Safeguarding Important Areas of Natural Habitat in Mongolia alongside Economic Development

January 2009

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Foreword

From the boreal forests of the north to the deserts of the south, from the high peaks of the Altai range to the unending steppe, from ephemeral oases to one of the largest bodies of freshwater in the world, Mongolia's natural habitats form a major component of the country's national wealth. These habitats support the nomadic pastoral lifestyle of Mongolia's rural population, underpin the development of nature-based tourism, and provide freshwater, fuel and other essential ecosystem goods and services. At the same time, Mongolia's natural habitats still support healthy populations of regionally and globally threatened wildlife species, many of which have declined or disappeared in other countries, following the pattern of habitat degradation, fragmentation and conversion that has been witnessed elsewhere.

Mongolia has entered a period of rapid economic growth, which is being accompanied by rapid development in sectors such as mining, energy, agriculture and tourism. Without effective planning and mitigation measures, such developments threaten the very natural habitats that underpin the Mongolian society and economy. A high priority is to safeguard important areas of natural habitat (both protected and unprotected) from the negative impacts of economic development, while taking advantage of opportunities to generate new funding streams for the conservation of these areas.

The World Bank has taken an advanced position in safeguarding important areas of natural habitat alongside its development work, which is set out in its Operational Policy on Natural Habitats (OP 4.04) of June 2001. In order to strengthen environmental safeguards in Mongolia, the Bank commissioned a study on Safeguarding Important Areas of Natural Habitat in Mongolia alongside Economic Development, funded by Japanese Consultant Trust Funds. This study was prepared by the Rural Development, Natural Resources and Environment Unit of the East Asia and Pacific Region (EASRE), in collaboration with BirdLife Asia, Tokyo, and the Wildlife Science and Conservation Center, Ulaanbaatar.

For the first time, this study pulls together data on 'critical natural habitats' (as defined in our policy) at a national scale, and overlays them with development plans in three key economic sectors (mining, infrastructure and tourism), in order to provide a strategic overview of the potential impact of these developments on important areas of natural habitat in Mongolia. It is my sincere hope that the detailed analysis and thoughtful recommendations in this report will help to guide

sustainable development planning and policy that balances demands for growth with the need to preserve the country's enviable natural wealth.

I would like to congratulate the study team for their efforts, and acknowledge the commitment, professionalism and persistence of BirdLife Asia and the Wildlife Science and Conservation Center in championing the conservation of natural habitats in Mongolia and Asia.

Arshad Sayed
Mongolia Country Manager
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Glossary of terms

Acid Rock Drainage (or Acid Mine Drainage): a major environmental risk associated with hard rock mining, where the exposure of sulphide minerals to water and air produces an acid solution that can affect water quality for wildlife and humans.

aimag: the largest sub-national administrative unit, equivalent to a province. There are 21 aimags in Mongolia plus the capital city, Ulaanbaatar.

bag: administrative unit below the level of soum, equivalent to a sub-district.

Citizens' Representative Khurals: local legislatures at aimag and soum level.

ger camp: tourist camp where visitors are accommodated in the traditional dwellings of nomadic herders.

Ikh Khural: the Mongolian Parliament.

Important Bird Area (IBA): sites of international importance for bird conservation at the global, regional or national level, based upon standard, internationally recognised criteria.

Local Special Protected Area (Local SPA): locally protected area. Local SPAs can be designated at the aimag (or capital city) and soum (or district) levels.

Millennium Road: a proposed east-west road corridor across the full width of Mongolia.

soum: administrative unit below the level of aimag, equivalent to a district. The capital city is subdivided into districts, not soums.

State Special Protected Area (State SPA): nationally protected area. State SPAs comprise Strictly Protected Areas, National Parks, Nature Reserves and Monuments.

Abbreviations and acronyms used

ADB	–	Asian Development Bank
ALAGC	–	Administration of Land Affairs, Geodesy and Cartography
ARC	–	Alliance of Religions and Conservation
BBOP	–	Business and Biodiversity Offsets Program
CBD	–	Convention on Biological Diversity
EIA	–	Environmental Impact Assessment
EITI	–	Extractive Industries Transparency Initiative
EPA	–	Environmental Protection Agency
GMI	–	Global Mining Initiative
GMIA	–	Geological and Mining Inspection Agency
IBA	–	Important Bird Area
IBAMA	–	Brazilian Institute for Environment and Renewable Resources
ICMM	–	International Council on Mining and Metals
IFC	–	International Finance Corporation
INAP	–	International Network for Acid Prevention
ITM	–	International Travel Mart
IUCN	–	International Union for Conservation of Nature
JICA	–	Japan International Cooperation Agency
MNE	–	Ministry of Nature and Environment
MNET	–	Ministry of Nature, Environment, and Tourism
MoRTT	–	Ministry of Road, Transport and Tourism
MRPAM	–	Mineral Resources and Petroleum Authority of Mongolia
NEMO	–	Netherlands-Mongolia Trust Fund for Environmental Reform
NMFS	–	National Marine Fisheries Service
NPI	–	Net Positive Impact
OP 4.04	–	World Bank Operational Policy on Natural Habitats
OP 4.11	–	World Bank Operational Policy on Physical Cultural Resources
OSM	–	Office of Surface Mining Reclamation and Enforcement
RAPPAM	–	Rapid Assessment and Prioritisation of Protected Area Management
REA	–	Regional Environmental Assessment
SCA	–	Special Conservation Area
SCI	–	Site of Community Importance
SDC	–	Swiss Agency for Development and Cooperation
SEA	–	Strategic Environmental Assessment
SMCRA	–	Surface Mining Control and Reclamation Act
SPA	–	Special Protected Area
STDC	–	Sustainable Tourism Development Center

TNC – The Nature Conservancy
UNESCO – United Nations Educational, Scientific and Cultural Organisation
UNIDO – United Nations Industrial Development Organisation
USFWS – United States Fish and Wildlife Service
WSCC – Wildlife Science and Conservation Center
WWF – World Wildlife Fund / World Wide Fund for Nature

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Executive summary

Background to the study

Mongolia retains vast areas of relatively unspoiled natural habitats, including boreal forest (taiga), steppe grassland, semi-desert and desert, as well as many freshwater and saline wetlands of international importance. These natural habitats support globally important populations of a large number of wildlife species, many of which have undergone massive declines elsewhere in their ranges. In their current undeveloped or lightly developed state, these habitats underpin the rural economy throughout Mongolia, through, for instance, supporting livestock herding and providing a supplementary food source during times of economic hardship.

As market reforms to the economy continue, and the country experiences rapid economic growth, **Mongolia's natural habitats look set to enter a period of unprecedented pressure**. Alongside the forestry and agriculture (mainly livestock herding) sectors, the rapidly expanding mining, infrastructure and tourism sectors all pose risks to natural habitats and the wildlife populations they support.

Given the development pressures they face, there is a need to assess the threats to important areas of natural habitat in Mongolia, strengthen safeguard measures, and provide examples from elsewhere of good practice in avoiding, mitigating and compensating for impacts. In response to this need, the World Bank, through the Japanese Consultant Trust Funds, contracted BirdLife Asia to undertake a study on the potential impacts of mining, infrastructure and tourism development on important areas of natural habitat in Mongolia.

Critical natural habitats in Mongolia

The World Bank has taken an advanced position on safeguarding important areas of natural habitat alongside its development work, as set out in its Operational Policy on Natural Habitats (OP 4.04). As part of this policy, **the World Bank is committed not to support projects that, in its opinion, involve the significant conversion or degradation of critical natural habitats**. For the purposes of this study, critical natural habitats in Mongolia were taken to include the following categories:

1. Formal protected areas, comprising:
   a. Nationally protected areas (i.e. State Special Protected Areas - State SPAs)
   b. Locally protected areas (i.e. Local Special Protected Areas - Local SPAs)
   c. Internationally protected areas (i.e. Ramsar Sites, World Heritage Sites and

Biosphere Reserve core areas)
2. Community protected areas (i.e natural sacred sites)
3. Supporting sites that maintain conditions vital for the viability of protected areas
4. Supplementary sites, critical for rare, vulnerable, migratory or endangered species (i.e. Important Bird Areas - IBAs)

One quarter of Mongolia's territory falls into one or more category of critical natural habitat. Ninety-five percent of the critical natural habitat identified during the study is designated as protected areas, although many of these sites, particularly Local SPAs, have no management structures in place at present.

Mining, infrastructure and tourism development in Mongolia

World class mineral resources, coupled with a strategic location between China and Russia, are driving rapid growth in Mongolia's mining sector. Mining currently accounts for around a third of Mongolia's GDP and around half of its industrial output and export earnings. As of May 2008, over 3,500 exploration licences and over 1,000 mining licences had been issued, covering 40 million and 400,000 ha respectively. Omnogobi and Dornogobi aimags combined account for half of the total mining area in the country. Gold, construction materials, coal and fluorspar are the minerals most widely targeted.

Mongolia will witness significant infrastructure development over the next decade, driven by rapid urbanisation, expansion of international trade between Russia and China, and growth in the mining sector. Mining is likely to be the major economic and political driver for infrastructure development in remote areas, where some of the largest mineral deposits are located. Development of these resources will require construction of water, power and construction infrastructure to facilitate their extraction, processing and export.

Tourism in Mongolia is largely based on the equestrian-pastoralist lifestyle of its rural people, combined with vast, open landscapes, largely devoid of globalised developments. Protected areas are popular tourist destinations, with tourists typically accommodated in tented '*ger*' camps run by tour operators, based on concessions licensed by the government. Economic reform since the early 1990s has led to the privatisation of tourism operations and the rapid development of the sector. This growth is putting an increasing pressure on certain protected areas, as a result of increased visitor numbers and infrastructure.

Regulatory and institutional frameworks for environmental protection

Since 1990, Mongolia has introduced several key pieces of legislation related to environmental protection. There nevertheless remain a number of important gaps and limitations, and several observers note that the existing regulatory framework is weak in the area of public participation. **The 1994 Law on Special Protected Areas explicitly prohibits exploration and mining within State SPAs, and restricts tourism to certain zones**. The 2007 Law on Forests appears to extend the prohibition on exploration and mining to all "protected forests": a very broad category.

Regulatory and institutional frameworks for mining

The 2006 Minerals Law sets out the process for licensing large-scale exploration and mining activities. **The Minerals Law prohibits exploration and mining within "Special Needs Land", which includes State and Local SPAs**. However, the law does not provide for all the procedural steps necessary to ensure effective implementation of these safeguards, and introduces

a number of constraints on effective public consultation during the licensing process. In order to regulate the massive and informal artisanal mining sector in Mongolia, the government recently passed a Temporary Regulation on Artisanal and Small-scale Mining Operations, which explicitly prohibits artisanal and small-scale mining within protected areas.

Impacts of mineral exploration on critical natural habitats

At present, **nearly 4 million ha of critical natural habitat in Mongolia is included within exploration licences**. The degree of overlap with Local SPAs and IBAs is significantly greater than that with State SPAs and internationally protected areas. These differences can be explained by the fact that many Local SPAs have been designated relatively recently, and may, therefore, post-date the exploration licences they overlap with, and the fact that IBAs are not safeguarded from exploration under Mongolian law, except where they are otherwise designated as protected areas.

Overlaps with exploration licences have the following implications for critical natural habitats:

- Direct impacts on biodiversity from exploration activities;
- Indirect impacts on biodiversity arising from exploration activities;
- Barriers to protected area establishment;
- Pressure for degazettal.

Impacts of mining operations on critical natural habitats

Currently, **less than half of one percent of the total area of critical natural habitat in Mongolia is included within mining licences**, almost all of which is made up of overlaps with Local SPAs. Indeed, two-thirds of the total overlap between mining licences and critical natural habitats in Mongolia is accounted for by Tavan Tolgoi Local SPA in Omnogobi aimag, which overlaps with six coal mining licences. It appears that this site and some of the other overlapping Local SPAs were knowingly sited on top of mining areas by local authorities.

Two minerals (coal and gold) account for more than 90 percent of the total overlap between mining licences and critical natural habitats. It is notable that copper and wolfram (tungsten), which make up a significant proportion of the current area under mining licences, do not account for any overlaps with critical natural habitats.

Recent studies have documented a range of direct impacts of mining operations on natural habitats. Direct impacts can include water pollution (resulting from, for example, disposal of tailings in rivers), air pollution (in the form of dust, emissions from smelters, etc.) and habitat loss (resulting from, for example, exploration drilling, overburden stripping or tailings impoundment). Changes to ground and surface water (resulting from water off-take for mining, mineral concentration or coal washing) may represent the most severe direct impacts, particularly in arid and semi-arid environments. The implications of any given overlap between a mining licence and a critical natural habitat are determined by the following factors:

- The environmental performance of the licence-holding company;
- The nature of the target mineral;
- The sensitivity of the impacted ecosystem.

It is important to note that the direct impacts of mining, while locally significant, are generally restricted to small areas (the average mining licence covers 374 ha), compared with those of sectors such as livestock herding. In the Mongolian context, the direct impacts of mining on biodiversity are likely to be less significant than indirect ones, such as the development of transport infrastructure.

Impacts of infrastructure on critical natural habitats

Due to the projected rapid growth of the mining sector, the need for infrastructure to service new mines and the tendency for mines to be located in areas with a low baseline human footprint, **the category of infrastructure development with the greatest potential for negative impacts on critical natural habitats is considered to be mining-associated infrastructure.**

Other forms of infrastructure development with potential impacts on critical natural habitats planned for Mongolia over the next decade include upgrades and enlargements of the national road and rail network, and new power generation and transmission infrastructure. Within the timeframe of the study, however, it was not possible to evaluate the overlap between these developments and critical natural habitats with any degree of confidence. For this reason, the analysis focused on mining-associated infrastructure.

Although only around 160,000 ha of critical natural habitat are located within mining licences, a further 6.5 million ha lies within 20 km of one or more mining licence. These areas are considered to be at high risk from being impacted by mining-associated infrastructure. Risk of impact is not, however, the same thing as actual impact, because risks can be avoided (through careful siting/routing of infrastructure) or minimised (through the implementation of appropriate mitigation measures).

Impacts of tourism on critical natural habitats

Seventy percent of the tourist camp locations mapped during the study are located in or are adjacent to State or Local SPAs. The protected areas with the greatest number of tourist camps are: Gorkhi-Terelj (with 38); Bogd Khan Uul (13); Khovsgol Lake (11); and Khangain Nuruu (nine). A comparison between camp locations and IBAs revealed that nearly half of the camps that could be mapped are located in or adjacent to IBAs.

As part of the study, the Department of Social Geography of the National University of Mongolia, the Mongolian Tourism Association, and the Wildlife Science and Conservation Center conducted a questionnaire survey to assess the impact of tourist camps on the environment. Data were collected from participants at the International Travel Mart, held in Ulaanbaatar in March 2008, with 85 camp operators responding. Garbage disposal, land degradation, unregulated road development and water pollution were the environmental impacts of tourist camps most frequently identified by camp operators. Strengthened control and standardisation of tourist camps and strengthened environmental protection were the most commonly recommended government actions in response (18 respondents each), followed by financial support to tourist camps to introduce environmentally friendly technologies (16 respondents).

Tourism development has the potential to make significant contributions towards the conservation of critical natural habitats by contributing directly to financing the management of these sites or by benefiting local economies and, thereby, increasing political and community support for their conservation. Tourism develop also has the potential to impact negatively on critical natural habitats, however. This study highlights seven key tourism-related impacts, including disturbance to wildlife, degradation of grassland steppe and deserts, and pollution of lakes and rivers.

At present, the threat posed by tourism development appears to be more localised than that posed by mining and infrastructure development, although severe at particular sites. Many of the issues arising relate to protected areas management, particularly the lack of capacity and resources, the poor application of management zoning, and lack of awareness and visitor management programmes.

Recommendations for site safeguard with regard to mining and infrastructure

Based on the analysis undertaken, the study formulates a series of key recommendations for safeguarding critical natural habitats from the negative impacts of mining and associated infrastructure. These recommendations can be summarised as follows:

1. Environmental safeguards in the mine licensing process should be strengthened. In particular, the 1998 Law on EIA and the 2006 Minerals Law should be revised to make public consultation an explicit requirement of the EIA and mine licensing processes, respectively.

2. Existing overlaps between exploration and mining licences and critical natural habitats should be resolved, and MRPAM should not issue any new mining licences within State or Local SPAs.

3. The safeguard of critical natural habitats outside of protected areas should be strengthened. In particular, the 2002 Law on Land should be revised to explicitly recognise sites designated under multilateral environmental agreements and natural sacred sites as Special Needs Land, and the World Bank should ensure that the list of IBAs in Mongolia is used in project screening.

4. On-the-ground protection of critical natural habitats should be improved by improving management effectiveness of protected areas, strengthening enforcement of controls on artisanal mining on Special Needs Land, and supporting the State Professional Inspection Agency to overcome barriers to effective on-the-ground monitoring and enforcement of environmental protection regulations.

5. The environmental performance of mining operations should be improved. In particular, the government should support and facilitate the introduction of Best Available Techniques into placer gold mining, and adopt a law on artisanal and small-scale mining that restricts these activities to specific areas.

6. The government of Mongolia should introduce regulations that require mining companies to compensate for any impacts on biodiversity that remain after mitigation has been pursued, by investing in biodiversity offsets.

Recommendations for site safeguard with regard to tourism development

Similarly, the study formulates a series of key recommendations for safeguarding critical natural habitats from the negative impacts of tourism development. These recommendations can be summarised as follows:

1. In those protected areas that already allow tourism, sustainable tourism plans should be prepared by the Ministry of Nature, Environment and Tourism based on IUCN's *Guidelines for Tourism in Parks and Protected Areas of East Asia*. These plans should be prepared as a priority where tourism impacts are of immediate concern, followed by those sites where tourism might be developed in the near future.

2. The Ministry of Nature, Environment and Tourism should establish a clear plan, based on local and expert consultation, identifying the next set of protected areas where tourism might be developed over time. Tourism development should not be allowed to proceed at any new protected areas until appropriate sites have been

identified, EIAs have been carried out and consulted on, and sustainable tourism plans are in place.

3. Innovative financing and governance models should be piloted at selected protected areas. This may involve including private sector representation on management boards and exploring decentralised revenue collection. This should be complemented by a feasibility study for capturing revenue streams from tourism operations within protected areas or their buffer zones.

4. A national sustainable tourism strategy should be developed by the government of Mongolia, in consultation with relevant stakeholders, and a cross-sectoral fund should be established by one or more interested donors to support collaborative initiatives that address objectives set out in the strategy.

1. Introduction

As market reforms to the Mongolian economy continue and the country enjoys rapid economic growth, the environment has entered a period of unprecedented pressure. Mining, infrastructure development and tourism development, in particular, are undergoing rapid expansion, and all pose risks to Mongolia's globally important biodiversity.

In order to strengthen its safeguard review process in Mongolia, specifically implementation of its Operational Policy on Natural Habitats (OP 4.04), the World Bank contracted BirdLife Asia to identify important areas of natural habitat in the country, and assess the extent to which these areas overlap with development plans. BirdLife Asia undertook this study in close collaboration with the Wildlife Science and Conservation Center (WSCC) of Mongolia.

The study looked at the extent of overlap between sites of conservation importance on the one hand, and mining licences, major infrastructure plans, and tourist camp locations on the other. It determined the scale of overlap at the national level, provided a strategic overview of potential impacts, and identified particular sites where there is cause for concern. Recommendations were made for how environmental issues arising might be addressed, including examples of guidance and best practice from outside of Mongolia.

In addition to this report, BirdLife Asia and WSCC provided the World Bank with the original GIS data compiled during the study. The GIS work benefited significantly from collaboration with WWF Mongolia, The Nature Conservancy (TNC) and the Administration of Land Affairs, Geodesy and Cartography (ALAGC). Furthermore, examples of best practice were shared through meetings with government, industry and NGO representatives, including a presentation at the Responsible Mining and Resource Use Discussion Series.

It is hoped that this study will help strengthen the safeguard of important areas of natural habitat in Mongolia, as well as inform sector work, project financing, and policy dialogue.

2. Background to the study

2.1 Important biodiversity under threat

Mongolia retains vast areas of relatively unspoiled steppe grassland (including forest steppe and mountain steppe) as well as semi-desert and desert habitat. This comprises part of the vast Eurasian steppe, which extends in an increasingly fragmented form from eastern Europe through western and central Asia to north-east Asia. Mongolia's steppe habitats form the heart of the Daurian Steppe, which is recognised by WWF as a Global 200 Ecoregion. The Daurian Steppe forms the best and most intact example of an undisturbed steppe ecosystem in the world, and is one of the last areas in the Palaearctic to still support stable herds of larger vertebrates (WWF 2008).

Large-scale loss of steppe grassland has taken place in neighbouring China and Russia, through ploughing and conversion to agricultural land, and, as a consequence, Mongolia supports globally important populations of many steppe-dependent IUCN Red List species that are close to extinction elsewhere in the region. There is, however, growing pressure on steppe grassland from an increasing human population, which has tripled since 1950, and an associated increase in livestock, which is resulting in overgrazing and degradation and desertification of pastures.

Other pressures impacting on steppe grassland include: steppe fires, usually set in spring and early summer, which can be very destructive to nesting birds; the use of rodenticides to control vole outbreaks; and the sinking of boreholes to supply water to domestic herds, which has led to adjacent severe land erosion and generally lowered water-tables. Furthermore, there are government plans for the development of agriculture, as well as infrastructure, which could have a major impact on the threatened steppe species (see below for further details).

The steppe region has many freshwater and saline wetlands of international importance, which support large numbers of breeding and migratory water birds. The water levels of many steppe lakes have fallen in recent decades, with some wetlands completely disappearing. In some cases, this is due to the damming or diversion of rivers and streams, to provide water for irrigation and livestock. In other locations, the cause is believed to be climatic, with some regions experiencing drought, milder winters with less snow fall, and hotter summers. In addition, increasing livestock numbers are adversely impacting reed and wet grasslands at many steppe wetlands, while steppe

fires can have a devastating impact on wetland vegetation.

Parts of northern Mongolia support extensive coniferous boreal forests, particularly in the Khentii mountains, around Khovsgol Lake, on the north and east sides of the Khangai mountains and in parts of the Khan Khokhii range. This comprises the southern edge of the vast belt of boreal forest (also called taiga) that extends from northern Europe across Russia to the Pacific coast. Large tracts of boreal forest remain in reasonable condition but forests in some areas have been much reduced and fragmented by logging. Also of note are alpine habitats in the Altai and other high mountains in western and central Mongolia, which support communities of high montane species.

Despite the aforementioned concerns regarding the state of Mongolia's natural and semi-natural habitats, the pressure on important sites was until recently felt to be relatively low, especially compared with neighbouring China. However, the environment in Mongolia looks set to enter a period of unprecedented pressure, as market reforms to the Mongolian economy continue, and the country enjoys rapid economic growth (in part fuelled by demand from China). Mining, infrastructure development and tourism development have been highlighted recently as undergoing rapid expansion, and these all pose risks to Mongolia's biodiversity. Furthermore, while Mongolia has made good progress with the establishment of a formal protected area system, many of its most important areas of natural habitat remain unprotected.

With vast, largely untapped mineral resources, Mongolia's mining sector is currently one of the fastest growing in the world (see Section 5.2). However, the sector currently lacks adequate environmental safeguards (see Sections 6.1 and 6.2) as a result there are a number of actual and potential overlaps between mining and exploration activities and areas of high biodiversity importance. Mining has the potential to affect biodiversity both directly and indirectly. Direct impacts can include water pollution (e.g. tailings disposal in rivers), air pollution and habitat loss (e.g. overburden stripping or tailings impoundment). In Mongolia, changes to ground and surface water (resulting from water off-take for mining, mineral concentration or coal washing) may represent the most severe direct impacts, particularly in arid and semi-arid environments. The indirect impacts of mining, such as planned and unplanned urban development and the construction of new transport infrastructure, are likely to be more significant than the direct impacts.

As the wider economy grows, and trade increases (especially with Russia, China and Korea), major investments will need to be made in infrastructure, including road and rail networks, hydropower plants and power transmission lines. Planned developments include: construction of a new bridge crossing from China into eastern Mongolia, passing through Nomrog Strictly Protected Area; construction of a thermal power station in Omnogobi aimag, to serve mining operation there; and completion of the 'Millennium Road' and five additional north-south roads across the country. Much of the planned infrastructure development depends on the rapidly expanding mining sector for its funding and/or economic justification.

The tourism sector is also growing strongly, with a strong focus on nature and cultural tourism. Of particular concern is the building of tourist camps at sites that are highly vulnerable to human disturbance. For example, there have recently been a number of '*ger*' (tented) camps established at wetlands of international importance, which are causing disturbance to breeding and migrating waterbirds.

As a consequence of these trends, measures are urgently needed to safeguard important areas of natural habitat (both protected and unprotected) from the negative impacts of development.

2.2 Site safeguard position of the World Bank

The World Bank has taken an advanced position on safeguarding important areas of natural habitat alongside its development work. Other development banks have taken similar positions with respect to site safeguard. The World Bank's position is set out in its Operational Policy on Natural Habitats (OP 4.04, June 2001), and includes the following:

- The Bank supports the protection, maintenance, and rehabilitation of natural habitats and their functions in its economic and sector work, project financing, and policy dialogue;
- The Bank's economic and sector work includes identification of (a) natural habitat issues and special needs for natural habitat conservation, including the degree of threat to identified natural habitats (particularly critical natural habitats), and (b) measures for protecting such areas in the context of the country's development strategy;
- The Bank does not support projects that, in the Bank's opinion, involve the significant conversion or degradation of critical natural habitats;
- The Bank encourages borrowers to incorporate into their development and environmental strategies analyses of any major natural habitat issues, including identification of important natural habitat sites, the ecological functions they perform, the degree of threat to the sites, priorities for conservation, and associated recurrent-funding and capacity-building needs.

Further details of this policy and those of other lending institutions are provided in Section 6.4 and Annex 8.

In order to strengthen environmental safeguards in Mongolia, the World Bank recently funded, with Japanese Consultant Trust Funds, the preparation of an inventory of the most important areas of natural habitat in the country using birds as indicators of overall biodiversity value. Seventy Important Bird Areas or IBAs (globally important sites for the conservation of birds and other biodiversity) were identified and documented. These IBAs help to identify sites meeting the World Bank's criteria for critical natural habitats that lie outside of existing and proposed protected areas.

3. Objectives of the study

Given the development pressures confronting Mongolia's biodiversity, there is a need to assess the threats to important areas of natural habitat, to strengthen safeguard measures, and to provide examples from elsewhere of good practice in avoiding, mitigating and compensating for impacts. BirdLife Asia was contracted to undertake a study with the following objectives:

1. To strengthen the World Bank's Safeguard Review process in Mongolia and inform discussions on important areas of natural habitat in its economic and sector work, project financing, and policy dialogue;

2. To ensure information on important areas of natural habitat in Mongolia is with business leaders and decision-makers and planners in key national and local government departments, as well as other lending institutions;

3. To identify the important areas of natural habitat in Mongolia that are most likely to be affected by (a) mining development, (b) infrastructure development and (c) tourism development;

4. To provide a strategic overview of the potential impact of these developments on important areas of natural habitat; and

5. To share best practice in site safeguard and mitigation from around the world with government and business leaders in Mongolia.

The outputs of the study were:

1. GIS layers and mapped information showing the extent to which plans for mining, infrastructure and tourism overlap with important areas of natural habitat in Mongolia;

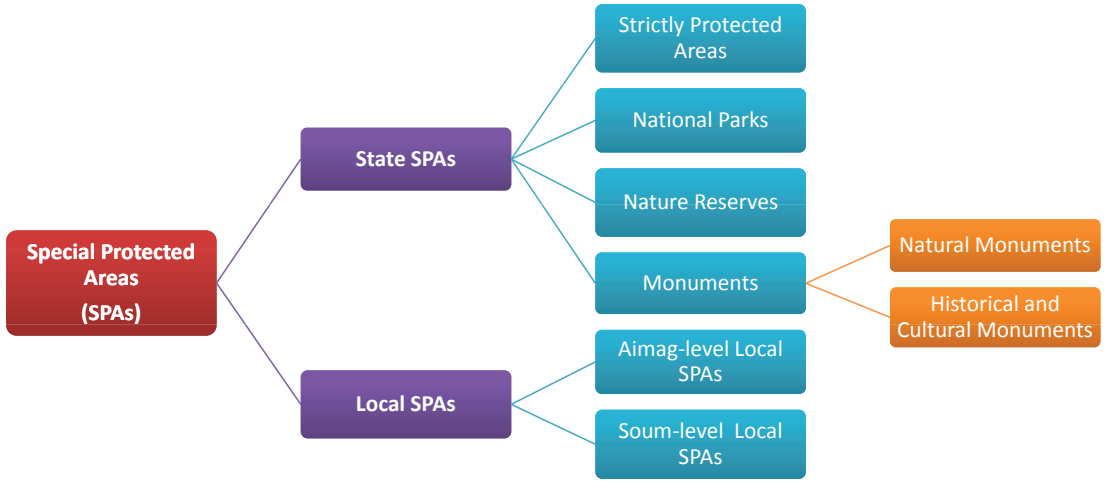
2. Strategic assessment of the impacts of these development pressures on important areas of natural habitat, with proposals for site safeguard and mitigation measures;

3. Examples provided for decision makers and business leaders of relevant site safeguard and mitigation measures from comparable situations elsewhere in the world.

4. Identification of important areas of natural habitat in Mongolia

For the purposes of this study, BirdLife interpreted important natural habitats as comprising sites that qualify as critical natural habitats, as defined in World Bank OP 4.04 (see Section 6.4). Following OP 4.04, critical natural habitats are: (i) existing protected areas and areas officially proposed by governments as protected areas, areas initially recognised as protected by traditional local communities, and sites that maintain conditions vital for the viability of these protected areas; and (ii) sites identified on supplementary lists prepared by the World Bank or another authoritative source. Sites on supplementary lists may include: areas recognised by traditional local communities; areas with known high suitability for biodiversity conservation; and sites that are critical for rare, vulnerable, migratory, or endangered species. Listings are based on systematic evaluations of such factors as species richness; the degree of endemism, rarity, and vulnerability of component species; representativeness; and integrity of ecosystem processes.

Figure 1: Classification of Special Protected Areas



Data source: 1994 Law on Special Protected Areas

Table 1: Categories of critical natural habitat in Mongolia

Category	Criteria set out in OP 4.04	Application in Mongolia
Formal protected areas	Existing protected areas and areas officially proposed by governments as protected areas (e.g. reserves that meet the criteria of the World Conservation Union [IUCN] classifications)	There are three categories of formal protected area in Mongolia: (a) **nationally protected areas** (b) **locally protected areas** (c) **internationally protected areas** (i.e. Ramsar Sites, World Heritage Sites and Biosphere Reserve core areas)
Community protected areas	Areas initially recognised as protected by traditional local communities (e.g. sacred groves)	A number of natural habitats (mountains, lakes, etc.) are recognised as **natural sacred sites**
Supporting sites	Sites that maintain conditions vital for the viability of protected areas (as determined by the environmental assessment process)	A number of natural habitats maintain conditions vital for protected areas (e.g. forest that protect the catchments of lakes, wildlife corridors, etc.). Due to limitations of time and data availability, it was not possible to identify these sites during the study.
Supplementary sites	These may include: areas recognised by traditional local communities; areas with known high suitability for biodiversity conservation; and sites that are critical for rare, vulnerable, migratory, or endangered species	Areas recognised by traditional local communities are included within the category of natural sacred sites, above. The network of **Important Bird Areas** in Mongolia represents a set of sites with known high suitability for biodiversity conservation that are critical for rare, vulnerable, migratory or endangered species

Critical natural habitats in Mongolia fall under four categories: formal protected areas; community protected areas; supporting sites; and supplementary sites (Table 1). During the study, it was possible to identify and map sites under each of these categories, apart from supporting sites. To date, there has been no nationwide analysis of sites that maintain ecological conditions necessary to maintain the viability of protected areas. While such an analysis would be possible, to have undertaken it would have been outside the scope of this study, which used existing data sets as inputs.

Each category of critical natural habitat is described in the following sections, and further details are provided in Annexes 1-5. It should be noted that these categories are not mutually exclusive, as some sites are recognised/designated under more than one category.

4.1 Sources of information

Formal protected areas

Following Article 3 of the 1994 Law on Special Protected Areas, protected areas in Mongolia are classified into State Special Protected Areas (State SPAs) and Local Special Protected Areas (Local SPAs). State SPAs are further classified into Strictly Protected Areas, National Parks, Nature Reserves and Monuments (Figure 1).

A GIS data layer on State SPAs was provided by WWF Mongolia. Additional information on the official areas and dates of establishment of State SPAs was collated from various official documents obtained from the former Ministry of Nature and Environment (MNE[1]) and downloaded from its website (www.mne.mn). The data collated from these sources were current as of June 2008.

There are some discrepancies between the areas given in the official documents and the areas calculated from the GIS polygons of State SPA boundaries, amounting to less than 3 percent of the total area of the system. The figures used throughout this report are those calculated from the GIS polygons. In addition, although some official documents treat protected areas with several non-contiguous sectors (e.g. Great Gobi "A" and Great Gobi "B") as single sites, each sector is treated as a separate protected area for the purposes of this report.

Data on Local SPAs were collated by WWF Mongolia and TNC, working through ALAGC. These data were collated through correspondence with aimag (or capital city) administrations, then verified and digitised. The data summarised in this report are current as of May 2008. However, it should be noted that Local SPAs continue to be designated by local administrations at aimag and soum level, and that the coverage of Local SPAs is expected to continue to expand.

For reasons of space, a full list of Local SPAs in Mongolia is not presented in this report. A comprehensive list, current as of December 2007, has recently been published by ALAGC and WWF Mongolia (2008).

Data on three types of international protected areas were collated for the study. Data on World Heritage Sites and Biosphere Reserves were downloaded from the website of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (www.unesco.org). Data on Ramsar Sites were downloaded from the website of the Ramsar Sites Information Service (www.wetlands.org/rsis/). Boundary polygons on Ramsar Sites in Mongolia were digitised from paper maps, provided by scientists from the Mongolian Academy of Sciences who originally proposed the sites for Ramsar designation. All data on internationally protected areas are current as of June 2008.

In the case of Ramsar Sites, there are some major discrepancies between the official areas obtained from the Ramsar Sites Information Service and the areas calculated from the GIS polygons. These discrepancies are thought to arise from the fact that the official figures only give the area of water surface at the site but exclude the surrounding habitats. The discrepancies are, therefore, particularly great in cases such as Lake Ganga and its surrounding wetlands, where the Ramsar Site comprises a number of small lakes within a matrix of terrestrial habitats. The figures used throughout this report are those calculated from the GIS polygons. At a future point, there is a need to revise the official figures given on the Ramsar Sites Information Service to reflect the full area of each site.

Community protected areas

As explained in Table 1, for the purposes of the study, community protected areas were taken to comprise natural sacred sites. The list of natural sacred sites in Mongolia was downloaded from the Buddhist Ecology website (www.buddhistecology.org/sacredsitesofmongolia.shtml). This list was compiled by the Alliance of Religions and Conservation (ARC) and WWF Mongolia. Other natural features (lakes, mountains, etc.) of cultural and/or religious significance to local communities are mentioned in various references but data on these sites were not included in the study due to limitations of time.

[1] In September 2008, MNE was restructured as the Ministry of Nature, Environment, and Tourism (MNET), with the addition of the Tourism Department of the former Ministry of Road, Transport, and Tourism.

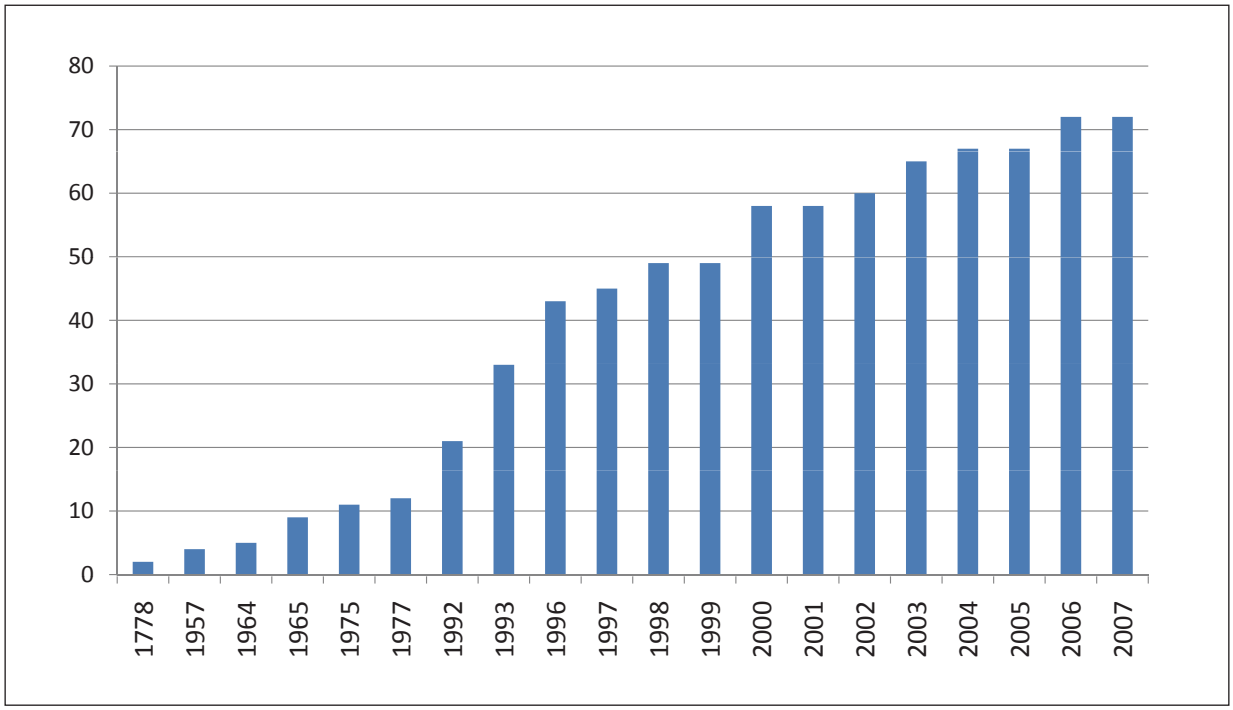
Supplementary sites

For the purposes of the study, supplementary sites were taken to comprise IBAs (Table 1). It is recognised that other sites in Mongolia may meet the criteria for supplementary sites set out in OP 4.04. At present, however, systematic inventories of important sites are not available for any taxonomic group apart from birds. Data on IBAs, current as of June 2008, were taken from the inventory of IBAs in Mongolia compiled by WSCC, the Institute of Biology of the Mongolian Academy of Sciences and BirdLife International (Nyambayar and Tseveenmyadag 2008). This inventory contains the results of a workshop on *Identification and Safeguarding of Important Areas of Natural Habitat in Mongolia* held in Ulaanbaatar in April 2007. This workshop was convened by the former MNE and the World Bank and attended by representatives of government, academia and international and national NGOs. The workshop participants applied a global set of criteria for identifying IBAs developed by BirdLife International. The workshop built, in turn, on a preliminary list of 40 IBAs in Mongolia presented in the directory of IBAs in Asia (BirdLife International 2004). Details on each of Mongolia's IBAs are available on WSCC's website (www.wscc.org.mn/iba.html).

4.2 Nationally protected areas in Mongolia

Mongolia has one of the world's oldest traditions of protected area establishment, dating back to three sacred mountains designated by Chinggis Khan in the early 13th Century (Enebish and Myagmarsuren 2000, Farrington 2005). In 1778, the introduction of a formal ban on logging and hunting at Bogd Khan Mountain, south of Ulaanbaatar, created one of the world's oldest continuously protected areas (Johnstad and Reading 2003). In 1818, similar bans were introduced at Otgontenger and Bulgan Mountains (Enebish and Myagmarsuren 2000).

Figure 2: Cumulative increase in number of State SPAs in Mongolia



Data source: WWF Mongolia and MNE

The State SPA system has evolved incrementally since the 1950s, with a rapid increase in the rate of expansion during the 1990s, following the introduction of a democratic system of governance (Farrington 2005). Since 2000, the rate of expansion of the State SPA system has slowed considerably (Figure 2), although this period has witnessed the rapid development of a nationwide system of Local SPAs (see Section 4.3).

Alongside expanding the system, the government of Mongolia has put in place a regulatory framework for protected areas. The first piece of legislation on protected areas was enacted in 1975, when the "Procedure on Strictly Protected Areas of Mongolia" was approved. The key current pieces of legislation on protected areas and their buffer zones are the 1994 Law on Special Protected Areas and the 1997 Law on Buffer Zones (see Section 6.1).

The Law on Special Protected Areas recognises four main categories of nationally protected area (i.e. State SPA): (i) Strictly Protected Areas; (ii) National Parks; (iii) Nature Reserves; and (iv) Monuments. **Strictly Protected Areas** are areas in which natural conditions are very well preserved, and where human use is severely restricted. **National Parks** are areas in which natural conditions are relatively well preserved, and which have historical, cultural, scientific, educational, and ecological importance. **Nature Reserves** comprise areas protected for the conservation, preservation and restoration of ecological, biological, palaeontological or geological features. **Monuments** are areas protected for the purposes of preserving natural heritage and historical and cultural sites (Johnstad and Reading 2003).

As of June 2008, Mongolia's State SPA system covers around 22 million ha or around 14 percent of its national territory (Table 2). The system comprises 18 Strictly Protected Areas (accounting for 49 percent of the system by area), 26 National Parks (41 percent), 20 Nature Reserves (9 percent) and 8 Monuments (less than 1 percent). The full list of State SPAs in Mongolia is presented in Annex 1 and on Map 1.

Table 2: State SPAs in Mongolia as of June 2008

Category	No.	GIS area (ha)	Official area (ha)
Strictly Protected Area	18	10,987,403	10,494,283
National Park	26	9,263,347	9,214,153
Nature Reserve	20	2,057,621	2,002,228
Monument	8	104,765	97,645
Total	**72**	**22,413,136**	**21,808,309**

Data sources: WWF Mongolia and MNE

Mongolia has an ambitious plan to expand the country's protected area system, in line with the Convention on Biological Diversity (CBD) Programme of Work on Protected Areas, which aims to establish and maintain comprehensive, effectively managed, and ecologically representative networks of terrestrial protected areas by 2010. In response to the CBD Programme of Work, the Mongolian government is implementing a National Programme on Special Protected Areas. The second phase of this programme (2005-2015) includes an aim for "Special Protected Areas to occupy up to 30 percent of territory" (MNE 2007). This reiterates a goal, originally set by the *Ikh Khural* (Mongolian Parliament) in 1992, of placing 30 percent of the nation under some form of protected status (Johnstad and Reading 2003). With the recent enlargement of the nationwide system of Local SPAs (see Section 4.3), Mongolia is well on the way to meeting this target.

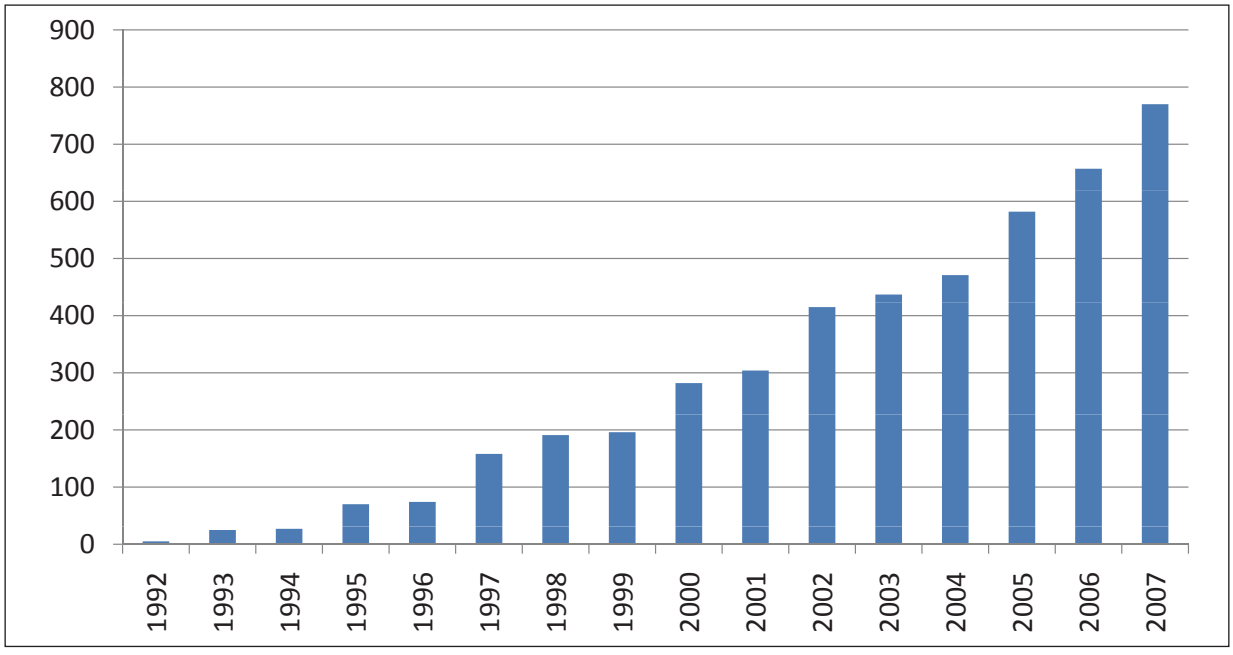
It is notable that the 30 percent target of the Mongolian government far exceeds the target set at the IUCN World Parks Congress at Caracas, Venezuela, in 1992 of extending the protected area network to encompass, at minimum, 10 percent of each major biome by 2000. However, this apparent discrepancy should be viewed in the light of the fact that Mongolia contains vast natural ecosystems with populations of wide-ranging megafauna that do not readily lend themselves to conservation within small, fragmented protected areas, and the fact that the 10 percent target of IUCN is an arbitrary figure, based as much on pragmatism as sound conservation science.

In the view of MNET, expanding the protected area system is not simply a question of increasing the size of the network but one of increasing the coverage of important species and habitats (D. Delgertsogt, Deputy Minister of Nature, Environment, and Tourism verbally 2008). To this end, a process of gap analysis and consultation is currently underway, with a view to increasing the coverage of species and habitats that are under-represented within the present system.

4.3 Locally protected areas in Mongolia

Article 28 of the Law on Special Protected Areas empowers Citizens' Representative Khurals at aimag (or capital city) and soum (or district) levels to designate Local SPAs and set their boundaries and management regulations (see Section 6.1). To date Local SPAs have been designated in Ulaanbaatar city plus all but one of the 21 aimags (provinces) in Mongolia[2]. Initially, three aimags (all in central Mongolia) designated their entire territory

Figure 3: Cumulative increase in number of Local SPAs in Mongolia



Data source: WWF Mongolia, TNC and ALAGC

[2] In the case of many Local SPAs, it is unclear whether any formal process was followed to evaluate sites against biological or other criteria before conferring a protected area designation. In the future, therefore, there may be a need to rationalise the Local SPA network, in order to channel limited resources towards sites that make the greatest contribution to conserving biodiversity of national or local importance.

as a Local SPA (B. Chimed-Ochir verbally 2008). However, after being requested to do so by the central government, they subsequently dropped the designation for the whole aimag, and designated a series of individual Local SPAs instead.

As of May 2008, there were 937 Local SPAs in Mongolia, covering over 16.5 million ha, equivalent to over 10 percent of the national territory. These include at least 492 sites (covering at least 11.5 million ha) designated at the aimag (or capital city) level and at least 399 sites (covering at least 3.6 million ha) designated at the soum (or district) level; the relevant data are unavailable for the remaining 46 sites. A summary of the Local SPAs in each aimag (and capital city) is presented in Annex 2 and on Map 2.

Local SPAs range in size from less than 1 ha to nearly 1 million ha (Khangain Bus Local SPA in Bayankhongor aimag). Only 40 Local SPAs are greater than 100,000 ha in area but these account for over half of the total area of the Local SPA system. Of the Local SPAs for which the relevant data are available, more than three quarters were established after 1 January 2000 (Figure 3). This contrasts sharply with the expansion of the State SPA system, which slowed down after 2000 (Figure 2).

There is a limited amount of overlap between State SPAs and Local SPAs. The total area of overlap is 929,202 ha, equivalent to nearly 6 percent of the Local SPA system. Interestingly, over half of the overlap occurs in Bayankhongor aimag, with 222,820 ha being accounted for by overlaps with Ikh Bogd Uul National Park and 194,395 ha being accounted for by overlaps with Gobi Gurvan Saikhan National Park. In the case of Ikh Bogd Uul, the site has only recently (2007) been included in the State SPA system, which may explain overlap with pre-existing Local SPAs.

Taken together (and excluding overlaps), State SPAs and Local SPAs cover a total area of 38,015,439 ha, equivalent to over 24 percent of the national territory.

4.4 Internationally protected areas in Mongolia

In addition to its protected area systems at national and local levels, Mongolia has designated a number of sites in accordance with multilateral environmental agreements to which it is a signatory, specifically the Ramsar Convention, the World Heritage Convention and UNESCO's Man and the Biosphere Programme. These sites can be considered as internationally protected areas.

Ramsar Sites

The Ramsar Convention, officially known as the Convention on Wetlands of International Importance especially as Waterfowl Habitat, came into force in 1975. The convention provides a framework for international cooperation for the conservation and wise use of wetlands. Parties have a commitment to promote the wise-use of all wetlands in their territory, to designate suitable sites for inclusion on the List of Wetlands of International Importance (Ramsar Sites), and to promote their conservation.

Mongolia became a contracting party to the Convention in 1998 and 11 Ramsar Sites, covering 1,695,598 ha, have been designated so far; the full list is presented in Annex 3 and on Map 3. Ten Ramsar sites are partially covered by State SPAs and/or Local SPAs but one site is fully protected. In total, 455,069 ha of Ramsar Sites currently lies outside of the national and local protected area systems, thus adding to the area of critical natural habitat in the country.

World Heritage Sites

The aim of the World Heritage Convention, which came into force in 1975, is to identify and conserve cultural and natural monuments and sites of outstanding universal value. Parties to the Convention have a commitment to nominate suitable sites for recognition by UNESCO as natural or cultural World Heritage Sites.

Mongolia became a contracting party to the Convention in 1990 and has since nominated one natural World Heritage Site (Uvs Nuur Basin) and one cultural World Heritage Site (Orkhon Valley). The total area of these two World Heritage Sites in Mongolia is 932,201 ha. More details about these two sites are given in Annex 3 and on Map 3.

Uvs Nuur Basin is composed of 12 non-contiguous areas, five of which are in Mongolia and seven of which are in Russia. All five areas in Mongolia are almost entirely included within State SPAs. Similarly, Orkhon Valley is almost entirely contained within two State SPAs. Recently, a third site, Khovsgol Lake, has been proposed the government as a natural World Heritage Site. This site is whole contained within an existing State SPA. Consequently, the existing and proposed World Heritage Sites in Mongolia only make a small additional contribution (27,721 ha) to the area of the country that qualifies as critical natural habitat under OP 4.04.

Biosphere Reserves

The Man and the Biosphere Programme was initiated in 1971 by UNESCO. The programme aims to develop a basis for the conservation and sustainable use of biological diversity, and for the improvement of the relationship between people and their environment. Countries participating in the programme are expected to designate one or more Biosphere Reserves, which are examples of terrestrial and coastal ecosystems where solutions are promoted to reconcile biodiversity conservation with its sustainable use.

Biosphere Reserves build on traditional confined conservation zones, combining core protected areas with zones where sustainable development is fostered among local inhabitants and enterprises. Governance systems for Biosphere Reserves are often highly innovative; in some cases, new legislation can be introduced. Biosphere Reserves have three inter-connected functions:

- Conservation: landscapes, ecosystems, species and genetic variation;
- Development: economic and human and culturally adapted;
- Logistical support: research, monitoring, environmental education and training.

Biosphere Reserves are organised into three types of management zone (core areas, buffer zones and transition areas), each of which has a defined management regime. The zonation scheme is applied differently in different settings, to accommodate geographical and socio-cultural conditions, available legal protection measures and local constraints. However, only the core area of a Biosphere Reserves requires legal protection, and hence can correspond to an existing protected area, such as a nature reserve or national park (UNESCO 2008). For this reason, for the purposes of this report, only the core areas of Biosphere Reserves are considered to qualify as critical natural habitat.

To date, Mongolia has designated six Biosphere Reserves, the first (Great Gobi) in 1990 and the most recent (Mongol Daguur) in 2007. These six sites cover a total area of 16,078,072 ha. However, only 2,064,505 ha of this comprise core areas; further details are presented in Annex 3 and on Map 3. The core areas of all six of Mongolia's Biosphere Reserves are designated as State SPAs. Therefore, they do not increase the area of the country that qualifies as critical natural habitat.

4.5 Natural sacred sites in Mongolia

Broadly speaking, sacred sites fall into two categories: (i) natural sites, such as mountains and lakes revered traditional local communities; and (ii) cultural sites, such as monasteries, deer stones, petroglyphs and burial mounds (G. Verboom verbally 2008). For the purpose of this study, only natural sacred sites were considered to meet the definition of critical natural habitat under OP 4.04, which includes "areas recognized by traditional local

communities (e.g., sacred groves)". Cultural sacred sites are not natural habitats *per se*. The safeguard of cultural sacred sites, together with that of sites of archaeological or palaeontological interest is addressed by the World Bank's Operational Policy on Physical Cultural Resources (OP 4.11, July 2006).

Following the consolidated list of natural sacred sites presented on the Buddhist Ecology website, there are 47 natural sacred sites in Mongolia. Of these sites, three have been designated at the national level by Presidential Decree, 34 have been designated at the aimag (or capital city) level and 10 have been designated at the "regional" level (meaning that they are shared by multiple aimags). Natural sacred sites are found in all 21 of Mongolia's aimags, plus the capital city. The aimags with the largest number of natural sacred sites are Khovsgol and Ovorkhangai (with four each). The full list of natural sacred sites in Mongolia is presented in Annex 4 and on Map 4.

Of the 47 natural sacred sites in Mongolia, 16 are protected within State SPAs, while a further eight are protected within Local SPAs. The remaining 23 sites represent additional critical natural habitats in Mongolia. As boundaries have not been officially defined for these sites, they were mapped as points during the study. Consequently, it was not possible to calculate the total area of these additional sites. As a proportion of the total area of critical natural habitat in Mongolia, however, it is small.

4.6 Important Bird Areas in Mongolia

Introduction

In addition to existing and proposed protected areas, the World Bank recognises important sites for "rare, vulnerable, migratory or endangered species" as critical natural habitats (see Section 6.4). Information on these sites is not always readily available in an agreed, objectively assessed and standardised format, particularly for sites outside of the national protected area network. This dearth of information inhibits the early identification of potentially deleterious impacts arising from development projects, thereby delaying the safeguards clearance process and requiring substantial investments to undertake site inspections to determine whether any critical natural habitats will be potentially impacted.

BirdLife International is recognised as the only organisation in the world that is currently identifying important sites for conservation in all countries in a way that is consistent with World Bank OP 4.04; that is, irrespective of their formal status as protected areas. BirdLife's IBAs are identified using standard, internationally agreed criteria, through national and local level consultations involving NGOs, experts and government agencies. Birds are the best available surrogate for general biodiversity and can be used as an effective (if imperfect) means of identifying natural habitats that are critical for other important flora and fauna also.

As a group, birds have many features that make them good indicators for the selection of important sites that also have wider biodiversity importance, for example:

- They contain high numbers of globally threatened and restricted-range species, and their distributions overlap with those of other globally threatened and endemic, but less well-known, taxa;
- They are widely distributed at all elevations, in almost all habitats (including those that are semi-natural) and throughout all geographical regions;
- They have well understood distributions and habitat requirements, and are relatively easy to record and identify in the field;
- They are good indicators of habitat condition and human disturbance, and provide a means of relatively easily monitoring ecological changes over time;
- Criteria exist (and have been developed

over a period of over 20 years) for the objective identification of important sites for birds at global and regional scales;

- They can act as flagships for conservation, and there is a large community of people, amateur and professional, who are motivated to work for their conservation.

Birds are also an important conservation focus in their own right. They perform ecological roles essential to the function of ecosystems, such as seed-dispersal and pollination, and they have economic values, particularly as a basis for nature-based tourism, a growing industry in parts of Mongolia.

Table 3: Summary of global categories and criteria for identifying IBAs

Category	Criterion	Application in Mongolia
A1: Globally threatened species	The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.	The site qualifies if it is known, estimated or thought to hold a population of a species categorised as Critical, Endangered or Vulnerable (Near-threatened and Data Deficient species are not covered under this category in the present analysis).
A2: Restricted-range species	The site is known or thought to hold a significant component of the restricted-range species whose breeding distributions define an Endemic Bird Area or Secondary Area.	The site qualifies if it forms one of a set selected to ensure that, as far as possible, all restricted-range species of an Endemic Bird Area or Secondary Area are present in significant numbers in at least one site in the set and, preferably, in more.
A3: Biome-restricted assemblages	The site is known or thought to hold a significant component of the group of species whose breeding distributions are largely or wholly confined to one biome.	The site qualifies if it forms one of a set selected to ensure that, as far as possible, all species and habitats characteristic of a biome are adequately represented.
A4: Globally important congregations	**(i)** The site is known or thought to hold, on a regular basis, ≥1% of a biogeographic population of a congregatory waterbird species.	This applies to waterfowl species as defined by Wetlands International (2002). Thresholds for each species were set regionally, by estimating 1% of biogeographic populations.
or	**(ii)** The site is known or thought to hold, on a regular basis, ≥1% of the global population of a congregatory seabird or terrestrial species.	This includes those seabird species not covered by Wetlands International (2002). Thresholds for each species are set regionally or inter-regionally, by estimating 1% of the global population.
or	**(iii)** The site is known or thought to hold, on a regular basis, ≥20,000 waterbirds or ≥10,000 pairs of seabirds of one or more species.	For waterbirds, this is the same as Ramsar Convention criteria category 5. There are no sites meeting criteria A4 (iii), for seabirds, in Mongolia (for obvious reasons)
or	**(iv)** The site is known or thought to exceed thresholds set for migratory species at bottleneck sites.	A threshold of at least 20,000 migrating individuals of all raptor or crane species was set regionally.

Criteria used to identify IBAs in Mongolia

The criteria used to identify IBAs in Mongolia were those used in the first Asia-wide inventory of IBAs (BirdLife International 2004). These standardised criteria were designed to identify sites of global significance, and thus permit meaningful comparison between sites within each country, with neighbouring countries, and also at regional and global levels (Table 3).

As well as meeting the criteria in Table 3, an IBA should also, as far as possible, be:

- Different in character or habitat or ornithological importance from the surrounding area;
- An actual or potential protected area, with or without buffer zones, or an area that can be managed in some way for nature conservation;
- Alone or with other sites, a self-sufficient area, which provides all the requirements of the birds, when present, for which it is important.

Limitations of the IBA approach

At this point, it is necessary to stress that there are a number of limitations to using the IBA approach for the identification of important areas of natural habitat.

First, a number of species are widely disbursed in their distributions and populations throughout all, or at key stages, in their life-cycle. These might be species that occur at low densities over large ranges, or species occurring in habitats that are comparatively intact and covering a very large area. In such situations, only a small proportion of a species's population and range is likely to be covered in any network of IBAs. Examples of such species in Mongolia are birds of steppe grassland and boreal forest, where extensive habitat remains. In such situations, only representative sites have been identified as IBAs, and other landscape-scale measures will be essential, covering a much larger area, if the species's population and range are to be maintained. These measures are likely to be in the form of national and provincial policies and plans for land-use, rather than measures targeting particular sites.

Second, the threats facing some species may extend beyond the IBAs at which they occur. The reasons for a decline in a species's population may, for example, be due to collection for the wildlife trade or poisoning. In such situations, national or regional interventions are likely to be required in addition to site-specific ones.

Third, birds are imperfect indicators of wider biodiversity. While birds occur in almost all habitats and geographical regions, their distributions and habitats do not exactly mirror all other groups. Plants and freshwater fish, for example, can show patterns of diversity and endemism that are not necessarily matched by those of birds. Birds are not good indicators of important sites for specialised cave fauna, for obvious reasons. There will, therefore, be other sites important for fauna and flora other than birds that will need to be identified at some later date. This will require the development of additional site selection criteria and further desk studies, consultation and field work.

IBAs in Mongolia

To date, 70 IBAs have been identified in Mongolia. All but one of these sites qualify as IBAs under category A1 (globally threatened species), 7 qualify under category A2 (restricted-range species), 41 qualify under category A3 (biome-restricted assemblages) and 46 qualify under category A4 (globally important congregations). IBAs have been identified in 18 of Mongolia's 21 aimags. The aimags with the largest number of IBAs are Dornod (with 10), Zakhan (with 8), Khovd and Khovsgol (with 7 each). The full list of IBAs in Mongolia is presented in Annex 5 and on Map 5.

Mongolia's IBAs cover a total area of 8,358,313 ha, equivalent to 5 percent of its territory. Seventy percent of the IBA network (5,858,813 ha) is protected within State SPAs. Six percent of the network (519,341 ha) is protected within Local SPAs, of which 389,633 ha is not otherwise protected within State SPAs. Seventeen percent of the IBA network (1,390,317 ha) has been designated internationally as Ramsar Sites, World Heritage Sites and/or Biosphere Reserve core areas, of which 280,481 ha is not otherwise protected within either State SPAs or Local SPAs. Therefore, 1,829,386 ha of the IBA network (22 percent of the total) are not protected at the local, national or international level. This represents an addition to the area of Mongolia that qualifies as critical natural habitat (Table 4).

Table 4: Coverage of IBAs in locally, nationally and internationally protected areas

IBA statistic	Total area (ha)	Area not otherwise protected (ha)
Area covered by State SPAs	5,858,813	5,858,813
Area covered by Local SPAs	519,341	389,633
Area covered by international designations	1,390,317	280,481
Area unprotected	1,829,386	1,829,386
Total area of IBA network	-	**8,358,313**

4.7 Consolidated set of critical natural habitats

To summarise, **there are four categories of site in Mongolia that meet the criteria for critical natural habitat** set out in World Bank OP 4.04:

1. Formal protected areas, comprising:
   a. Nationally protected areas (i.e. State Special Protected Areas - State SPAs)
   b. Locally protected areas (i.e. Local Special Protected Areas - Local SPAs)
   c. Internationally protected areas (i.e. Ramsar Sites, World Heritage Sites and Biosphere Reserve core areas)
2. Community protected areas (i.e natural sacred sites)
3. Supporting sites (i.e. sites that maintain conditions vital for the viability of protected areas)
4. Supplementary sites (i.e. Important Bird Areas)

This study did not identify any supporting sites. If the remaining categories are overlaid with one another, **the consolidated set of critical natural habitats covers 40.3 million ha, equivalent to one quarter of Mongolia's territory** (Table 5 and Map 6).

From the figures presented in Table 5, it can be calculated that 56 percent of the critical natural habitat identified in this report is included within State SPAs. Under Mongolian law, State SPA status affords the highest level of safeguard from the negative impacts of mining, infrastructure and tourism development (see Section 6.1). A further 39 percent of the critical natural habitat identified in this report is included within Local SPAs but not formally protected at the national level. While, Mongolian law still affords Local SPAs some level of safeguard from negative development impacts, there is less clarity and consistency about how environmental protection regulations apply to them (see Section 6.1). In particular, there are no standard management regulations for Local SPAs.

Table 5: Consolidated set of critical natural habitats in Mongolia

Critical natural habitat	Number of sites	Total area (ha)	Incremental addition to critical natural habitat (ha)
1. Formal protected areas			
a. Nationally protected areas	72	22,413,136	22,413,136
b. Locally protected areas	937	16,531,505	15,602,303
c. Internationally protected areas	-	-	-
(i). Ramsar Sites	11	1,695,598	455,069
(ii). World Heritage Sites	2	932,201	27,721
(iii). Biosphere Reserve core areas	6	2,064,505	0
2. Community protected areas			
Natural sacred sites	47	not available	[23 sites]
3. Supporting sites			
[none identified during study]	n/a	n/a	n/a
4. Supplementary sites			
Important Bird Areas	70	8,358,313	1,829,386
TOTAL			**40,327,615**

Only 5 percent of the consolidated set of critical natural habitats in Mongolia identified by this study is not designated as State or Local SPAs. A small proportion of this area is designated under multilateral environmental agreements (as Ramsar Sites and World Heritage Sites) but the remainder is not under any form of formal protected area designation. One explanation for this finding is the fact that many critical natural habitats identified outside of State or Local SPAs are relatively small, discrete sites, such as wetlands, whose combined area is not large relative to the protected area networks, which include some vast areas of desert, semi-desert and boreal forest habitats. Another explanation is the fact that the combined coverage of the State and Local SPA systems is high, relative to other countries in the region.

The 5 percent figure should not be interpreted as meaning that 95 percent of the critical natural habitats in Mongolia are protected. In the first place, formal designation does not necessarily equate to on-the-ground protection, particularly in the case of Local SPAs, the majority of which have no protected area management structures in place, and exist, at present, purely as 'paper parks'. In the second place, there are undoubtedly other critical natural habitats, outside of formal protected areas, that have not been identified by this study, particularly supplementary sites critical for rare, vulnerable, migratory, or endangered species in taxonomic groups other than birds. For example, this study identifies no critical natural habitats in limestone areas, which are known to have high levels of endemism in plants, land snails and other taxa.

In addition, 23 natural sacred sites do not overlap with any other critical natural habitat. As the boundaries of these sites have not yet been defined, it is not possible to calculate the area they contribute to the consolidated set of critical natural habitats in Mongolia.

5. Overview of development planning in Mongolia

5.1 Sources of information

Mining

A GIS data layer showing the exploration and mining licences in Mongolia, current as of 19 May 2008, was obtained from the Department of Geological and Mining Cadastre of the Mineral Resources and Petroleum Authority of Mongolia (MRPAM). The metadata attached to this layer included date of licence and licence holder's name for both types of licence. However, metadata on target mineral(s) were available for mining licences only.

Infrastructure

Data on existing and planned roads, railroads and airports were digitised from maps presented in the National Transport Strategy for Mongolia (MoRTT 2007), cross-referenced with maps and tables presented in the National Land Management Master Plan (ALAGC 2003). Data on existing and planned energy infrastructure were digitised from maps and tables presented in the National Land Management Master Plan for 2004-2023 (ALAGC 2003).

Tourism

The Department of Social Geography of the National University of Mongolia, the Mongolian Tourism Association and WSCC, supported by this study, conducted a questionnaire survey to assess the impact of tourist camps on the environment. The survey was endorsed by the Tourism Department of the former Ministry of Road, Transport and Tourism (MoRTT[3]).

Data were collected from participants at the International Travel Mart (ITM), the biggest tourism related event in Mongolia, which was took place on 29 and 30 March 2008 in Ulaanbaatar. The ITM was organised by the Mongolian Tourism Association and the Tourism Department. The questionnaire survey was based on face-to-face interviews. The survey team consisted of two lead persons plus assistants. A total of 12 volunteer assistants were drawn from undergraduate and graduate students of tourism business at the National University of Mongolia under the guidance of Prof. G. Baatartsooj. The questionnaire consisted of three parts: (i) background information on tourist camps; (ii) information on visitors; and (iii) information related to environmental issues.

[3] In September 2008, MoRTT was restructured as the Ministry of Road, Transport, Construction, and Urban Development; the Tourism Department joined the new MNET.

Seventy one (93 percent) of the 76 tourist camps participating in the ITM responded to the questionnaire survey. Information was collected from an additional 14 tourist camp representatives that did not have displays at ITM, bringing to 85 the total number of camps responding to the questionnaire. This is just under half (42 percent) of the 200 camps registered with the Tourism Department in 2006. Additional information on the location of tourism camps was compiled from brochures, websites and various other sources by WSCC.

5.2 Mining development

Significance of the mining sector to Mongolia's economy

World class mineral resources, coupled with a strategic location between China and Russia, are driving rapid growth in Mongolia's mining sector, and mean that it is poised to become a major supplier of mineral resources to some of the world's largest and fastest growing economies. Mining accounts for around a third of Mongolia's GDP and around half of its industrial output and export earnings (IMMI 2007, World Bank and PPIAF 2007). Major export-related minerals include copper, molybdenum, gold, coal (both thermal and coking) and fluorspar (World Bank 2006).

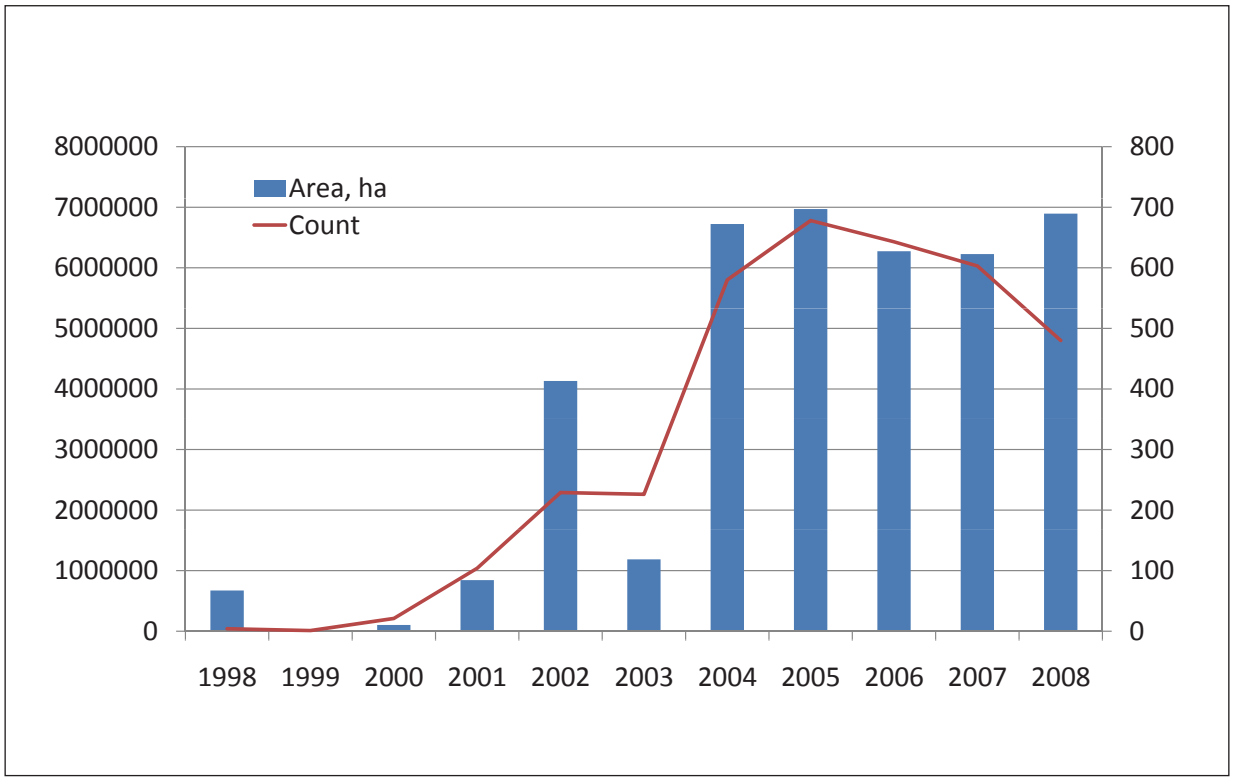
Over 12,000 people are employed by the formal mining sector, while the informal (artisanal) sector involves many times this number (World Bank 2006). Although it is not a long-standing tradition of Mongolians, artisanal mining has become an important social safety net during times of economic hardship, and now provides the main livelihood for tens of thousands of people (estimates range between 30,000 and 100,000 participants; World Bank 2006).

Development of the mining sector

Prior to the shift to a market economy in 1992, Mongolia's mining sector was dominated by state-owned joint ventures between the Mongolian government and the Soviet Union, Bulgaria, Czechoslovakia, East Germany and Hungary (World Bank 2006). Following the break up of the Soviet Union and the ensuing collapse of Soviet Bloc markets for Mongolia's animal products industries, mining rapidly became Mongolia's most important industry, with annual growth of the sector over the period 1993 to 2003 ranging from 8 to 13 percent (Jargalsaikhan 2004 cited in Farrington 2005). Since 1992, the number of private companies (mainly Mongolian, sometimes partnering with Canadian, British, Australian, Russian and Chinese companies) involved in exploration and mining has increased (World Bank 2006).

The passing of a Minerals Law in 1997, the abolition of a 10 percent tax on gold and the widely publicised discovery of the Oyu Tolgoi copper/gold deposit in 2001 triggered a rapid increase in mineral exploration during the late 1990s and early 2000s (World Bank 2006). The number of exploration licences issued per year increased exponentially over this period, from only four in 1998 to 580 in 2004 (Figure 4). Foreign investment in the mining sector also increased rapidly, from 43 billion tugriks (US$37 million) in 2002 to more than 227 billion tugriks (US$195 million) in 2006 (IMMI 2007). Private investors during this period concentrated almost exclusively on six high-value export minerals: gold; copper; zinc; uranium; fluorspar; and coal (World Bank 2006).

Figure 4: Number and area of exploration licences issued per year



Data source: Department of Geological and Mining Cadastre, MRPAM

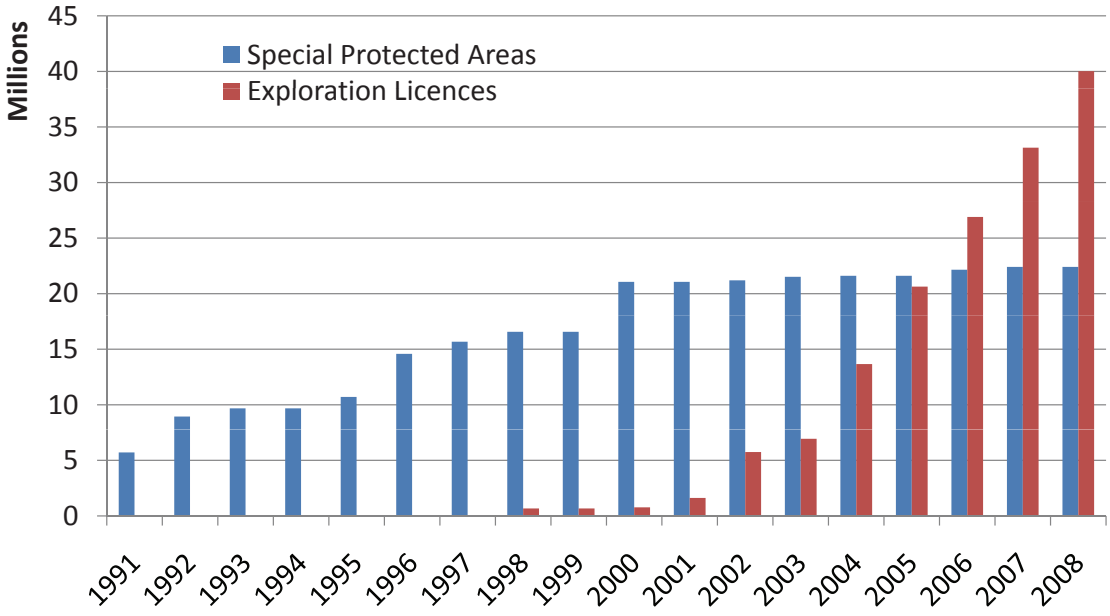
In 2006, the government responded to the rapid growth of the mining sector by passing a new Minerals Law, which provided for government participation in partnerships with private companies. This new law, coupled with citizen advocacy and increased windfall taxes on profits from copper and gold, dampened investor enthusiasm for mining in Mongolia (The Asia Foundation 2007b). As Figure 4 shows, the period since 2004 has witnessed a tailing off of the rate of increase in the issuing of exploration licences.

Current status of exploration and mining in Mongolia

There are two types of licence for mining in Mongolia: an "exploration licence" grants the right to prospect or conduct exploration, whereas a "mining licence" (or operating licence) grants the right to conduct mining operations.

As of 19 May 2008, 3,572 exploration licences had been issued, covering a total area of 40,027,296 ha, equivalent to one quarter of the territory of Mongolia. More than 80 percent of these licences were issued after 1 January 2004, with over 28 percent being issued in the 12 month period since 19 May 2007. As Figure 5 shows, most of the expansion of Mongolia's State SPA system was in the period up to 2000, while most of the growth in the area under exploration licence has been in the period since 2001. Consequently, almost all State SPAs predate the granting of exploration licences.

Figure 5: Cumulative increases in areas of exploration licences and State SPAs in Mongolia



Data sources: Department of Geological and Mining Cadastre, MRPAM, and WWF Mongolia

The areas covered by individual exploration licences range in size from 2 ha to over 380,000 ha. The mean exploration area is 11,206 ha, and the median is only 2,674 ha, demonstrating the influence that a few very large areas have on the mean. Article 17 of the 2006 Minerals Law stipulates that exploration areas should be between 25 and 400,000 ha. While no exploration areas exceed the maximum permissible size, around 1 percent are smaller than the 25 ha minimum size.

Exploration licences are not distributed evenly around the country. Rather, they are concentrated in certain aimags (Table 6 and Map 7). The parts of Omnogobi and Dornogobi aimags that lie outside of protected areas are almost completed covered by exploration licences. It is no coincidence that this part of the country contains the largest known proven deposits of mineral resources, including the Tavan Tolgoi coal deposit and the Oyu Tolgoi copper-gold deposit. High densities of exploration licences are also found in several other aimags, including Gobi-Altai in the west, Bulgan and Orkhon in the north, Dornod in the east and Dundgobi and Gobi-Sumber in the centre.

With regard to mining licences, 1,066 had been issued as of 19 May 2008, covering a total area of 398,306 ha, equivalent to one quarter of one percent of the territory of Mongolia. In area terms, the coverage of mining licences is only around one percent of that of exploration licences. In impact terms, however, the potential of mining licences to impact negatively upon biodiversity is disproportionate to the area they occupy. This is due in particular to the potential for mining operations to contribute to indirect impacts (road and rail development, construction of high voltage power lines, etc.) that extend well beyond their direct footprints.

Table 6: Distribution of exploration licences by aimag

Aimag name	Total area (ha)	Exploration area (ha)	Exploration area as percentage of total
Arkhangai	5,509,445	578,829	10.5
Bayankhongor	11,496,246	1,526,766	13.3
Bayan-Olgii	4,713,266	674,412	14.3
Bulgan	4,749,907	1,278,579	26.9
Darkhan-Uul	318,342	46,811	14.7
Dornod	12,389,523	3,756,170	30.3
Dornogovi	10,914,054	6,565,096	60.2
Dundgovi	7,424,510	2,165,917	29.2
Gobi-Altai	14,203,734	4,501,843	31.7
Gobi-Sumber	545,291	227,506	41.7
Khentii	8,061,439	1,210,159	15.0
Khovd	7,729,575	1,290,851	16.7
Khovsgol	10,073,127	536,122	5.3
Omnogobi	16,309,375	9,328,091	57.2
Orkhon	81,022	44,096	54.4
Ovorkhangai	6,246,365	510,840	8.2
Selenge	4,112,396	649,691	15.8
Sukhbaatar	8,224,176	2,132,036	25.9
Tov	7,867,003	1,234,388	15.7
Ulaanbaatar	135,778	3,353	2.5
Uvs	7,041,905	945,592	13.4
Zavkhan	8,265,690	820,147	9.9
TOTAL	**156,412,168**	**40,027,296**	**25.6**

The areas covered by mining licences range in size from less than 1 ha to over 37,000 ha. The mean mining area is 374 ha, and the median is only 71 ha, much lower than the corresponding figures for exploration licences. Article 24 of the 2006 Minerals Law stipulates that mining areas should cover no less than 1 ha for salt and common minerals and no less than 25 ha for other minerals; no upper limit is set. Only three mining areas cover less than 1 ha.

The geographic concentration of mining licences is similar to that of exploration licences: a not altogether unexpected result (Map 8). The aimags with the greatest area covered by mining licences are Omnogobi and Dornogobi, which, together, account for half of the total mining area in the country. Darkhan-Uul and Orkhon aimags and Ulaanbaatar city all have greater densities of mining licences than Omnogobi and Dornogobi, but this reflects their small size overall, rather than a larger mining area. Across the remainder of the country, mining licences cover less than 1 percent of the aimag area, sometimes considerably less (Table 7).

With regard to target minerals, Table 8 shows that gold, construction materials, coal and fluorspar are the minerals most widely targeted by mining licences, in terms of number. Together, these four minerals account for 84 percent of the total number of mining licences issued as of May 2008. For two of these minerals - construction materials and fluorspar - individual mining areas tend to be small (averaging just 55 and 79 ha respectively). Consequently, although they make up a large proportion of the total number of mines, their total footprint on the ground is relatively small (a little over 10,000 ha in each case).

Table 7: Distribution of mining licences by aimag

Aimag name	Total area (ha)	Mining area (ha)	Exploration area as percentage of total
Arkhangai	5,509,445	9,521	0.17
Bayankhongor	11,496,246	12,229	0.11
Bayan-Olgii	4,713,266	4,267	0.09
Bulgan	4,749,907	10,086	0.21
Darkhan-Uul	318,342	7,048	2.21
Dornod	12,389,523	10,655	0.09
Dornogovi	10,914,054	43,149	0.40
Dundgovi	7,424,510	5,535	0.07
Gobi-Altai	14,203,734	963	0.01
Gobi-Sumber	545,291	4,650	0.85
Khentii	8,061,439	12,687	0.16
Khovd	7,729,575	5,056	0.07
Khovsgol	10,073,127	1,413	0.01
Omnogobi	16,309,375	168,889	1.04
Orkhon	81,022	2,672	3.30
Ovorkhangai	6,246,365	12,295	0.20
Selenge	4,112,396	28,625	0.70
Sukhbaatar	8,224,176	2,274	0.03
Tov	7,867,003	40,848	0.52
Ulaanbaatar	135,778	3,731	2.75
Uvs	7,041,905	4,936	0.07
Zavkhan	8,265,690	6,778	0.08
TOTAL	**156,412,168**	**398,306**	**0.25**

The mining licences that tend to cover the largest areas are those for copper (mean of 3,812 ha) and coal (mean of 1,280 ha). Consequently, these two minerals account for a significant proportion of the total area under mining licences (Figure 6). The third mineral with a large combined footprint is gold. This reflects the large number of mining licences for gold, rather than the size of individual mines (Table 8). Taken together, gold, copper and coal account for 87 percent

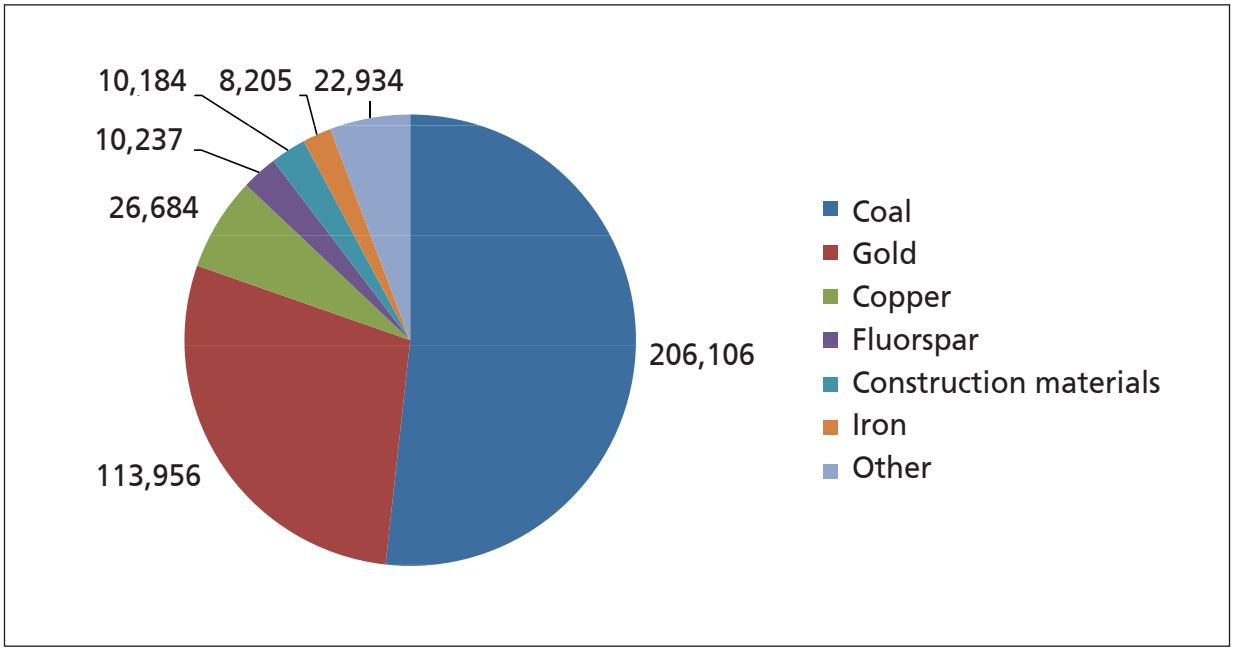
of the area of Mongolia currently under mining licences. The implications of each of these target minerals for biodiversity are discussed in Section 7.4.

The figures in these sections do not include artisanal mining, which, prior to the passing of a Temporary Regulation on Artisanal and Small-scale Mining Operations in February 2008, was essentially unregulated (see Section 6.2). Had figures on artisanal mining been available, it is likely that the proportion of the direct mining footprint attributable to gold would have increased significantly.

Table 8: Distribution of mining licences by target mineral

Target mineral	No. of licences	As % of total	Mining area (ha)	As % of total	Mean mining area (ha)
Gold	469	44.00	113,956	28.61	243
Construction materials	186	17.45	10,184	2.56	55
Coal	161	15.10	206,106	51.75	1,280
Fluorspar	130	12.20	10,237	2.57	79
Iron ore	24	2.25	8,205	2.06	342
Salt	14	1.31	674	0.17	48
Wolfram (tungsten)	10	0.94	6,647	1.67	665
Mixed minerals	9	0.84	3,995	1.00	444
Copper	7	0.66	26,684	6.70	3,812
White lead	7	0.66	5,153	1.29	736
Phosphate	6	0.56	826	0.21	138
Zinc	4	0.38	1,200	0.30	300
Alabaster	4	0.38	212	0.05	53
Rare earths	3	0.28	675	0.17	225
Molybdenum	2	0.19	202	0.05	101
Crystal	2	0.19	136	0.03	68
Silver	2	0.19	41	0.01	20
Uranium	1	0.09	264	0.07	264
Other	18	1.69	1,604	0.40	89
Unknown	7	0.66	1,304	0.33	186
TOTAL	**1,066**	**100**	**398,306**	**100**	**374**

Figure 6: Distribution of mining areas (ha) by target mineral



Future directions for the mining sector

Mining sector output is expected to double or even treble from 2003 levels by 2010, provided that large projects get development approvals and are successfully commissioned (World Bank and PPIAF 2007). It is very likely that mineral exports will continue to be one of Mongolia's most important sources of revenue for decades to come (Farrington 2005). Major new mines in the process of being developed include the Boroo gold mine, a hard-rock mine located in northern Mongolia, the Oyu Tolgoi copper-gold mine, located in Omnogobi aimag, and the Tavan Tolgoi coal mine, also in Omnogobi. Oyu Tolgoi alone will double Mongolia's exports, while Oyu Tolgoi and Tavan Tolgoi together will treble them. This will create huge trade surpluses and distort the national economy (G. Hancock verbally 2008). In addition to social and economic impacts, the continued growth of the mining sector can be expected to have a number of implications for critical natural habitats and the fauna and flora species they support. These are explored in Section 7.

5.3 Infrastructure development

Social and economic context for infrastructure development in Mongolia

As alluded to in the previous section, Mongolia is currently witnessing unprecedented rates of economic growth, in large part driven by growth in the extractive industries (mining and oil and gas). In addition to possessing world class mineral deposits, Mongolia sits astride the shortest land route between Moscow and Beijing. Between 2000 and 2005, total Russia-China trade increased by 200 percent (World Bank and PPIAF 2007). A third factor influencing Mongolia's development trajectory is rapid urbanisation, as a nomadic, agricultural economy gives way to a sedentary, service-based one. Consequently, Mongolia is poised for rapid growth, underpinned by mining, trade and continued urbanisation (World Bank and PPIAF 2007).

The mining-infrastructure nexus

One of the key economic and political drivers for infrastructure development over the next decade will be mining. Mineral deposits are frequently located in remote areas, poorly served by existing infrastructure. Development of these resources will require the construction of water and power infrastructure to facilitate their extraction and processing, as well as the construction of transport infrastructure to facilitate their export to markets (particularly China). As a recent World Bank study observes, "almost all medium- and large-mine developments likely to occur in Mongolia will require significant new power, water and transportation infrastructure" (World Bank and PPIAF 2007, p6).

With regard to transport infrastructure, projected increases in rail traffic due to increased international trade between Russia and China are likely to be able to be catered for by improvements to the existing main line (World Bank and PPIAF 2007). Therefore, the principal economic driver for expansion of the rail network into new areas will be mining developments.

With regard to power infrastructure, Mongolia's relatively high per capita consumption of electricity (1,300 kWh) is driven by the energy demands of the mining sector (World Bank and PPIAF 2007). Several proposed power infrastructure developments, such as the construction of a thermal power station near Tavan Tolgoi and a high voltage transmission line linking it to the Central Energy System, are driven by the projected demand of new mines and the opportunity to export surplus power to consumers in Ulaanbaatar or neighbouring countries.

With regard to urban development, existing mining areas, such as Erdenet, are already witnessing rapid urban expansion and will need additional infrastructure (World Bank and PPIAF 2007). New mines are expected to catalyse the development of mining towns. For example, a mining town of 14,000 people is expected to develop in Omnogobi aimag to service the Oyu Tolgoi mine.

Because mines are often situated in remote locations, the infrastructure developments they require are often very specific; without the mine, the infrastructure is usually of little value (World Bank and PPIAF 2007). Consequently, over the next decade, mines can be expected to provide the economic justification, and in many cases the capital, for a large proportion of the infrastructure developments that will take place in Mongolia. This is especially the case as far as potential impacts on biodiversity are concerned, because mining-associated infrastructure will extend into areas that have hitherto had very limited human footprints, whereas investments in infrastructure not directly linked to mining will (with a few exceptions) be concentrated in urban areas.

For the purposes of this study, therefore, the potential impacts of infrastructure development on important areas of natural habitat were considered mainly in terms of the indirect impacts of mining (i.e. construction of road, rail and power infrastructure, growth of mining settlements, etc.). Exceptions were made for major planned infrastructure developments not directly linked to mining that were thought to have the potential to cause severe impacts on biodiversity if they were located within critical natural habitats. These developments include construction of new railroads, arterial roads, airports and hydropower plants.

Current status of infrastructure

Mongolia has an extensive infrastructure stock for a country at its level of economic development. Rates of access to roads, electricity and mobile telephony are higher than might be expected given the country's income and geography (World Bank and PPIAF 2007). Nevertheless, considerable infrastructure gaps remain. Less than one third of households in the country have adequate access to water supplies, for example, and only a little over half of rural Mongolians have access to electricity (World Bank and PPIAF 2007).

Although Mongolia's road density (0.009 roads per 1,000 km^2) is one of the lowest in the world, it is denser than would be expected based on the country's income density (World Bank and PPIAF 2007). As of the end of 2005, Mongolia's road network totalled 49,250 km, comprising 11,219 km of national roads and 38,031 km of provincial and local roads (MoRTT 2007). Of Mongolia's total road network, only about 1,900 km is surfaced. A further 1,900 km is gravel and 1,800 km is improved earth tracks. The remaining 43,600 km is earth tracks (World Bank and PPIAF 2007).

Most domestic freight transport is by road. However, rail dominates international freight transport, because of its comparative advantage for moving minerals. Road freight is mainly from Ulaanbaatar to the aimags, whereas rail freight is mostly of coal to Ulaanbaatar (World Bank and PPIAF 2007). Mongolia's rail network comprises 1,815 km of broad-gauge track, of which 1,110 km are on the main line linking Russia to China, 238 km are on a separate network in eastern Mongolia linked to the Russian railway, and 477 km are branches off the main line (World Bank and PPIAF 2007). One important branch line connects major coal mines with the power plant used to operate the Erdenet copper mine in Orkhon aimag (MoRTT 2007).

Regarding aviation, Mongolia has 17 domestic airports but only two international airports. One of these, Chinggis Khan International Airport in Ulaanbaatar, receives 98 percent of international air services (World Bank and PPIAF 2007).

At present, Mongolia has three regional energy systems. The largest by far is the Central Energy System, which covers Ulaanbaatar, Erdenet and other urban centres in the centre of the country and accounts for 96 percent of energy consumption. The Eastern Energy System covers urban centres in Dornod and Sukhbaatar aimags, while the Western Energy System covers urban centres in Bayan-Olgii, Uvs and Khovd aimags (World Bank and PPIAF 2007). In 2002, coal was the fuel source for 90 percent of Mongolia's electricity generation, with a little over 1 percent being met by diesel, and small-scale hydropower accounting for 0.3 percent. The balance was made up of electricity imports, mainly from Russia (World Bank and PPIAF 2007). As of 2003, there were six medium-scale hydropower plants in Mongolia. The largest of these, on the Bogd River in Zavkhan aimag, had an installed capacity of 20 MW (ALAGC 2003).

Projected infrastructure developments

Over the next 10 years, expanded access to quality infrastructure will be required to sustain GDP growth predicted to be as high as 7 or 8 percent per annum (World Bank and PPIAF 2007). A recent World Bank study recommended investments in three key areas, to prevent infrastructure becoming a constraint on economic performance: (a) investments required to maintain the existing stock of infrastructure; (b) investments required to exploit the potential of recent mining discoveries; and (c) investments in national capacity to avoid electricity shortages and to upgrade distribution facilities (World Bank and PPIAF 2007).

As the government of Mongolia formulates and implements plans to meet the country's infrastructure needs, it is committed to the principles of sustainable development. These commitments are set out in the 1995 Law on Environmental Protection and the 1998 Law on Environmental Impact Assessment (EIA), which provide the legal basis for regulating the environmental impacts of infrastructure development (see Section 6.1). Further specific reference to the principles of sustainable development is made in a number of recent policy statements by the government. For example, the 2007 National Transport Strategy for Mongolia states that "government-funded investment decisions will be based on thorough technical, economic, financial and environmental analyses of all alternatives" (MoRTT 2007, p3).

There is no single document covering all current infrastructure development plans in Mongolia. In 2003, ALAGC prepared a National Land

Management Master Plan, covering the period 2004-2023, which presented information on planned developments of transport, energy, water, communications and tourism infrastructure. However, the information contained in this plan was compiled from individual line ministries, which, in most cases, have subsequently revised or updated their plans.

In the transport sector, a national strategy was prepared in 1999 by the World Bank (1999). A new strategy was prepared in 2007 by the former MoRTT, with technical assistance from the Asian Development Bank (ADB) (MoRTT 2007). The new transport strategy sets out 14 general sector strategies, including one on environmental sustainability, specifically that "the Government will ensure that all transport projects will be environmentally sustainable, respect the ecosystems, preserve the socio-cultural balance, and minimize the environmental impact of any infrastructure works and transport services" (MoRTT 2007, p4). This includes a commitment to observe "environmental impact assessments and other requirements of the Government's environmental policies" in the planning and operation of transportation facilities and services (MoRTT 2007, p30).

Realising the objectives and targets set out in the new transport strategy will require a total investment of US$1,275 million over the period 2006-2015, of which US$926 million is expected to come from the government of Mongolia and US$349 million from other sources (MoRTT 2007).

Policy for the energy sector is set by the Ministry of Minerals and Energy. The legal basis for the current structure and operations of the sector is provided by the 2001 Energy Law, which limits the central government's role to policy making and provides for the operation and ownership of energy services by public or private companies (World Bank and PPIAF 2007).

A recent World Bank-commissioned study on the delivery of infrastructure services in Mongolia reviewed planned developments in the transport, energy and communications sectors, and made recommendations for enhancing efficiency, improving planning and prioritising investments in infrastructure (World Bank and PPIAF 2007). While not an official document, this study provides a valuable insight into the feasibility of the various infrastructure developments proposed by the government of Mongolia.

At the sub-national level, the government of Mongolia is currently preparing a regional development plan for the South Gobi, with technical assistance from the World Bank and additional support from the Netherlands-Mongolia Trust Fund for Environmental Reform (NEMO). This plan frames and explores the implications of different options for the infrastructure that will be necessary to facilitate economic growth in the South Gobi region (J. Reichert verbally 2008). This planning process provides an opportunity to evaluate the potential environmental and social impacts infrastructure developments in the region that is the major focus for mining activity in the country (see Section 6.1, Tables 6 and 7).

Over the period until 2015, Mongolia's transport system will need to respond to increasing congestion in Ulaanbaatar, ensure adequate access from mining regions to international markets, provide reliable trade access to the Russian and Chinese borders, and improve the connectivity between Ulaanbaatar and the regions (World Bank and PPIAF 2007).

With regard to road infrastructure, the National Transport Strategy identifies "improvements to the main north-south road corridor via Ulaanbaatar" as the top priority, followed by "improvements to the main east-west road corridor (i.e. Millennium Road)" and improved connections between Ulaanbaatar and these corridors (MoRTT 2007).

According to data collated in the recent World Bank study (World Bank and PPIAF 2007),

the government's investment plan for road development includes the following projects:

- Completion of the Millennium Road (600 km);
- A new north-south road in western Mongolia, linking Russia to China (800 km);
- Four additional new north-south roads linking to the Millennium Road (1,100 km in total);
- Completion of the road from Ulaanbaatar to Zamyn Uud on the Chinese border (300 km);
- A southern road to Altay (225 km).

Completion of sections of the Millennium Road is being supported by the World Bank and bilateral donors. A project to construct one of the north-south roads linking to the Millennium Road (Tsagan Nuur to Yarantay) is currently under preparation with funding from ADB. ADB is also financing completion of the road from Ulaanbaatar to Zamyn Uud (MoRTT 2007).

With regard to rail infrastructure, the National Transport Strategy identifies "improvements to the north-south rail corridor linking Russia and China" and "establishment of rail as the main option for connectivity to the mining sector" as the top priorities (MoRTT 2007).

According to the World Bank study (World Bank and PPIAF 2007), the government's investment plan for rail development includes the following projects:

- A new rail line linking Russia to China (1,100 km);
- New east-west railways in the south of Mongolia (500 km);
- New mining railways (300 km);
- Railways for the maintenance sector.

The study notes that new mining railways will be contingent on the availability of private financing, and that they should, as far as possible, be built and operated by the mining firms themselves (World Bank and PPIAF 2007). No decisions have yet been made about which mining railways will be built, if any (World Bank and PPIAF 2007). However, the National Transport Strategy identifies a particular need for new rail services between the Chinese border and mines in the South Gobi region (MoRTT 2007).

With regard to civil aviation, the National Transport Strategy identifies improvements to domestic air services to link the west of the country with Ulaanbaatar and other key locations and improvements to domestic air services to meet tourism needs as the top priorities (MoRTT 2007). In addition, the strategy recommends undertaking a feasibility study to assess the viability and timing of a new international airport for Ulaanbaatar.

According to the World Bank study (World Bank and PPIAF 2007), the government's investment plan for civil aviation includes the following projects:

- A new international airport for Ulaanbaatar.
- Upgrading four domestic airports (Olgiy, Ulaangom, Uliastay and Altay).

On 3 March 2008, the governments of Japan and Mongolia concluded an agreement to build a new international airport at Zuun Mod, 40 km south of Ulaanbaatar. This airport, which will be built at a cost of ¥28.8 billion (US$175 million), is expected to open in 2015 (Kyodo News Agency 2008).

With regard to energy, the National Land Management Master Plan presents a list of eight hydropower plants planned for construction during the period 2004 to 2012. The total installed capacity of these plants will be 266.5 MW, of which 83 percent will be provided by the Egiin plant in Bulgan aimag (ALAGC 2003). The dams created by the eight hydropower plants will inundate a combined area of nearly 1.1 million ha, with potentially serious implications for aquatic and terrestrial biodiversity.

According to the World Bank study (World Bank and PPIAF 2007), the proposed energy investment programme of the Mongolian government comprises the following elements:

- Commissioning of both phases of the Egiin hydropower plant;
- Construction of new coal-fired combined heat and power plants in Ulaanbaatar;
- Increased imports of power from Russia, using existing transmission capacity;
- Construction, by the private sector, of a coal-fired power plant at Tavan Tolgoi.

The first stage of the 220 MW Egiin hydropower plant is proposed for commissioning in 2012 (World Bank and PPIAF 2007).

Apart from hydropower plants, other water infrastructure has not been looked at in any detail by this study. It is recognised, however, that some planned developments have significant biodiversity implications. One example is the proposed Herlen-Gobi water project, which proposes transferring water from the Herlen River to the south-east Gobi, 70 percent of which is projected to meet mining demand (World Bank and PPIAF 2007).

There are a number of reasons to expect that the infrastructure development plans summarised above will not be realised in full by 2015. First, the required funding is unlikely to be available. For example, based on independent assessments carried out during the recent World Bank study, the total cost of transport infrastructure developments proposed for Mongolia over the period 2008-2015 is three to four times what countries typically spend on transport infrastructure, and would be very difficult to realise (World Bank and PPIAF 2007). This mismatch between likely resources and proposed investments suggests that plans will have to be considerably scaled back, even if tax revenues devoted to infrastructure were to increase significantly (World Bank and PPIAF 2007).

Second, many proposed developments, particularly in the transport sector, appear to lack economic justification. One example is the recent expansion of the Millennium Road Programme to include five new north-south routes. No prefeasibility or feasibility studies have as yet been conducted on these routes, and there is a high risk that the system will attract insufficient traffic to justify its costs (World Bank and PPIAF 2007).

Third, there needs to be a realignment of investment from new construction to maintenance. Between 2000 and 2006, overall expenditure on capital maintenance across infrastructure sectors dropped from 0.6 to 0.2 percent of GDP (World Bank and PPIAF 2007). Taking road transport as an example, national and local road funds currently spend 75 percent of their (limited) resources on new road construction rather than maintenance (World Bank and PPIAF 2007).

In response to these constraints, the World Bank formulated preliminary recommendations on how the government's investment plan for the 2008-2015 period could be modified to make it more consistent with the likely availability of resources (World Bank and PPIAF 2007). These recommendations included: dropping plans for new east-west railways in the south of the country; reducing the need for a new rail line linking Russia and China by adding capacity to the existing line; reducing the construction of new north-south roads under the Millennium Road Programme from 1,100 to 150 km; and deferring the construction of a new international airport (World Bank and PPIAF 2007).

5.4 Tourism development

Background

Tourism in Mongolia is largely based on its rural population and their pastoralist lifestyle, combined with its open, vast and attractive landscapes (Wigsten 2005). Alongside the generalist nature

tourist are small but increasing numbers of organised and independent travellers with specialist interests, ranging from horse-riding and fly-fishing to bird and butterfly-watching. Not surprisingly, a number of protected areas in Mongolia are popular tourist destinations for their landscape, cultural and wildlife values and opportunities for outdoor activities.

Tourism development has the potential to make significant contributions towards the conservation of protected areas by directly financing their management and/or benefiting local economies and, thereby, increasing political and community support for their conservation. Tourism development also presents considerable opportunities to support sustainable development in Mongolia. Unlike certain other sectors, travel and tourism is not centred on Ulaanbaatar, and represents a considerable counterbalance to rapid urbanisation (J. Wigsten *in litt.* 2008). It also allows young Mongolians who have moved to the capital city to return to their native rural areas seasonally or permanently, and it can generate good employment opportunities for women, helping to maintain a gender balance among rural populations (J. Wigsten *in litt.* 2008). In addition, barriers to entry into the tourism industry for rural people are relatively low in terms of investment costs (J. Wigsten *in litt.* 2008).

Due to the long, cold winters, and the extremely limited opportunities for winter-tourism, the tourist season runs from April to October, with July and August being the busiest months. The limited infrastructure, especially relating to transportation and accommodation, means that tourists are heavily dependent on tour operators, who provide a package that includes transport, food and lodging, which are pre-booked and linked together as part of a tour programme (Wigsten 2005). Outside Ulaanbaatar, tourists are typically accommodated in tented *ger* camps run by tour operators, based on concessions licensed by the government. The local government charges rent for land used by these camps.

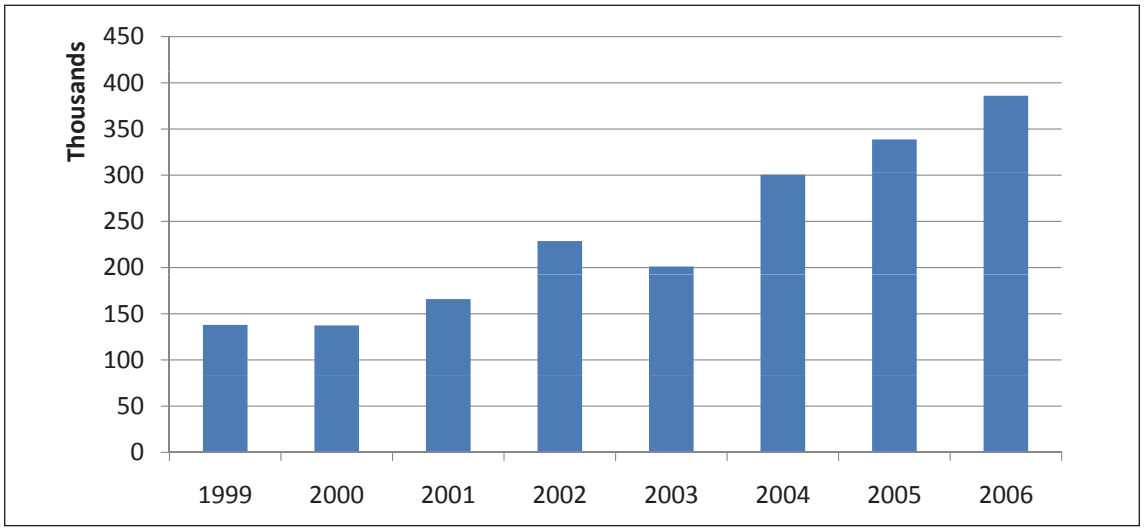
Increasingly, based on others' perceived success and initiatives such as *ger*-to-*ger*, herder families are establishing independent camps in popular visitor destinations. However, their activities are not yet coordinated, and they lack business skills and capacity for promotion of their products and services. As a result, they have not yet developed integrated products and services, which could be easily sold, via the supply chain, to the international market (Wigsten 2005).

The benefits accrued by communities from tourist camps vary. Where a camp is locally owned or the investor originates from area, it can provide significant local benefits through employment, the renting of horses and camels, and the sale of vegetables, milk products and meat (Wigsten 2005). It is often the case, however, that tour operators use their own animals and bring in produce from outside, due to reliability and safety considerations. In this case, benefits to the local community can be extremely limited.

The expansion of tourism

Political and economic reforms since the early 1990s have led to the privatisation of tourism operations, the lifting of restrictions on entry to and travel around Mongolia, and the rapid development of the sector. The number of foreign visitors entering Mongolia is growing rapidly, with an increase from 137,000 in 1999 to 385,000 in 2006 (MoRTT 2007) (Figure 7). A significant proportion of these arrivals are not leisure visitors but business travellers, who do not typically use *ger* camp accommodation near protected areas (J. Wigsten *in litt.* 2008).

Figure 7: Increase in visitors to Mongolia, 1999-2006 (MoRTT 2007)



The growth in visitors is matched by an increase in the number of hotels and tourist camps, with the latter increasing from 63 in 1999 to 200 in 2006 (MoRTT 2007) (Figure 8). Over 90 percent of visitors originate from 10 countries: China, Russia, Korea, Japan, the United States, Germany, France, the United Kingdom, Australia and the Netherlands, in that order. The income from tourism in Mongolia in 2006 was US$210 million, or 10 percent of Mongolia's gross national product.

Tourism development is viewed as a priority for economic development by the government (T. Batjargal pers. comm.). It is widely recognised that development of the sector should focus on specialist rather than mass tourism. Since most of the tourism in Mongolia is nature based, it can be expected that tourist numbers and pressure on Mongolia's nature, especially on its protected areas, will both increase over time (Schleicher and Hotz 2007).

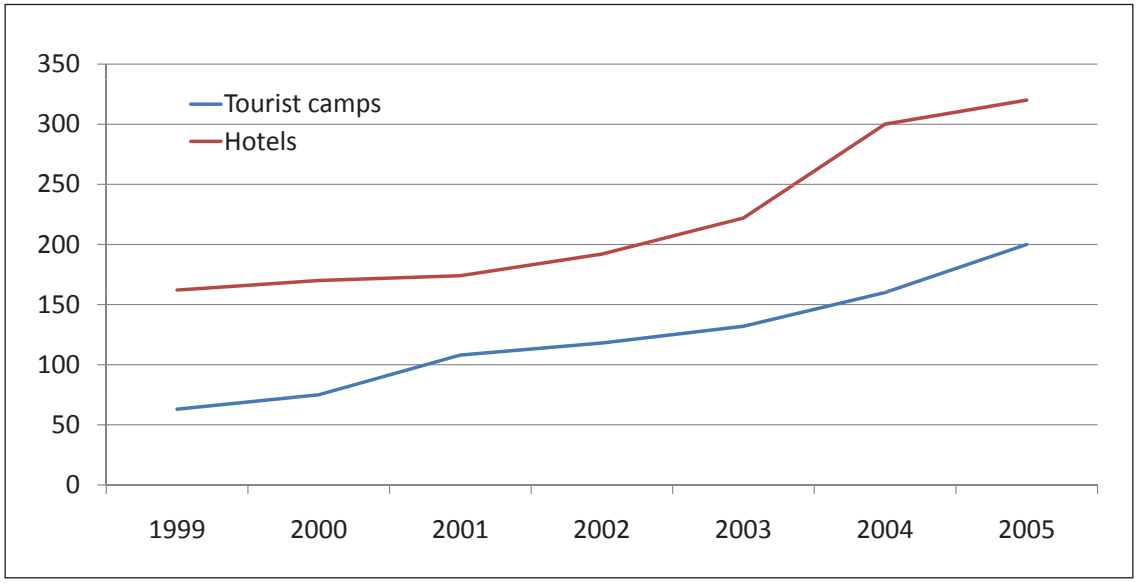
Domestic tourism is currently very low, except for visitors to Gorkhi-Terelj National Park near Ulaanbaatar. It is, however, expected to rise as incomes rise and infrastructure improves. No data were obtained on the levels and destinations of domestic tourists.

Development of a tourism strategy for Mongolia

The most recent strategy for tourism development is the Tourism Development Strategy for Mongolia 2007-2011, published by the former MoRTT. The strategy proposes the need to establish an independent structure which would be responsible for implementing state policy, training, information, awareness and research. Objectives in the strategy include, *inter alia*: (1) protection of the environment and nature, and the social and cultural heritage of Mongolia; (2) mitigation of poverty with benefits for households on low incomes, and social fragile groups; (3) building the capacity of human resources in the tourism sector; (4) intensifying stakeholder cooperation, and encouraging initiative and investment by the private sector; (5) developing community-based tourism; (6) improving tourism management in the protected areas; and (7) developing winter tourism to extend the tourism season. Specific projects include the establishment of hot spring resorts (Khujirt, Shargaljuut and Tsenkher hot springs) and winter sport complexes at Ulaanbaatar and Khovsgol.

It should be noted that, despite the existence of a national strategy, tourism development in Mongolia remains largely demand-driven, devoid

Figure 8: Increase in tourist camps and hotels in Mongolia, 1999-2006 (MoRTT 2007) (the green line shows number of hotels; the blue line shows number of tourist camps)



of any strategic guidance. The sector appears to develop almost wherever it wishes to. Evidence of rapid expansion of tourist developments leading to saturation can be seen in a number of projected areas, such as Khovsgol Lake and Gorkhi-Terelj National Parks (J. Wigsten *in litt.* 2008).

Development of sustainable tourism in Mongolia

Perhaps the most significant initiative is the Sustainable Tourism Development Center (STDC). The mission of STDC is to contribute towards the design, monitoring, evaluation and improvement of sustainable tourism practices and principles in Mongolia. Its work includes establishing policy and planning for sustainable development in protected areas, defining guidelines and rules for tour operators, collaboration with local communities as part of the 'Community Based Tourism Network', and providing guidance on tourism development to provincial authorities.

The successes of STDC have been achieved without any intervention by international donor agencies, and have been developed around a clear mission of destination management. Because STDC has a clear mission and communication strategy, its stakeholders know from the outset what they are choosing, and cooperation can be built around the intended business results of the organisation. The emergence and maturation of STDC will create an interface between the tourism industry and future spatial development planning needs for tourism to continue to make a large contribution to Mongolian GDP (Wigsten *in litt.* 2008).

6. Overview of regulatory and institutional frameworks

6.1 Regulatory and institutional frameworks for environmental protection

Regulatory framework for environmental protection

Since 1990, Mongolia has introduced several key pieces of legislation related to environmental protection, including:

- The Constitution of Mongolia (1992);
- The Law on Environmental Protection (1995);
- The Law on Environmental Impact Assessments (1998);
- The Law on Special Protected Areas (1994);
- The Law on Buffer Zones (1997);
- The Law on Land (2002);
- The Law on Forests (2007).

There remain, however, a number of important gaps and limitations. Some observers (e.g. IIED and WBCSD 2002) note that the existing regulatory framework is weak in the area of public participation. In particular, there is no specific provision for public consultation in the EIA process. Other observers (e.g. Wingard and Zahler 2006) point to the lack of any law or regulation directed at controlling the wildlife trade.

The cornerstones of the regulatory framework for environmental protection are the 1995 Law on Environmental Protection and the 1998 Law on Environmental Impact Assessments. Among other things, these laws enshrine the polluter-pays principle and grant citizens the right of access to environmental information.

Provision for EIA is made by Article 7 of the 1995 Law on Environmental Protection, and this is expanded upon by the 1998 Law on EIA. The Law on EIA provides for financial and criminal penalties, and even the suspension of implementation, for project proponents who do not comply with the requirements set out in EIA reports. However, there is there is no specific provision for public consultation in the EIA process, and the public is only guaranteed access to EIA reports after they have been completed.

The 1994 Law on Special Protected Areas provides for the establishment of protected area systems at national and local level, and establishes management regulations for nationally protected areas (State SPAs). **Articles 12, 18, 21 and 24 of the Law on Special Protected Areas explicitly prohibit exploration and mining within State SPAs, and restrict tourism to certain zones**. According to Article 28, whether tourism is permitted within Local SPAs appears to be determined on a case-by-case basis by the relevant Citizens' Representative

Khural. The 2007 Law on Forests appears to extend the prohibition on exploration and mining within areas of natural habitat to all "protected forests": a very broad category.

A key piece of legislation is the 2002 Law on Land, which creates the category of 'Special Needs Land', which includes State and Local SPAs. Special Needs Land is the property of the state and may not be given for private ownership.

A more detailed discussion of the regulatory framework for environmental protection in Mongolia is presented in Annex 6.

Institutional framework for environmental protection

The state administrative organisation responsible for land management and cadastre is the Administration of Land Affairs, Geodesy and Cartography (ALAGC). ALAGC is responsible for preparing the National Land Management Master Plan, the most recent version of which, covering the period 2004-2023, was approved by Government Decree No. 264, dated 24 December 2003.

The state administrative organisation responsible for developing and enforcing environmental and natural resources policies is the Ministry of Nature, Environment and Tourism (MNET). The Ministry was established in 1989 as the Ministry of Nature and Environment (MNE). In September 2008, MNE was restructured as MNET, with the inclusion of the Tourism Department of the former MoRTT. Within MNET, responsibility for protected areas lies with the Special Protected Areas Administration, established in 1993. The ministry is one of the most poorly funded in Mongolia. In 2003, for intance, the former MNE received less than 1 percent of the total state budget (Wingard and Zahler 2006).

MNET faces particular capacity limitations with regard to wildlife management. The ministry has no specific budget allocated for wildlife, and does not have a dedicated wildlife management agency (Wingard and Zahler 2006). Instead, management authority is delegated to local governments, which lack the necessary training and funding to implement effective management, particularly given the challenges of policing Mongolia's vast open areas (Wingard and Zahler 2006). Local departments are understaffed, underpaid, poorly equipped and, therefore, unable to control the unsustainable and illegal hunting that is causing dramatic declines in Mongolia's wildlife (Wingard and Zahler 2006).

The Environmental Protection Agency (EPA), which was previously an agency of the former MNE, was integrated into the State Professional Inspection Agency in February 2003 (World Bank 2006). State chief inspectors are assigned to the aimags (and capital city), while state inspectors and rangers are appointed at the soum (or district) level. The Law on Environmental Protection empowers state inspectors to require the elimination of adverse impacts or the suspension of activities with adverse environmental impacts, and impose administrative penalties on violators.

6.2 Regulatory and institutional frameworks for mining

Regulatory framework for mining

Prior to 2006, the regulatory framework for mining in Mongolia was formed by the 1988 Law on Subsoil (updated in 1995) and the 1997 Minerals Law, complemented by the various pieces of environmental legislation summarised in Section 6.1 and Annex 6. A number of observers (e.g. IIED and WBCSB 2002, World Bank 2006) noted weaknesses with this framework, particularly in the areas of public participation in the permitting process, sanctions, funding for rehabilitation, informal mining, protected areas and compensation for land use.

To some degree, these weaknesses were addressed by a 2006 revision of the Minerals Law. This

amendment strengthened environmental protection and clarified some of the procedures for exploration, mining and related investment (The Asia Foundation 2007a). With regard to informal mining, a significant recent development was the approval, in February 2008, of temporary regulations and a sub-programme on artisanal and small-scale mining. Despite these developments, detailed regulations necessary for the effective management of the mining sector still need to be completed.

The 2006 Minerals Law sets out the process for licensing large-scale exploration and mining activities. **Articles 17 and 24 of the Minerals Law prohibit exploration and mining within "Special Needs Land", which includes State and Local SPAs**. However, the law introduces a number of constraints on effective public consultation during the licensing process, including no specific requirement to consult with affected local communities, and a 30-day deadline for comments, after which exploration licences are granted automatically. Another shortcoming of the current law is that MRPAM, the agency responsible for issuing exploration licences, is only required to notify MNET, the ministry responsible for the national protected area system, *after* the licence has already been granted, giving MNET no opportunity to double-check that the requested area does not overlap with any protected area.

In order to regulate the massive and informal artisanal mining sector in Mongolia, the government recently passed a Temporary Regulation on Artisanal and Small-scale Mining Operations, which will remain in place until a full law is passed. This regulation explicitly prohibits artisanal and small-scale mining within protected areas and other Special Needs Areas defined by the 2002 Law on Land.

A fuller discussion of the regulatory framework for environmental protection in Mongolia is given in Annex 7.

Institutional framework for mining

Since its creation in Spetember 2008, the state administrative organisation with overall responsibility for development of the mining sector has been the Ministry of Minerals and Energy. The ministry is responsioble for promoting the sector overall, putting in place the necessary regulatory framework, and collating and evaluating the results of regional geological surveys.

Within the ministry, the key implementing agency for mining is MRPAM, which is responsible for issuing mineral licences, compiling industry information, archiving geological data, and conducting geological surveys. It has three divisions: the Department of Geological and Mining Cadastre; the Mining Office; and the Office of Geology/ Mongolian Geological Survey. The Department of Geological and Mining Cadastre, which has a staff of 12, is responsible for processing exploration and mining licence applications (World Bank 2006).

When the 1997 Minerals Law was approved, an independent regulatory agency, Geological and Mining Inspection Agency (GMIA), was created (World Bank 2006). GMIA has since become a division of the State Professional Inspection Agency, the consolidated inspection agency. Its 12 officers are linked to aimag-level mine inspection agencies, which report directly to the prime minister's office (World Bank 2006).

A number of weaknesses have been identified in the institutional framework for mining, including the lack of an appropriate structure to ensure the timely enforcement of regulations relating to the procedures for local governments to issue land use permissions and for enforcement of sanctions for licence violations, and poor coordination between MRPAM and MNET, the Ministry of Finance, the State Professional Supervision Agency, and local administrative bodies (World Bank 2006). MRPAM requires additional capacity in a number of areas, including capacity to regulate artisanal and small-scale mining, and capacity to audit the technical and

environmental performance of mining operations against the conditions specified in permits and licences. To address the former constraint, a new Artisanal and Small-scale Mining Unit was established within MRPAM in 2005, with the assistance of SDC (World Bank 2006).

To address the broader capacity constraints faced by MRPAM, the Mongolia Mining Sector Technical Assistance Project, currently being developed by the government of Mongolia and the World Bank, will include a component on capacity building for the Department of Geological and Mining Cadastre of MRPAM. As part of this, mining cadastral data will be fully computerised, allowing protected areas (and, potentially, other critical natural habitats) to be built into the system and licence applications that overlap with them to be automatically rejected. The proposed World Bank project will also promote more effective inter-ministerial cooperation, by making individuals responsible for inter-agency coordination (G. Hancock verbally 2008).

6.3 Regulatory and institutional framework for tourism

Regulatory framework for tourism

Since 1990, Mongolia has developed several key laws, regulations and guidelines related to tourism development, including:

- The Law on Special Protected Areas (1994);
- The State Policy on Tourism Development (1995);
- Ministerial Order No. 43 on the Regulation of Tourism Operations in Protected Areas (1996);
- The Master Plan for Developing Tourism in Mongolia, supported by JICA (1999);
- The Law on Tourism (2000);
- Guidelines and organisational systems for ecotourism programs in the Mongolian Tourism Master Plan by JICA (2002);
- The Tourism Development Strategy for Mongolia 2007-2011 (2007).

The basis for regulation of tourism is provided by the Law of Mongolia on Tourism (promulgated in May 2000), with the conduct of tourism business in special protected areas being governed by the 1994 Law on Special Protected Areas.

Under the 2000 Law on Tourism, tourism organisations (tour operators and tour agencies) are required to "take necessary measures within [their] control, to protect and preserve rare objects of national, historical, cultural and natural value, and report the breaches to the relevant authorities" (Article 8.1.5) and "endeavor to develop environmentally-friendly tourism that shall contribute to the socio-economic development of Mongolia, as well as to the health, customs and traditions of the population" (8.2).

The powers of the Tourism Department are set out in Article 16, and include the power to: develop and coordinate the unified state policies with respect to tourism and provide specialised administration (Article 16.1.1); develop a tourism development plan and ensure its implementation (16.1.3); approve rules for the grading and licensing of tourism organisations, high-level hotels and tourist camps (16.1.6); determine the number and location of tourist camps, relaxation and recuperation centres, and sanatoriums operating in the tourism regions, and keep a unified registry thereof (16.1.7); set the number of tourists to be received in a tourism region (16.1.12); set tourist routes and itineraries (16.1.13), and prohibit the conduct of any activity that could possibly adversely impact the development of tourism (16.1.14).

The Law on Tourism also provides for the establishment of the Mongolian Tourism Board (Article 15), which is responsible for the development and implementation of unified policies on tourism. The Tourism Board includes *inter alia* representatives from MNET and

members proposed by non-governmental tourism organisations (15.3).

Citizens' Representative Khurals at aimag, soum and bag levels are authorised to make decisions about economic and social development, as well as allocation of natural resources in their respective territories. With respect to tourism, they are responsible (Article 18.1) for: overseeing the implementation of state policies and legislation on tourism within their respective territories (18.1.1); ensuring the implementation of the national programme on development of tourism (18.1.2); submitting to the Tourism Department proposals regarding the inclusion of particular parts of their respective territories in the tourism resource region (18.1.3), and approving tourism development programmes in their respective territories (18.1.4).

Governors at all three administrative levels have the authority with respect to tourism (Article 18.2) to: implement, in their respective territories, state policies regarding tourism, and the implementation of the tourism legislation (18.2.1); issue, within the limits of their authority and in accordance with number and location approved by the Tourism Department and applicable legislation, permits to possess land by tourist organisation to be established in the given territory, and conclude agreements to this effect (18.2.2); and develop programmes and projects in conformity with the policies of regional tourism development in their respective territories, submit proposals to the relevant Citizens' Representative Khural, and develop and implement tourism plans in line with the approved programmes (18.2.3).

The 1994 Law on Special Protected Areas is explicit about whether tourism can be organised in the four types of protected area at national level: (i) Strictly Protected Areas; (ii) National Parks; (iii) Nature Reserves; and (iv) Monuments.

Strictly Protected Areas are divided into pristine zones, conservation zones and limited use zones (Article 8), and providing the appropriate permits are obtained and "environmentally safe technology" is used, eco-travel and tourism can be organised and accommodation for temporary residence or camping can be built within limited use zones (Article 11). However "any activities which pollute the soil, water and air" and "using open water sources such as lakes, rivers, streams, springs or ponds for commercial purposes" are prohibited (12.1).

National Parks are divided into special zones, travel and tourism zones and limited use zones (Article 14). The management regulations for National Parks are similar to those for Strictly Protected Areas, insofar as tourism activities are permitted (within travel and tourism zones and limited use zones; Articles 16 and 17).

The Law on Special Protected Areas does not appear to appear to prohibit responsible tourism activities within Nature Reserves, providing they do not change the natural original condition or have negative environmental impacts such as the construction of buildings, and the digging of land etc. (Article 21). Responsible tourism activities appear to be permitted at Monuments, although it is prohibited to "construct buildings which soil the view and scenery, to plough or dig land, to use explosives, to explore or mine natural resources, to touch, erode or remove Natural or Cultural and Historical Monuments, or conduct any other activities which cause damage to them" (Article 24).

Development of tourist infrastructure, both inside and outside of protected areas, is also covered by the legal requirement for EIAs, which sets out the process for screening new projects, and the contents for environmental protection plans where these are needed.

Institutional framework for tourism

The past decade has seen the government of Mongolia shift from owning and running tourism operations to setting the legal and policy framework. As managers of protected areas, several of which

are popular destinations, the government is also responsible for visitor facilities and management of tourists in these areas.

Responsibility for formulation and coordination of tourism sector policy lies with the Tourism Department, which is also responsible for formulation and update of sector standards and regulations, and for marketing, promotion and development of tourism infrastructure, human resources and tourism products. Prior to September 2008, the Tourism Department was part of the former MoRTT. Following a government restructuring, the department is now part of MNET, the ministry responsible for managing the protected area network, a key resource attracting tourists to Mongolia. This restructuring is expected to improve coordination between tourism development and protected area management.

The Japan International Cooperation Agency (JICA) has also played a key role in the development of tourism in Mongolia. It supported nationwide research to develop a master plan for national tourism development in Mongolia in 1999. Based on the research reports, JICA organised a national workshop on Mongolian ecotourism development in 2002. This workshop developed recommendations concerning the guidelines, criteria and definition of Mongolian ecotourism and its organisation, design, financial bases and safety standards. Ecotourism was viewed as a way of improving Mongolia's socio-economic situation. A summary of work supported by JICA was submitted to the Cabinet and the first Tourism Law of Mongolia was enacted in May 2000.

6.4 Safeguard policies

Safeguard policies of international development banks

The World Bank and other multilateral development banks have introduced environmental safeguard policies to ensure that appropriate measures are taken to mitigate potential negative impacts of their financing operations (Annex 8). These policies provide a basis for safeguarding important sites for biodiversity conservation from incompatible development. Given the threats to biodiversity outlined above, and the rapid pace of economic development currently underway in Mongolia, the full implementation of these policies is an urgent priority.

The availability and provision of information on important sites is an essential requirement in order to assist the effective implementation of safeguard policies. Such information helps to: (i) ensure greater coherence and clarity about the implementation of safeguard policies between donor agencies and borrowers; (ii) ensure increased consistency and transparency of safeguard policies, and promote greater public trust in donor agencies; and (iii) assist with the standardisation and comparability among safeguard policies, thereby reducing opportunities for borrowers to "shop around" for donors with less stringent safeguard requirements (aid recipients frequently cite differences in donor operational policies and procedures as a major impediment to the effectiveness of external development assistance).

Safeguard commitments by the private sector

Standards set by the International Finance Corporation (IFC) have greatly helped to set standards for other financial institutions. In 2003, a small group of banks, working together with the IFC, launched the so-called 'Equator Principle'. The aim was to develop a common set of environmental and social safeguard policies that could be applied globally and across all development sectors. These principles have subsequently been adopted by nearly 50 financial institutions.

Signatories to the Equator Principles apply the IFC's Performance Standard 6 on Biodiversity Conservation and Sustainable Natural Resources Management (see Annex 8) to all investments in excess of US$10 million. This has greatly expanded the safeguard framework for protecting sites of biodiversity importance.

Mining companies in particular are increasingly realising that they need to demonstrate a commitment to biodiversity conservation, as an essential element of their sustainable development strategies. This is of particular significance to site safeguard in Mongolia, where the mining sector is undergoing rapid expansion.

The International Council on Mining and Metals (ICMM) was formed in October 2001 to represent leading international mining and metals companies. ICMM's Sustainable Development Framework states its members' commitment to "contribute to conservation of biodiversity and integrated approaches to land use planning". Building on this commitment, in 2006, ICMM published its *Good Practice Guidance for Mining and Biodiversity* (ICMM 2006).

These commitments towards biodiversity conservation are being further elaborated by individual ICMM members. Rio Tinto, for example, a company with substantial mining interests in Mongolia, launched an organisation-wide biodiversity strategy at the World Conservation Forum in Bangkok in November 2004. This strategy enshrines the principle of Net Positive Impact, which is articulated as follows:

"Rio Tinto aims to have a Net Positive Impact on biodiversity by minimising the negative impacts of its activities and by making appropriate contributions to conservation in the regions in which it operates."

Rio Tinto's approach to achieving a Net Positive Impact on biodiversity comprises a number of steps: (1) identifying the scale and nature of biodiversity impacts; (2) avoiding or reducing these impacts wherever possible; (3) putting mitigation measures in place for unavoidable impacts; and (4) ensuring that any residual impacts are compensated for through biodiversity offsets, such as support for nearby protected areas. Finally, the company also invests in additional conservation actions, which may not necessarily be linked to the mining impacts, and are not a form of compensation for them.

Other mechanism of relevance to the conservation of natural habitats

Whilst this is not the place to cover this in detail, it is worth stressing that the safeguarding of important areas of natural habitat will also be of relevance in assisting the Mongolia in meeting its commitments under multilateral environmental agreements.

These agreements include the CBD, the Convention on Wetlands of International Importance (Ramsar Convention), the Convention on Migratory Species (Bonn Convention), and the World Heritage Convention. Mongolia is a Contracting Party to all of these Conventions.

7. Environmental impact of development plans

7.1 Analysis of overlap between exploration licences and critical natural habitats

As a basis for evaluating the impacts of mineral exploration on critical natural habitats, a GIS analysis was conducted of the overlap between exploration licences (as of May 2008) and each category of critical natural habitat defined in Section 4 (i.e. nationally protected areas, locally protected areas, internationally protected areas, natural sacred sites and IBAs). This was followed by a GIS analysis of overlap between exploration licences and the consolidated set of critical natural habitats in Mongolia (see Section 4.7).

As summarised in Section 5.2, more than 40.3 million ha, equivalent to one quarter of Mongolia's territory, is covered by exploration licences. Of this area, 3,874,886 ha overlap with critical natural habitats, representing for nearly 10 percent of the consolidated set of critical natural habitats in Mongolia (Table 9 and Map 10). These figures mask significant differences among different categories of critical natural habitat, with respect to overlap with exploration licences. The area of overlap with State SPAs only amounts to 141,014 ha, equivalent to less than 1 percent of the State SPA system, while the area of overlap with internationally protected areas (which mainly lie within State SPAs) is only 72,179 ha (2 percent).

Table 9: Overlap between exploration licences and critical natural habitats

Critical natural habitat	Total area (ha)	Area within exploration licences (ha)	Percentage within exploration licences
1. Nationally protected areas	22,413,136	141,014	0.6
2. Locally protected areas	16,531,505	3,083,781	18.7
3. Internationally protected areas	3,988,448	72,179	1.8
4. Natural sacred sites	[47 sites]	[2 sites]	4.3
5. Important Bird Areas	8,358,313	724,512	8.7
Consolidated set	**40,327,615**	**3,874,886**	**9.6**

Note: Because of overlap among different categories of critical natural habitat, the sum of the figures for the five separate categories is greater than the figure for the consolidated set of critical natural habitats.

The degree of overlap with other categories of critical natural habitat is substantially greater: 3,083,781 ha of Local SPAs (19 percent of the total), two natural sacred sites (4 percent) and 724,512 ha of IBAs (9 percent) are included within exploration licences. The greater degree of overlap with these categories appears to be explained by a combination of two factors. First, natural sacred sites and IBAs are not safeguarded from exploration under Mongolian law, except where they are otherwise designated as protected areas. Second, most Local SPAs have been designated relatively recently (more than three quarters after 1 January 2000; Figure 3), and may, therefore, post-date exploration licences that overlap with them.

Of the 3,572 exploration licences in Mongolia, 878 (or 25 percent) overlap with one or more critical natural habitats. For most of these licences (826), the overlap is with areas where exploration is explicitly prohibited under Article 17 of the 2006 Minerals Law (i.e. Special Needs Land, including State SPAs and Local SPAs). These overlaps fall into two types: marginal overlap (where less than 10 percent of the licence overlaps with one or more protected area); and major overlap (where 10 percent or more of the licence overlaps with one or more protected area).

For around one third of the exploration licences that overlap with Special Needs Land (296 licences), the overlap is marginal (Table 10). For the most part, these overlaps appear to be due imprecise mapping of exploration licence boundaries and/or failure to observe Article 17 of the Minerals Law, which stipulates that exploration area boundaries must deviate from straight lines to avoid overlap with Special Needs Land. Visual examination of overlaps suggests that mapping errors introduced during the GIS analysis, due to the imperfect fit of different data layers, also account for some of the marginal overlaps.

Table 10: Overlap between exploration licences and Special Needs Land

Type of overlap	Number of licences	Total area of overlap (ha)	Mean area of overlap (ha)
Marginal (<10%)	296	187,074	632
Major (≥10%)	530	2,989,441	5,640
TOTAL	**826**	**3,176,515**	**3,846**

For the remaining 530 exploration licences that overlap with Special Needs Land, the overlap is major (Table 10); in 283 cases, the licence lies wholly (≥99.5 percent) inside Special Needs Land. All but 29 of the major overlaps between exploration licences and Special Needs Land involve Local SPAs. This can be explained by two factors. First, more that 90 percent of State SPAs were designated before 1 January 2004, while more than 80 percent of exploration licences were granted after this date. This contrasts with Local SPAs, of which only a little more than half were designated before 1 January 2004. Therefore, in many (but not all) cases, exploration licences predate the Local SPAs they overlap with. Second, prior to 2008, data on Local SPAs were not available in a consolidated format. In particular, boundary polygons for Local SPAs were not available as a GIS data layer until the recent compilation exercise undertaken by ALAGC, WWF Mongolia and TNC (ALAGC and WWF Mongolia 2008). Consequently, the main safeguard against the inclusion of Local SPAs within exploration licences has, to date, been the requirement by Article 19 of the Minerals Law that MRPAM sends licence applications to aimag governors for their review and approval, prior issuing them.

7.2 Implications of overlap between exploration licences and critical natural habitats

As the previous section shows, nearly 3.2 million ha of Mongolia's protected area systems at state and local levels are included within exploration licences. Most of these overlaps are major (i.e. representing 10 percent or more of the exploration area in question) and almost all of them involve Local SPAs. There is also significant overlap between exploration licences and IBAs, amounting to over 700,000 ha, and reflecting the fact that more than one quarter of the IBA network is either unprotected or only designated as Local SPAs (which do not appear to afford effective safeguard against mineral exploration, at least not until recently).

The implications of overlaps with exploration licences for Local SPAs and IBAs (and, to a lesser extent, other categories of critical natural habitat) are of four main types:

- Direct impacts on biodiversity from exploration activities;
- Indirect impacts on biodiversity arising from exploration activities;
- Barriers to protected area establishment;
- Pressure for degazettal.

Each of these types of impact is described below. In addition, the presence of an exploration licence may indicate an elevated risk that a critical natural habitat may be impacted by an actual mining operation in future. However, given that a large majority of mining explorations will never proceed to an operating mine, and considering that, for the minority of projects that do proceed, both the licence and the direct footprint of the mine will usually occupy only a fraction of the exploration licence (the mean mining area in Mongolia is 374 ha, compared with 11,206 ha for exploration areas), this risk is not necessarily as great as might be supposed.

Direct impacts on biodiversity from exploration activities

Mining has the potential to affect biodiversity throughout the life cycle of a project, both directly and indirectly. The greatest impacts typically occur during the operational phase, whereas impacts during the exploration phase are typically much less intense, albeit dispersed across larger areas. Nevertheless, mineral exploration, especially in the later stages, can involve significant infrastructure, including exploration camps, exploration shafts, processing plants and access roads. The physical footprint of this infrastructure can result in direct loss of natural habitats, while its construction and operation can result in disturbance to animal species.

Direct impacts on biodiversity are not confined to the later stages of mineral exploration. Even during initial prospecting and test drilling activities, the presence of exploration teams in areas that are often sparsely populated, with a low baseline level of human activity, can place significant additional pressures on fragile ecosystems. These pressures may include vehicle damage to ground vegetation. In addition, unless exploration teams are carefully monitored by their employers, opportunistic hunting of wildlife is a genuine risk. Siberian Marmot *Marmota sibirica*, Black-tailed Gazelle *Gazella subgutturosa*, Mongolian Gazelle *Procapra gutturosa* and Grey Wolf *Canis lupus* are among the species most commonly targeted by opportunistic hunters. These impacts represent the greatest threat to biodiversity at sites where conservation management personnel are either not present or under resourced. It is significant, therefore, that most overlap between critical natural habitats and exploration licences involves Local SPAs or IBAs, which typically lack effective, on-the-ground conservation management.

One weakness of Mongolia's exploration permitting system is that there is no requirement to rehabilitate sites following exploration. As a consequence, some companies have been known to leave scars on the landscape from trenching or roadway developments

(G. Hancock *in litt.* 2008). There is a need to revise and strengthen the enforcement of regulations, so that companies are required to lodge refundable environmental protection bonds sufficient to cover the costs of reclamation, and thereby ensure that sites will be reclaimed even if the company abandons them.

Indirect impacts on biodiversity arising from exploration activities

Exploration activities may give rise to indirect impacts on biodiversity, which are not necessarily caused by the company conducting the exploration but triggered or increased by its presence in an area. Throughout the exploration process, the presence of teams of geologists and support staff in remote areas may create an additional market for wildlife products, particularly wild meat, leading to increased levels of hunting by local people.

Another issue is that artisanal mining is anecdotally linked with commercial mining, as artisanal miners specifically target companies' exploration areas (T. Naughton verbally 2008). Hence, presence of exploration activities in an area, or even the simple act of granting an exploration licence, may draw artisanal miners to that area, in search of minerals, particularly alluvial (placer) gold. Communications among artisanal miners are very good, which enables them to avoid monitoring by government authorities and quickly respond to new opportunities. Discoveries of areas with alluvial gold mining potential can lead to rapid influxes of artisanal miners from all over the country (T. Naughton verbally 2008). The risk of exploration triggering an in-rush of artisanal miners is perhaps greatest when two conditions are met: (i) the target mineral is gold; and (ii) a discovery is made but not in sufficient quantities to warrant the company proceeding to an operational mine.

Barriers to protected area establishment

In almost all cases, although Local SPAs may be formally designated at aimag or soum level, they are not under any form of active conservation management and no protected area management structures are in place, either formal or community-based. At present, most Local SPAs remain 'paper parks', existing on paper but not established on the ground. Moreover, the designation of Local SPAs does not appear to have followed consistent biological criteria, hence it is possible that a number of them do not make major contributions to the conservation of biodiversity of global, national or even local importance.

As has been seen, exploration licences already overlap more than 3 million ha of Local SPAs. In about half of these cases, totalling 1,436,323 ha (or 47 percent of the total overlap), the designation of the Local SPA pre-dates that of the exploration licence. In these cases, the inclusion of part of a Local SPA within the exploration licence contravenes Article 17 of the 2006 Minerals Law, and the boundary of the exploration area should be adjusted to excise the area that overlaps with the Local SPA. In the remaining half of cases, either the granting of the exploration licence pre-dates the designation of the Local SPA or the date of designation of the Local SPA is not available (in some cases, the aimag or soum authorities appear to have purposefully designated a Local SPA on top of a pre-existing exploration licence). In cases where the exploration licence pre-dates the Local SPA, the protected area designation remains valid but, under Article 14 of the 2006 Minerals Law, the authority whose decision it was to establish the Local SPA is obligated to compensate the licence holder.

Direct compensation for licence holders is a method frequently used in developed countries to eliminate mining claims inside protected areas (Farrington 2005). However, the lack of public funds to cover the high costs of these settlements means that the provision for compensation in Article 14 of the Minerals Law will be very difficult to implement in practice, especially where aimag and soum budgets are concerned. Consequently, the presence of pre-existing

exploration licences across around 1.6 million ha of the Local SPA system presents a considerable barrier to establishing these areas on the ground. This problem is compounded by the fact that an exploration licence creates an obstacle to protected area establishment even when it covers only part of a protected area. Thus the total area of the Local SPA system adversely affected may be greater than the area of overlap alone.

An additional but related issue is that proposing areas for designation as protected areas could encourage pre-emptive applications for exploration licences in these areas (Farrington 2005). This is because of the legal loophole mentioned in Section 6.2, that Mongolia does not restrict granting of exploration licences for areas proposed for protection.

Pressure for degazettal

The final implication of the overlap between exploration licences and protected areas (mainly Local SPAs) is that it could contribute to pressure to degazette or reduce areas in order to permit exploitation. In mid-2002, MRPAM proposed withdrawing protected area status from 1.9 million ha across 18 State SPAs, in order to stimulate investments in exploration and mining. In a counter-proposal, the former MNE proposed dropping protection status from a somewhat smaller area, amounting to 434,000 ha in 10 State SPAs. Both proposals were rejected by the Mongolian Parliament in late 2002 (World Bank 2006). Subsequently, in late 2003, the government proposed to removing protected status from an even greater area, totalling 3.1 million ha in four State SPAs (Small Gobi, Great Gobi and Mongol Daguur Strictly Protected Areas, and Onon Balj National Park), to allow formal mineral exploration and mining to take place. This proposal was also rejected (Farrington 2005, World Bank 2006).

7.3 Analysis of overlap between operating licences and critical natural habitats

The next stage of the GIS analysis was to look at the overlap between mining licences (as of May 2008) and critical natural habitats. A similar approach to that used in Section 7.1 was adopted, with separate analyses being conducted for each category of critical natural habitats, as well as for the consolidated set as a whole.

Of the 400,000 ha of Mongolia's territory that is covered by mining licences, 158,006 ha overlaps with critical natural habitats. This represents less than half of one percent of the consolidated set of critical natural habitats identified in this study (Table 11 and Map 11). As with exploration licences, these figures mask significant differences among different categories of critical natural habitat, with respect to overlap with mining licences. Overlap with State SPAs is only 891 ha, comprising a 428 ha overlap with Khangain Nuruu National Park (designated in 1996), a 413 ha overlap with Toson Khulstai Nature Reserve (designated in 1998) and a handful of very small overlaps, some of which might be mapping errors. As a proportion of the total area of the State SPA system, the overlaps with mining licences are insignificant, and strengthen the conclusion that State SPA status has, to date, provided an effective safeguard against formal mining activities. State SPAs are not the only category for which overlap with mining licences is insignificant at present: only 18 ha of internationally protected areas (which may be a mapping error), 175 ha of IBAs and no natural sacred sites overlap with mining areas.

Compared with the other categories of critical natural habitat, the degree of overlap with Local SPAs is several orders of magnitude greater (although still only about 1 percent of the Local SPA network). Mining licences cover 157,799 ha within Local SPAs, accounting for 99.9 percent of the total overlap between mining licences and critical natural habitats. As in the case of

exploration licences, the greater degree of overlap with Local SPAs appears to be explained by a combination of the facts that, until recently, consolidated information on the status and location of Local SPAs was not available to the Department of Geological and Mining Cadastre within MRPAM, and that many Local SPAs post-date the mining licences they overlap with. In particular, Tavan Tolgoi Local SPA in Omnogobi aimag overlaps with 100,609 ha in six coal mining areas. It would appear that this site and some of the other overlapping Local SPAs were knowingly sited on top of mining areas by the local authorities who designated them.

Table 11: Overlap between mining licences and critical natural habitats

Critical natural habitat	Total area (ha)	Area within mining licences (ha)	Percentage within mining licences
1. Nationally protected areas	22,413,136	891	0.004
2. Locally protected areas	16,531,505	157,799	0.955
3. Internationally protected areas	3,988,448	18	0.000
4. Natural sacred sites	[47 sites]	[0 sites]	0.000
5. Important Bird Areas	8,358,313	175	0.002
Consolidated set	**40,327,615**	**158,006**	**0.392**

Note: Because of overlap among different categories of critical natural habitat, the sum of the figures for the five separate categories is greater than the figure for the consolidated set of critical natural habitats.

Of the 1,066 mining licences in Mongolia, 307 (or 29 percent) overlap with one or more critical natural habitats. For almost all (305) of these licences, the overlap is with either Local SPAs (most cases) or State SPAs (a handful of cases). As they are Special Needs Land, mining is explicitly prohibited in these areas under Article 24 of the 2006 Minerals Law. These overlaps fall into two types: marginal overlap (where less than 10 percent of the licence overlaps with one or more protected area); and major overlap (where 10 percent or more of the licence overlaps with one or more protected area).

Only 11 percent of the overlaps between mining licences and Special Needs Land (33 licences) are marginal (Table 12). For the most part, these appear to be genuine overlaps due to failure to observe Article 24 of the Minerals Law, which stipulates that mining areas cannot overlap with Special Needs Land. For the remaining 272 mining licences that overlap with Special Needs Land, the overlap is major; in 222 cases, the licence lies wholly (≥99.5 percent) inside Special Needs Land.

Table 12: Overlap between mining licences and Special Needs Land

Type of overlap	Number of licences	Total area of overlap (ha)	Mean area of overlap (ha)
Marginal (<10%)	33	2,328	68
Major (≥10%)	272	155,523	570
TOTAL	**305**	**157,850**	**514**

With regard to the minerals targeted by mining licences, two minerals (coal and gold) account for more than 90 percent of the total overlap between mining licences and the consolidated set of critical natural habitats (Figure 9). Gold accounts for the greatest number of individual overlaps with critical natural habitats (148) but coal accounts for the greatest proportion of the overlap by area (117,873 ha). One explanation for this is that coal mining areas are, on average, five times bigger than gold mining areas (Table 8), and this is reflected in the relative difference in size of overlaps involving these metals (a mean of 1,684 ha for coal versus 183 ha for gold).

The target minerals of other mining licences that overlap significantly with critical natural habitats comprise iron ore, mixed minerals, construction materials, white lead, zinc and fluorspar (Table 13). In each case, however, the overlaps total only one or two thousand hectares across the whole country. It is notable that copper and wolfram (tungsten), which make up a significant proportion of the current area of Mongolia under mining licences, do not account for any overlaps with critical natural habitats. The case of copper is particularly notable, as it makes the largest contribution after gold and copper to the total mining area in Mongolia (Table 8). The explanation for this fact is that, with the exception of two small areas (in Dornogobi and Khentii aimags), mining areas for copper are relatively large and clustered in two locations (Erdenet in Orkhon aimag and Oyu Tolgoi in Omnogobi aimag) that lie outside of critical natural habitats.

Figure 9: Overlap (ha) between mining licences and critical natural habitats, by target mineral

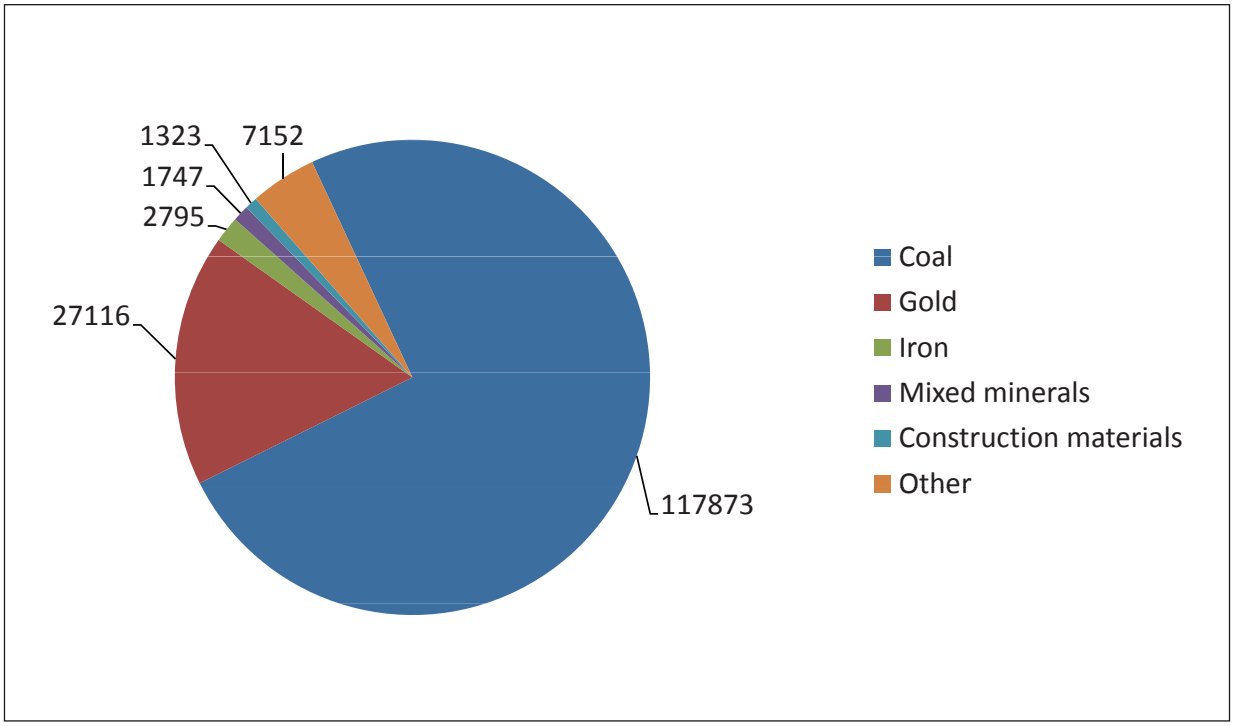


Table 13: Overlap between mining licences and critical natural habitats, by target mineral

Target mineral	No. of licences overlapping	Area of overlap (ha)	Area of overlap as % of total	Mean area of overlap (ha)
Coal	70	117,873	74.6	1,684
Gold	148	27,116	17.2	183
Iron ore	8	2,795	1.8	349
Mixed minerals	3	1,747	1.1	582
Construction materials	36	1,323	0.8	37
White lead	1	1,280	0.8	1,280
Zinc	4	1,124	0.7	281
Fluorspar	17	1,014	0.6	60
Phosphate	4	745	0.5	186
Uranium	1	264	0.2	264
Molybdenum	2	202	0.1	101
Salt	4	151	0.1	38
Alabaster	1	40	0.0	40
Other	5	2,036	1.3	407
Unknown	3	296	0.2	99
TOTAL	**307**	**158,006**	**100**	**515**

7.4 Implications of overlap between mining licences and critical natural habitats

The first point that needs to be made regarding the implications of overlap between mining licences and critical natural habitats is that, although mining licences indicate mining companies that have received a licence to mine, only a proportion of them are actively mining at present. The remainder are not yet mining for a number of reasons. Some are still concluding investment agreements with the government of Mongolia. Some have yet to secure the necessary investment finance. A few are bankrupt. At a recent meeting on Citizens' Engagement in Mine Licensing, held in Ulaanbaatar on 28 January 2008, as part of the Responsible Mining and Resource Use Discussion Series, it was estimated that, of the approximately 300 companies that currently hold mining licences, only around 70 are actively mining. At present, therefore, although mining is already having significant impacts at specific locations, the main threat to critical natural habitats is an anticipated not a current one. Nonetheless, if appropriate safeguard, mitigation and compensation measures are not taken, there is a significant risk that the growth of the mining sector will be accompanied by a rapid increase in threats to critical natural habitats.

The next point to make is that direct impacts of mining operations on critical natural habitats are typically felt across a smaller area than those arising from exploration but are generally greater in intensity. Excluding marginal overlaps, the average overlap between mining licences and critical natural

habitats (570 ha) is only about one tenth the size of that between exploration licences and critical natural habitats (5,640 ha). Within mining areas, however, the intensity of impacts on biodiversity can be expected to be greater than that within exploration areas.

Recent studies (e.g. World Bank 2006) have documented a range of direct impacts of mining operations on natural habitats in Mongolia. Direct impacts associated with mining operations can include water pollution (resulting from riverine tailings disposal, Acid Rock Drainage, use of mercury, etc.), air pollution (in the form of dust, emissions from smelters, etc.) and habitat loss (resulting from exploration drilling, overburden stripping, tailings impoundment, etc.). It is worth noting, however, that direct habitat loss resulting from mining operations may be limited in extent relative to that associated with developments in other sectors (such as agriculture and forestry), because of mining's localised primary footprint. In the Mongolian context, changes to ground and surface water (resulting from water off-take for mining, mineral concentration, coal washing, etc.) may represent the most severe direct impacts, particularly in arid and semi-arid environments, where vegetation may be dependent upon ground water and wildlife on localised, sometimes ephemeral, surface water sources. In the near future, these changes could place increased pressure on ecosystems already stressed by hydrological changes associated with climate change.

The third point to make is that certain types of mining activity are not necessarily inconsistent with the maintenance of the integrity of critical natural habitats, particularly if they are combined with measures to strengthen protection of these areas from other threats, such as over-grazing and hunting. Underground mining methods, in particular, can have minimal surface impacts in area terms, especially if surface infrastructure (such as mineral concentration facilities, tailings management facilities and workers camps) is located outside of the critical natural habitat. Mining activities within critical natural habitats that do not result in significant conversion or degradation of these habitats *sensu* OP 4.04 would be consistent with the aims of the World Bank's safeguard policy on natural habitats.

The implications of any given overlap between a mining licence and a critical natural habitat are determined by three main factors: (i) the environmental performance of the licence-holding company; (ii) the nature of the target mineral; and (iii) the sensitivity of the impacted ecosystem.

It was beyond the scope of this study to analyse the first factor in any detail. However, a mining company's environmental performance is a critical factor in determining the degree to which potential impacts on biodiversity are avoided, minimised or compensated for through restoration/rehabilitation and/or biodiversity offsets. A recent report by the World Bank (2006, p1) observed that: "the environmental record of the Mongolian mining sector is mixed at best. Many ongoing operations are managed in a sub-optimal way leading to significant environmental damage and production losses". Mining operations with limited financial capacity that use outdated technologies not only leave large quantities of valuable product behind but can also contribute to repeated mining of an area, failure of natural rehabilitation and illegal mining of waste rock piles by artisanal miners (The Asia Foundation 2007a). Despite this generally gloomy picture, the increasing number of foreign mining companies investing in Mongolia provides an indication that standards within the industry may improve. Several of these companies are members of ICMM, and have therefore signed up to the *Good Practice Guidance for Mining and Biodiversity* (ICMM 2006), which provides a benchmark against which the performance of individual companies can be assessed.

The implications of particular target metals with regard to the direct impacts of mining on biodiversity are, to some degree, specific to the particular ecological context in which a mine is

being developed or operated. For instance, water-intensive mining processes (such as coal washing) have greater implications for desert ecosystems, where water is scarce, than for boreal forest ecosystems, where water is generally plentiful. The key implications of different target minerals in the Mongolian context are outlined below.

Gold, copper, molybdenum, iron ore, zinc, silver, uranium, lead and "mixed minerals"

- The rocks from which these minerals are extracted have potential for Acid Rock Drainage. Consequently, intensive, well planned and long-term water treatment management is required. A recent study observed that Acid Rock Drainage is becoming a growing concern in relation to tailings management facilities, particularly in Erdenet (World Bank 2006). Large-scale mines that discharge acid into major rivers and lakes could have disastrous consequences for Taimen *Hucho taimen* and other aquatic biodiversity.
- All the above minerals generally require significant tailing impoundments as a result of the metallurgical process: copper tailings are some of the most extensive primary impacts associated with mining but others, such as gold, can also be significant. In other parts of the world, the practice of riverine tailings disposal, where large quantities of tailings are simply dumped into water courses, has received particularly intense criticism. In Mongolia, river flows are unlikely to facilitate this practice in many parts of the country.
- Waste rock dumps for copper and other base metals can also be very significant primary impacts. In Mongolia, waste rock piles from commercial mining are frequently unstable and prone to erosion (World Bank 2006). Heavy rainfall can wash gravel and soil down into valleys, with implications for aquatic and terrestrial biodiversity alike.
- With regard to gold mining, there is a suite of environmental problems associated with artisanal mining. Foremost among these is the use of mercury, which is ubiquitous among artisanal hard-rock gold miners in Mongolia and has begun to spread to artisanal alluvial gold miners (World Bank 2006). A recent study by PACT found that artisanal miners were taking mercury-contaminated tailings and processing them with cyanide (T. Naughton verbally 2008). For commercial gold mining, gravitational methods are more frequently used to recover alluvial gold. Where cyanide is used, the cyanide process needs to be (and can be) well managed. Depending on the quality of gold ore, the quantity of tailings generated can be very significant.
- Poor standards of atmospheric emissions at smelters associated with copper mines and steel plants associated with iron ore mines can give rise to acid rain or forest degradation in areas experiencing inversions.
- Regarding uranium, beyond the obvious issue of radioactive contamination, processing hard rock uranium ore can give rise to large tailing impoundments.
- Molybdenum is usually associated with copper mining and is rarely pursued in isolation.
- Mining for most of the above minerals is a water-intensive process, as water is required for metallurgy, tailings disposal and transport of concentrates. It has been observed that current mining practices are inefficient and use excessive process water, thus overtaxing surface waters and underground supplies. At the Erdenet copper mine, for example, 800 m^3 of freshwater are needed every hour for the concentrate washing process (World Bank 2006). Water management and recycling are crucial, therefore, particularly in semi arid/ arid zones.

Coal

- As explained in Section 7.3, coal mining areas account for the majority of the overlap with critical natural habitats.
- Acid Rock Drainage can be an issue in older coal mines. However, cyclical coal removal and ongoing reclamation can reduce sulphide exposure to short periods and ensure that non-oxidised rock gets buried before new oxidation can get a hold. Acid Rock Drainage is a particular consideration where mining occurs near drainages.
- Coal mining has the potential to cause large primary footprints, unless best practice reclamation procedures followed. The data collated by this study show that, in Mongolia, coal mining areas are larger, on average, than mining areas for all other minerals, apart from copper.
- Coal mines can have very high water demand for coal washing prior to product transport. In arid/semi-arid areas, this could place particular stresses on ground water sources.

Phosphates

- Specific biodiversity impacts of phosphate mining include the potential for eutrophication of drainages due to pollution with phosphate.

Construction materials, granite, chalk and alabaster

- These minerals are generally inert, with few chemical hazards associated with waste rock and no tailings issues of note. The principal biodiversity impacts of these mines relate to the primary footprint of the mine pit and associated infrastructure.

Fluorspar

- Fluorspar is often won as a by-product associated with base metals ores. In Mongolia, however, it is pursued in its own right. Fluorspar mines could give rise to localised Acid Rock Drainage impacts, if they were significant in volume.

In general, water-related impacts will be among the most significant direct biodiversity impacts of mines in most parts of Mongolia. In arid and semi-arid ecosystems, groundwater extraction will be a particular concern, as it has the potential to impacts on water sources depended on by wildlife species, especially in the context of recent climate trends (drying). Hydrological resources will need to be mapped and assessed to determine sustainable levels of use. In the north of the country, where water is more available, pollution will be a particular concern, and Acid Rock Drainage and tailings management will need to be addressed carefully.

7.5 Analysis of overlap between mining-associated infrastructure and critical natural habitats

The third stage of the GIS analysis was to look at overlap between projected infrastructure developments and critical natural habitats. There is an intrinsic challenge to looking at the potential impacts of projected infrastructure developments at the national scale, because infrastructure plans rarely designate specific areas for installations or definite alignments for roads and railroads. Most nationwide plans for infrastructure development in Mongolia either do not map individual developments at all or only map them at a very broad scale. Consequently, it was not possible, within the timeframe of the study, to map individual infrastructure

developments at a scale that would have allowed degree of overlap with critical natural habitats to be evaluated with any degree of confidence.

For these reasons, the analysis hereafter focuses on mining-associated infrastructure (which is facilitated by the locations of mining licences being known with a considerable degree of confidence). This category of infrastructure development is considered to have the greatest potential for negative impacts on critical natural habitats, due to the projected rapid growth of the mining sector, the need for infrastructure to service new mines and the frequent location of mines in areas with a low baseline human footprint.

As mentioned in Section 5.3, although mining-associated infrastructure is expected to account for a large proportion of infrastructure developments with significant biodiversity implications over the next decade, and while a number of specific needs have already been identified, final decisions have yet to be made regarding the siting of key pieces of infrastructure (roads, railroads, etc.). Consequently, an indirect approach was adopted to assess potential for overlap between mining-associated infrastructure and critical natural habitats. Specifically, critical natural habitats were assessed as having a high risk of being impacted (directly or indirectly) by mining-associated infrastructure if they: (i) overlap with one or more mining licences; or (ii) do not overlap with any mining licence but are located within 20 km of one or more mining licences[4].

Critical natural habitats that overlap with or lie close to exploration licences were not identified during this analysis. The rationale for this was that, because most exploration licences will not proceed to become operating mines for a variety of reasons (most commonly that they fail to identify an economically viable mineral resource), the presence of an exploration licence does not, by itself, represent a significantly increased risk that mining-associated infrastructure will be built through or close to a critical natural habitat.

As mentioned in Section 7.3, only 158,006 ha of the consolidated set of critical natural habitats is located within mining licences, most of which is Local SPAs. However, a further 6,521,266 ha lies within 20 km of one or more mining licence, bringing to 6,679,272 ha the total area considered to be at high risk from being impacted by mining-associated infrastructure (Table 14 and Map 12). This is equivalent to 16 percent of the consolidated set of critical natural habitats in Mongolia. In addition, 11 natural sacred sites are located within 20 km of one or more mining licence.

The analysis presented in Table 14 highlights the fact that, while some categories of critical natural habitat (namely State SPAs, internationally protected areas and IBAs) are unlikely to experience significant direct impacts from mine development, a significant proportion of sites in each category are at high risk of being impacted by mining-associated infrastructure. It must be emphasised that a risk of impact is not the same thing as an actual impact, because a risk can be avoided (through careful siting/routing of a piece of infrastructure) or minimised (through the introduction of appropriate mitigation measures).

[4] 20 km was chosen as the threshold because the probability of an average critical natural habitat (i.e. a site 474 km^2 in area; which can be mapped as a circle 25 km in diameter) being intersected by a single piece of linear infrastructure originating in a random direction from a mine 20 km away (i.e. a line passing at a random point through a circle 126 km in circumference) is 20 percent.

Table 14: Critical natural habitats at high risk of being impacted by mining-associated infrastructure

Critical natural habitat	Area within mining licences (ha)	Area outside but within 20 km of mining licences (ha)	Total area at high risk of being impacted (ha)
1. Nationally protected areas	891	1,479,779	1,480,670
2. Locally protected areas	157,799	4,731,877	4,889,676
3. Internationally protected areas	18	295,306	295,324
4. Natural sacred sites	[0 sites]	[11 sites]	[11 sites]
5. Important Bird Areas	175	874,330	874,505
Consolidated set	**158,006**	**6,521,266**	**6,679,272**

Note: Because of overlap among different categories of critical natural habitat, the sum of the figures for the five separate categories is greater than the figure for the consolidated set of critical natural habitats.

7.6 Implications of overlap between mining-associated infrastructure and critical natural habitats

In the Mongolian context, the development of associated infrastructure may be the biggest single source of pressure on critical natural habitats arising from growth in the mining sector. If we take the example of the Tavan Tolgoi deposit in Omnogobi aimag: it contains over 5 billion tonnes of coking and thermal coal but it is situated over 400 km from the nearest railway line. Exploitation of deposits such as Tavan Tolgoi will require major infrastructure developments in previously very inaccessible areas. The potential for both direct and indirect impacts are great.

Where it overlaps with critical natural habitats, linear infrastructure (roads, railroads, powerlines, etc.) has the potential to cause direct habitat loss. For example, the National Land Management Master Plan identifies four aimags where proposed railroad developments will intersect with protected areas: 7.5 km in Bayan-Olgii; 25 km in Khovd; 0.6 km in Bulgan; and 125.8 km in Omnogobi (ALAGC 2003). Linear infrastructure, particularly roads and railways, can also act as a barrier to wildlife movements. In a country such as Mongolia, where large, unenclosed, sparsely population spaces are the norm, inappropriately designed and sited linear structures can have the effect of fragmenting wildlife habitat. For example, Ito *et al.* (2005) examined the potential influence of the international railroad on Mongolian Gazelle *Procapra gutturosa* migration, using satellite tracking. They found the tracked gazelles never crossed the railroad, despite making movements along it in winter and the presence of better quality habitat on the other side. They concluded that it is likely that the railroad has a barrier effect on gazelle migration because it splits their habitat. It is likely that the barbed wire fencing along the railroad, constructed to avoid collisions with domestic livestock, is the major reason why the railroad acts as a barrier to wildlife movement. Linear infrastructure can also increases levels of disturbance to wildlife species, leading to reduced breeding success or increased mortality. For instance, the development of powerlines has been identified as a particular threat to the globally threatened Houbara Bustard *Chlamydotis undulata*, because of the disturbance they can cause to breeding birds. Direct mortality through collision is also an impact that can arise from the construction of infrastructure. Collision deaths with powerlines and windfarms have been documented for a number of species of soaring birds in Mongolia, including cranes *Grus* spp., raptors and Great Bustard *Otis tarda*.

Habitat loss, habitat fragmentation and disturbance to wildlife populations notwithstanding, over the longer term, it is likely that the most significant impacts on Mongolia's biodiversity arising from the construction of mining-associated infrastructure will be indirect ones. Development of infrastructure can facilitate access to previously remote areas and enable uncontrolled regional development. Such trends can place increased pressure on plant and animal populations (for food, fuelwood, etc.), resulting in habitat degradation and/or species loss.

The issue of mining associated infrastructure facilitating human access to previously remote areas is particularly significant in Mongolia, which has recently witnessed a rapid escalation in hunting and trade of wildlife, following the re-opening of the border with China, with its enormous capacity to absorb resources. Rapid declines have already been observed in economically important wildlife species, such as Mongolian Saiga Antelope *Saiga tatarica mongolica*, Red Deer *Cervus elaphus*, Argali *Ovis ammon*, Siberian Marmot *Marmota sibirica* and Saker Falcon *Falco cherrug* (Wingard and Zahler 2006). There is near unanimous agreement among hunters, traders and biologists that continued wildlife trade at the current volumes is unsustainable (Wingard and Zahler 2006). Construction of transport infrastructure linking new mines in Mongolia to markets in China is a particular cause for concern, given the volume of cross-border wildlife trade. With their existing enforcement capacity, the Mongolian authorities are already unable to effectively control trade through the existing border trade points, most of which are remote and severely understaffed (Wingard and Zahler 2006).

A final indirect impact of mining development worthy of mention here is creation of new mining settlements and expansion of existing ones, driven by economic growth in mining regions and facilitated by the development or improvement of infrastructure. To cite one example, the Oyu Tolgoi project in Omnogobi aimag is expected to catalyse the development of a new mining town to the north-east of the mine. When operational, the mine is predicted to employ a maximum of 1,850 full-time-equivalent employees (IMMI 2007). According to economic studies conducted by the Mongolian School of Mines in 2006, for every job created at Oyu Tolgoi, four additional jobs will be created in related industries (IMMI 2007). On top of this, the aimag and soum administrations are expected to retain and reinvest a significant proportion of mining revenues, drawing people into the area in search of work with contractors and sub-contractors providing goods and services to the mine and to benefit from improved public services. New urban developments on this scale have the potential to entirely transform local economies, and place new and unpredictable pressures on natural habitats and wildlife populations, including increased groundwater extraction, intensified hunting pressure and increased fuelwood use.

7.7 Individual critical natural habitats where impact from exploration and mining is expected to be significant

Nationally protected areas

Thirty eight State SPAs overlap with exploration licences and/or mining licences (Annex 9). However, only in the case of three protected areas does the combined overlap account for more than 10 percent of the site (i.e. constitutes a major overlap): Ikh Gazriin Chuluu and Nagalkhan Nature Reserves; and Suikhent Uul Monument (Table 15). In the case of Nagalkhan and Suikhent Uul, the protected area significantly pre-dates the exploration licences that overlap with it. In the case of Ikh Gazriin Chuluu, however, the protected area (designated in 2003) pre-dates one of the licences it overlaps with (issued in January 2007 and overlapping by 1,067 ha) but post-dates a second licence (issued in February 1998 and overlapping by 20,233 ha). These three cases are illustrated by Maps 15-17. Almost all of the overlaps with State SPAs involve exploration licences. Six State SPAs *do* overlap with mining licences but only two of

these overlaps are larger than 50 ha. The total area of overlap between State SPAs and exploration and mining licences is 141,905 ha, equivalent to less than 1 percent of the State SPA network.

Table 15: Nationally protected areas with major overlaps with exploration licences and/or mining licences

Rank	Site name	Total area (ha)	Exploration overlap (ha)	Mining overlap (ha)	Total overlap (ha)	% overlap
1	Ikh Gazriin Chuluu	34,096	21,301	0	21,301	62.5
2	Nagalkhan	4,806	1,455	0	1,455	30.3
3	Suikhent Uul	7,717	2,112	0	2,112	27.4

With regard to potential impacts arising from mining-associated infrastructure, 35 State SPAs are located within 20 km of mining areas, in whole or in part. In terms of area, 1,480,705 ha, or nearly 7 percent of the State SPA network, is located within 20 km of one or more mining areas. Measured by percentage overlap, 25 State SPAs have more than 10 percent of their area within 20 km of mining licences, of which eight have more than half of their area (Table 16).

Table 16: Nationally protected areas with more than half of their area within 20 km of mining licences

Rank	Site name	Total area (ha)	Area in 20 km of mining licence (ha)	% overlap
1	Develiin Aral	10,022	10,022	100.0
2	Bogd Khan Uul	41,383	41,383	100.0
3	Nagalkhan	4,806	4,806	100.0
4	Bulgan River	11,892	11,892	100.0
5	Khar Yamaat	51,274	40,653	79.3
6	Turgen	133,810	84,183	62.9
7	Ikh Nartiin Chuluu	70,088	42,287	60.3
8	Siilkhem "B"	76,647	46,035	60.1

Locally protected areas

A total of 357 Local SPAs overlap with exploration licences and/or mining licences. Of these sites, 341 overlap with one or more exploration licences and 75 overlap with one or more mining licences. The total area of overlap between Local SPAs and exploration and mining licences is 3,241,579 ha, equivalent to nearly 20 percent of the State SPA network. As discussed earlier, this is a significantly greater degree of overlap than that of any other category of critical natural habitat.

Measured by percentage overlap, 277 Local SPAs have major overlap with exploration licences and/or mining licences (i.e. combined overlaps that total at least 10 percent of the site). For 187 Local SPAs, licences occupy more than half of the site, while the whole site is occupied in 100 cases. In terms of area, 16 Local SPAs have overlaps with exploration

and/or mining licences greater than 50,000 ha in area (Table 17). These Local SPAs account for 45 percent of the total overlap between Local SPAs and exploration and mining licences.

Table 17: Locally protected areas with more than 50,000 ha within exploration licences and/or mining licences

Rank	Site name	Aimag	Total area (ha)	Exploration overlap (ha)	Mining overlap (ha)	Total overlap (ha)	% overlap
1	[Near-border area]	Omnogobi	863,271	179,035	0	179,035	20.7
2	Tavan Tolgoi	Omnogobi	184,466	66,029	100,609	166,638	90.3
3	Ikh Chingis Uul	Gobi Altai	217,874	151,223	45	151,269	69.4
4	Khangain Bus	Bayankhongor	989,126	120,469	4,069	124,538	12.6
5	Nariin Sukhait	Omnogobi	117,393	102,385	10,547	112,932	96.2
6	Buduun Uul	Sukhbaatar	87,011	87,009	0	87,009	100.0
7	Zotol Khan Uul area	Sukhbaatar	530,942	81,568	283	81,851	15.4
8	[Ulaan Uul soum]	Khovsgol	404,781	76,554	0	76,554	18.9
9	[Choibalsan, Gurvanzagal soums]	Dornod	86,685	71,951	91	72,042	83.1
10	Khoyor melkhiit	Dornod	115,941	63,819	0	63,819	55.0
11	Galiin Gol	Dornod	70,638	62,280	0	62,280	88.2
12	Gobi Gurvan Saikhan	Omnogobi	66,126	61,769	0	61,769	93.4
13	[Near-border area in Khanbogd soum]	Omnogobi	157,028	57,973	144	58,118	37.0
14	Erdenekhairkhan	Omnogobi	129,112	55,410	0	55,410	42.9
15	West of Sukhbaatar soum	Sukhbaatar	71,380	53,530	39	53,569	75.0
16	Baruun Ol	Dornod	64,407	51,872	97	51,969	80.7

Note: Square brackets denote that the site's name is not known, so a description of its location is given.

It is worth drawing particular attention to Tavan Tolgoi Local SPA in Omnogobi aimag, which was designated by the aimag government on 23 December 2003. Tavan Tolgoi Local SPA overlaps with six coal mining licences. These overlaps total 100,609 ha and account for two-thirds of the total area of overlap between mining licences and critical natural habitats in Mongolia. Bearing in mind the high profile of the Tavan Tolgoi coal mining area, it would appear that Tavan Tolgoi Local SPA was deliberately and knowingly sited on top of the existing mining areas by the aimag government. The case of Tavan Tolgoi Local SPA is illustrated on Map 18.

The overlaps between Local SPAs and exploration and mining licences are not distributed evenly throughout Mongolia but, rather, are concentrated in certain aimags. Eighty percent of the overlapping area is concentrated in just five aimags, each of which contains over 300,000 ha of overlap: Dornod; Omnogobi; Sukhbaatar; Gobi-Altai; and Bayankhongor (Table 18; Maps 13-14). Given that these include the four aimags with the largest area of Local SPA, this result is not entirely surprising. What is surprising, perhaps, is the inclusion of Gobi-Altai, which only has around 760,000 ha of Local SPAs, almost half of which overlap with

exploration and mining licences. These five aimags should be the focus of efforts to resolve overlaps between mining and exploration licences and protected areas.

Table 18: Distribution of overlaps between Local SPAs and exploration/mining licences by aimag

Aimag	Area of Local SPAs (ha)	No. of overlapping Local SPAs	Total overlap (ha)	% overlap
Arkhangai	552,375	12	93,991	17.0
Bayankhongor	2,817,750	18	310,528	11.0
Bayan-Olgii	126,632	3	31,839	25.1
Bulgan	49,173	2	20,218	41.1
Darkhan Uul	56,830	7	11,020	19.4
Dornod	3,211,381	40	813,868	25.3
Dornogobi	49,870	71	28,117	56.4
Dundgobi	470,785	34	77,350	16.4
Gobi-Altai	759,360	14	326,609	43.0
Gobi-Sumber	0	0	0	n/a
Khentii	680,742	8	25,476	3.7
Khovd	257,499	5	21,057	8.2
Khovsgol	530,492	8	84,084	15.9
Omnogobi	2,149,805	13	699,412	32.5
Orkhon	3,544	1	2	0.0
Ovorkhangai	104,888	4	2,178	2.1
Selenge	277,222	22	66,310	23.9
Sukhbaatar	2,461,656	35	430,866	17.5
Tov	1,413,616	39	90,792	6.4
Ulaanbaatar	41,054	8	13,545	33.0
Uvs	379,686	8	80,978	21.3
Zavkhan	137,145	5	13,341	9.7
TOTAL	**16,531,505**	**357**	**3,241,579**	**19.6**

IBAs

Twenty-nine individual IBAs overlap with exploration and/or mining licences (Annex 10). In 28 cases, the overlap involves exploration licences, while mining licences are involved in just four cases, none of which is greater than 138 ha. The total area of overlap is 724,687 ha, equivalent to nearly 9 percent of Mongolia's IBA network. Over two thirds of the overlap is accounted for by a single IBA, Galba Gobi, which overlaps with 26 exploration licences, totalling 497,627 ha. Measured by percentage overlap, 11 IBAs have major overlap with exploration licences and/or mining licences (i.e. combined overlaps that total at least 10 percent of the site). For five of these IBAs, more than half of the site is included within licences (Table 19). These overlaps are illustrated in Maps 19-23.

Table 19: IBAs with major overlaps with exploration licences and/or mining licences

Rank	Site name	Total area (ha)	Exploration overlap (ha)	Mining overlap (ha)	Total overlap (ha)	% overlap
1	Dashinchilen Bayan Lake	1,598	1,598	0	1,598	100.0
2	Tashgain Tavan Lakes	53,304	53,304	0	53,304	100.0
3	Tsengel Khairkhan Mt.	52,726	49,663	0	49,663	94.2
4	Shaazan Lake	5,485	3,752	0	3,752	68.4
5	Galba Gobi	828,328	497,627	0	497,627	60.1
6	Uvsiin Khar Us Lake	13,601	4,239	0	4,239	31.2
7	Oigon Lake	20,189	4,758	0	4,758	23.6
8	Bulgan River	32,700	7,212	0	7,212	22.1
9	Tolbo Lake	16,334	2,761	0	2,761	16.9
10	Ulaagchinii Khar Lake	13,439	1,584	0	1,584	11.8
11	Borzon Gobi	399,467	43,487	0	43,487	10.9

With regard to IBAs at high risk of impacts from mining associated infrastructure, 31 individual IBAs are located within 20 km of mining areas, in whole or in part. In terms of area, 874,505 ha, or more than 10 percent of the IBA network, is located within 20 km of mining areas. Measured by percentage overlap, 24 IBAs have more than 10 percent of their area within 20 km of mining licences, of which 10 have more than half of their area (Table 20). Interestingly, several IBAs that do not overlap with any licence were assessed as being at high risk of impact from mining-associated infrastructure, including Erkhel Lake, Teshigiin Olon Lakes and Khar Yamaat Nature Reserve. This highlights the need for mining companies to assess and manage potential impacts on critical natural habitats in the wider landscapes beyond the boundaries of their mining areas.

Table 20: IBAs with more than half of their area within 20 km of mining licences

Rank	Site name	Total area (ha)	Area in 20 km of mining licence (ha)	% overlap
1	Dashinchilen Bayan Lake	1,598	1,598	100.0
2	Shaazan Lake	5,485	5,485	100.0
3	Maikhant Mountain	42,015	42,015	100.0
4	Erkhel Lake	3,537	3,355	94.9
5	Teshigiin Olon Lakes	5,774	4,947	85.7
6	Khar Yamaat Nature Reserve	51,404	41,521	80.8
7	Delta of Orkhon and Selenge Rivers	21,405	15,758	73.6
8	Uvsiin Khar Us Lake	13,601	8,773	64.5
9	Turgen Tsagaan, Zegst, Tuulaitiyn Bur	35,282	22,023	62.4
10	Ikh Nartiin Chuluu Nature Reserve	66,601	40,709	61.1

7.8 Analysis of overlap between tourism development plans and critical natural habitats

GIS analysis of overlap between tourist camps and critical natural habitats

From the sample 140 tourist camps covered by the GIS analysis, 84 are located in or adjacent to 10 State SPAs. The names of the camps, and the State SPAs where they are located, are given in Annex 11. The State SPAs with the greatest number of tourist camps are Gorkhi-Terelj (with 38), Bogd Khan Uul (with 13), Khovsgol Lake (with 11) and Khangain Nuruu (with nine) (Table 21). The fact that Bogd Khan Uul and Gorkhi-Terelj contain the most camps is explained by their proximity to Ulaanbaatar: the vast majority to leisure visitors to Mongolia by rail stay in or near the capital for three or four nights, in order to meet connecting trains to/from China and Russia (J. Wigsten *in litt.* 2008).

Table 21: The overlap between tourist camps and State SPAs

Name of State SPA	Category	No. of camps	State SPA area (ha)	Density (camps per 100,000 ha)
Gorkhi - Terelj	NP	38	292,010	13.0
Bogd Khan Uul	SPA	13	41,383	31.4
Khovsgol Lake	NP	11	848,828	1.3
Khangain Nuruu	NP	9	889,986	1.0
Orkhonii Khundii	NP	4	92,955	4.3
Khogno Tarna	NP	3	78,798	3.8
Khorgo Trekhiin Tsagaan Nuur	NP	3	85,007	3.5
Moltsog Els	NP	1	488	204.8
Ugtam	NR	1	42,595	2.3
Khyargas Lake	NP	1	374,746	0.3
Total		**84**		

From the sample 140 tourist camps covered by the GIS analysis, an additional 17 are located in or adjacent to 11 Local SPAs (Table 22), with more than one camp at three Local SPAs: Kharkhorin (two camps), Gobi Gurvan Saikhan (three camps) and Ogii Lake and surrounding area (four camps). The names of the camps, and the Local SPAs where they are located. are given in Annex 12.

Table 22: The overlap between tourist camps and Local SPAs

Name of Local SPA	No. of camps	Local SPA area (ha)	Density (camps per 100,000 ha)
Ogii Lake and surrounding area	4	3,649	109.6
Gobi Gurvan Saikhan	3	66,126	4.5
Kharkhorin	2	45,146	4.4
Moltsog Els	1	1,133	88.3
Bulgan Khangai Uul	1	2,740	36.5
Bayanzag	1	3,404	29.4
Ongiin Khiid	1	6,677	15.0
Baga Gazriin Chuluu	1	11,354	8.8
Nariin Khamar	1	27,391	3.7
Baruun Ol	1	64,407	1.6
Tuin Gol River Valley	1	150,694	0.7
Total	**17**		

From the sample 140 tourist camps covered by the GIS analysis, 65 are located in or adjacent to eight IBAs (Table 23). Additional Critical Natural Habitats to those sites mentioned above are Terkhiin Tsagaan Lake, Shaazan Lake and Airag Lake. The names of the camps are given in Annex 13.

Table 23: The overlap between tourist camps and Important Bird Areas

IBA name	No. of camps	IBA area (ha)	Density (camps per 100,000 ha)
Gorkhi-Terelj National Park	39	293,937	13.3
Khovsgol Lake	10	380,212	2.6
Khangain Nuruu National Park	9	897,840	1.0
Ogii Lake	2	10,189	19.6
Terkhiin Tsagaan Lake	2	21,072	9.5
Shaazan Lake	1	5,485	18.2
Ugtam Nature Reserve	1	46,162	2.2
Airag Lake	1	73,348	1.4
Total	**65**		

It is often the case that, when several tourist camps are situated at a critical natural habitat, they are concentrated within a particular part of the site. For example, the entire south-western shore of Khovsgol Lake has been developed with tourist camps, while Gorkhi-Terelj has so many camps in close proximity that part of the national park has been effectively converted into a recreation area (J. Wigsten *in litt.* 2008). Even where there are few tourist camps at a site, they may be inappropriately sited. For instance, at Bayanzag (Flaming Cliffs) Local SPA, *ger* camps have been allowed to be built right below the famous cliffs (J. Wigsten *in litt.* 2008). Such adverse developments can be

attributed to a lack of strategic tourism planning and poor coordination with conservation objectives (J. Wigsten *in litt.* 2008).

A practitioners' perspective

According to (Wigsten 2005), the four main clusters of Mongolian tourism development are:

1. Kharkhorin (Ovorkhangai) and Khogno Khan Uul (Bulgan), which are popular due to the remains of the former capital of the Mongol Empire and the Erdenezuu Monastery;

2. Gorkhi-Terelj National Park (Tov), an area of mountain, forest and grassland, which serves as a major picnic area for Ulaanbaatar residents due to its proximity to the capital;

3. Gobi Gurvan Saikhan National Park (Omnogobi), where tourism is highly concentrated at: Yoliin Am, a gorge in the Gurvan Saikhan Mountains; Bayanzag, with its 'Flaming Cliffs', where the first ever fossilised dinosaur eggs were discovered in the 1920s; and Hongoriin Els, a 180 km long sand dune;

4. The south-western shore of Khovsgol Lake and the village of Hatgal, at 1,635 m above sea level near the Russian border, which is the only recent major tourism destination to have emerged over the last 10 years.

These represent centres where there has been rapid tourism development, with many seasonal *ger* camps and guest houses providing for organised groups as well as independent travellers. All of these sites, except possibly Gobi Gurvan Saikhan, have experienced over-development, and have reached saturation point (Wigsten 2005). Over-concentration of tourist camps leads to excessive competition, eroding local yields. Another problem is that the economic benefits from tourism are disproportionately concentrated in a few areas, not spread around the country (J. Wigsten *in litt.* 2008). For instance, in most of the western aimags and all of the eastern aimags, it is felt that there will not be any major tourism development for years to come (Wigsten 2005).

It is believed that protected area authorities allow tourist camps to be developed within their boundaries because it generates revenue for the protected area system. One exception is at Gobi Gurvan Saikhan, where tourist camps are restricted to the fringes of the national park, presumably because of the intervention of an international donor-funded protected area management project (J. Wigsten *in litt.* 2008).

It is important to view tourism development as bringing not only threats to critical natural habitats but also opportunities for sustainable development. Certain kinds of tourism development, such as low-impact *ger* camps, horse-riding, trekking, birdwatching and catch-and-release fly fishing, are fully compatible with the conservation of Mongolia's natural heritage. At the same time, these kinds of development can help to diversify local economies and provide employment for a young, seasonal workforce that can develop their communication and language skills. There is potential to develop a tourism industry in Mongolia with a diverse range of markets and products that limits visitor numbers and strikes a balance between sustainability and profitability. Many of the destinations with potential for such forms of tourism development overlap with protected areas and other critical natural habitats (J. Wigsten *in litt.* 2008).

WWF Mongolia's perspective in relation to protected areas

WWF have recently undertaken a review of the management effectiveness of the Mongolian protected area system (Batsukh and Belokurov 2005). This used WWF's Rapid Assessment and Prioritisation of Protected Area Management (RAPPAM) methodology (Ervin 2003). The review

covered 31 protected areas (12 Strictly Protected Areas and 19 National Parks). According to this review, tourism activities threaten eight of the 12 Strictly Protected Areas covered by the study, and are placing pressure on six of them (Figure 10). Tourism activities also threaten 18 of the 19 National Parks covered by the study, placing pressure on 12 of them (Figure 11).

Figure 10: Occurrence of pressures and threats in Strictly Protected Areas using WWF's RAPPAM methodology

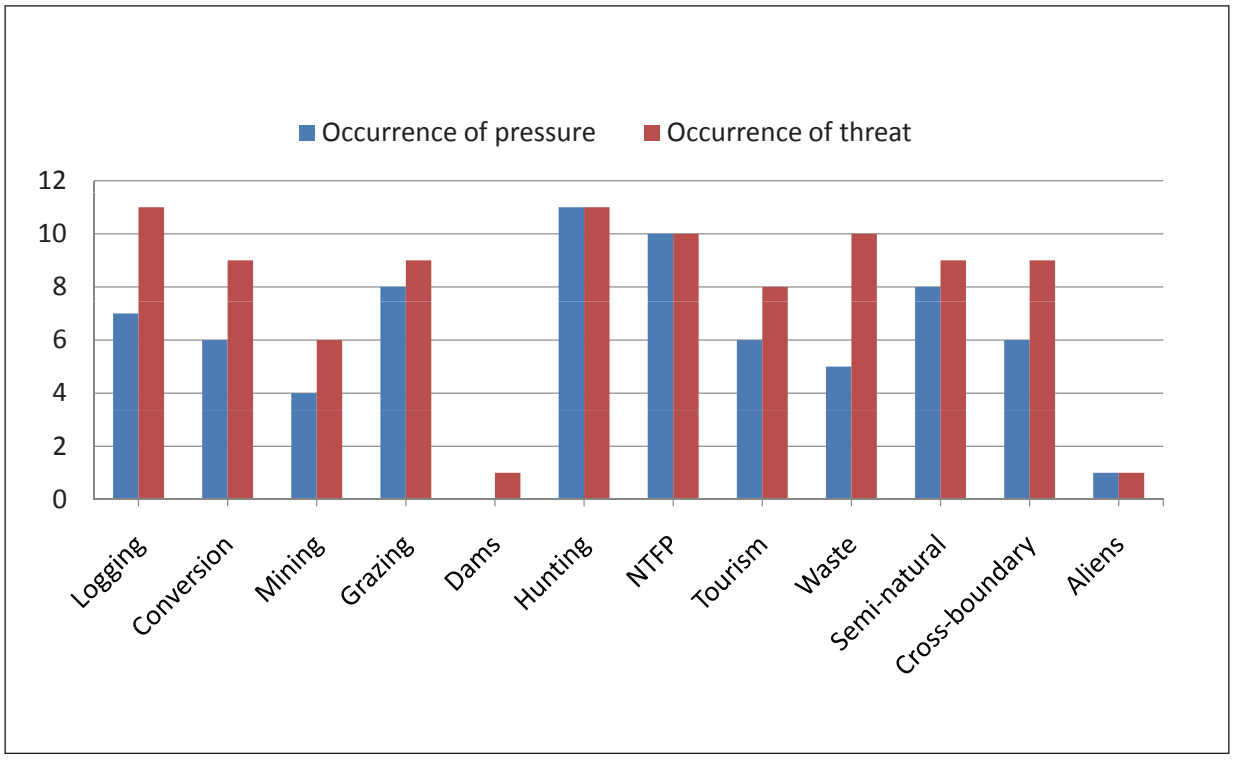
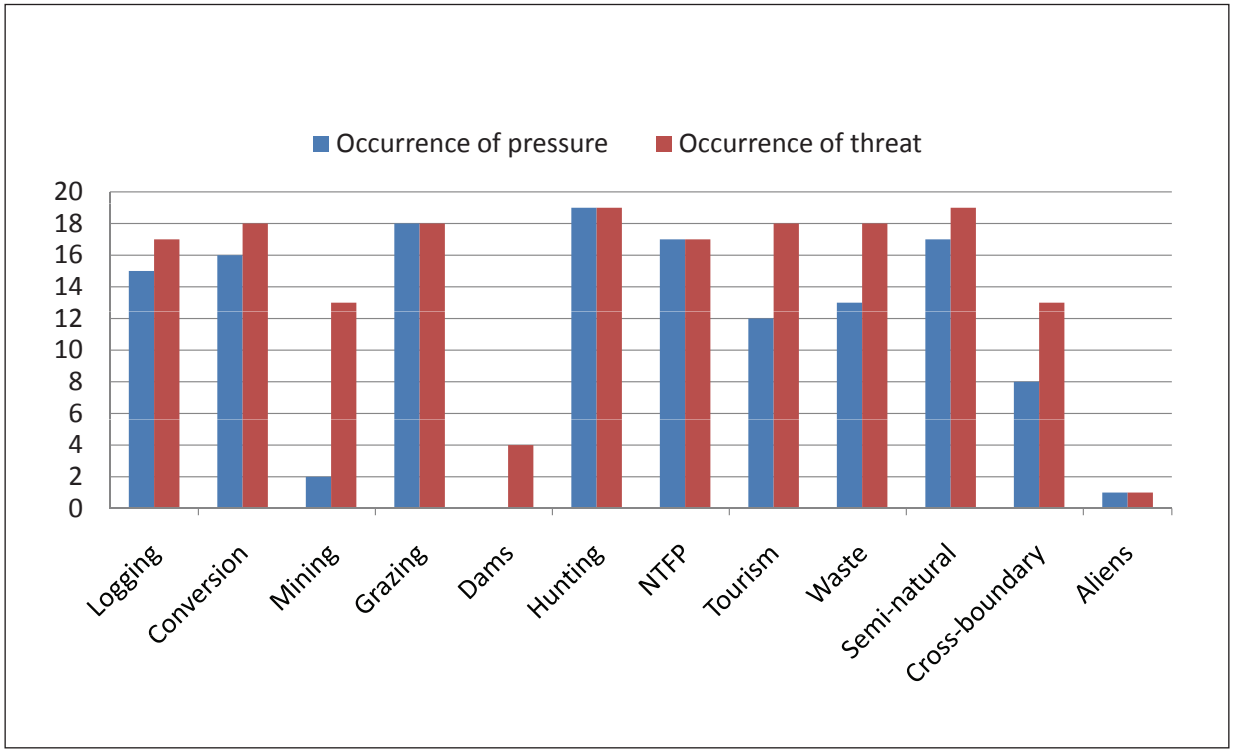


Figure 11: Occurrence of pressures and threats in National Parks using WWF's RAPPAM methodology



Tourist camp operators' perspectives

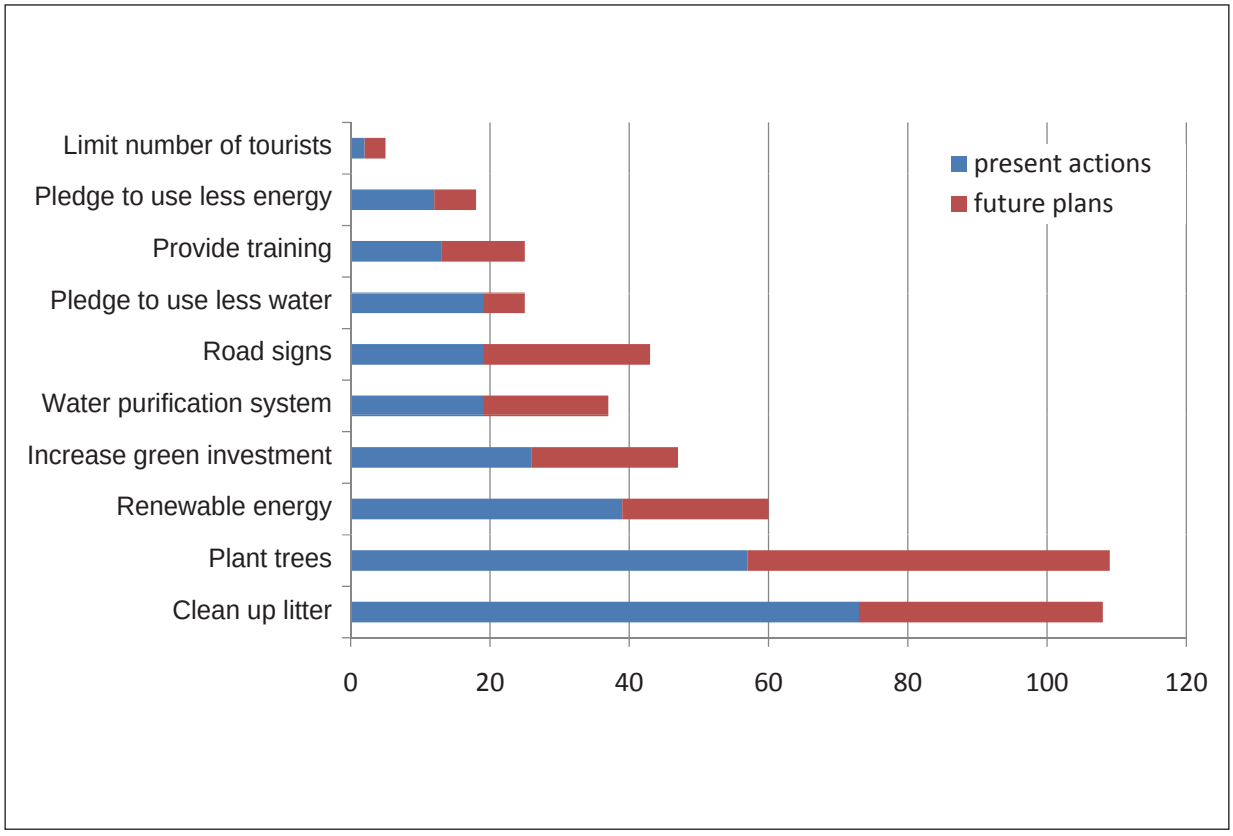
Based on the questionnaire circulated at the International Travel Mart (see Section 5.1), tourist camp operators identified the following sites as being under particular pressure due to the number of foreign visitors: Gorkhi-Terelj National Park, Tov aimag; Ogii Lake, Tsenkher Hot Spring and Khorgo-Terkhiin Tsagaan Lake, Arkhangai aimag; Khatgal, Khovsgol Lake and Jatgalant Hot Spring Area, Khovsgol aimag; Khongoriin Gol, Khongoriin Els and Yoliin Am, Omnogobi aimag; Elsen Tasarkhai and Kharkhorin, Ovorkhangai aimag; and Khogno Khan Mountain, Bulgan aimag.

Tourist camp operators identified the following sites as being under particular pressure due to the number of domestic visitors: Tsenkher Hot Spring, Taikhar Chuluu and Terkhiin Tsagaan Lake, Arkhangai aimag; Gorkhi-Terelj National Park, Tov aimag; Yoliin Am, Omnogobi aimag; Amarbayasgalant Monastery, Selenge aimag; and Kharkhorin, Ovorkhangai aimag.

Tourist camp operators identified the main impacts of tourist camps on the environment as garbage disposal, land degradation, unregulated road development and water pollution. They also identified the impact of adjacent mining, uncontrolled camping, and the unsustainable use of wood and other natural resources as being of concern.

Tourist camp operators were asked to identify the measures that they currently take and planned to take to reduce their impact on the environment. The responses to this question are summarised in Figure 12.

Figure 12: Comparison of current and planned activities to mitigate impacts from tourist camps on the environment



The tourist camp operators were also asked to recommended actions that should be taken by government and by themselves. Their responses are summarised in Tables 24 and 25.

Table 24: Government actions recommended by tourist camp operators

Type of action	Count	%
Strengthen control and standardisation of tourist camps	18	23.7
Strengthen environmental protection	18	23.7
Provide financial support for environmentally friendly technologies	16	21.1
Improve infrastructure	12	15.8
Improve the management and control of mines	6	7.9
Improve foreign cooperation in tourism sector	4	5.3
Improve capacity	1	1.3
Support cooperation between tourist camps	1	1.3

Table 25: Tourist camps actions recommended by the tourist camp operators

Type of action	Count	%
Landscaping and habitat improvement	16	28.1
Wise and sustainable use of resources	11	19.3
Environmental promotion	9	15.8
Reduce littering	7	12.3
Improve environmental control	5	8.8
Wildlife protection	4	7.0
Prevent natural disaster	2	3.5
Promote green investment	2	3.5
Designate protection	1	1.8

Overview of the impact of tourism on Critical Natural Habitats

From a nature conservation point of view, and based on information gathered from the 2007 IBA workshop, the tourist camp questionnaire and a literature review, the following threats are highlighted. These are considered to be geographically localised but having a significant impact in some cases. At present, the threat posed by tourism development appears to be more localised than that posed by mining and infrastructure development, although severe at particular sites. Furthermore, with commitment and best practice, there is the opportunity for tourism development to proceed in a way that is entirely compatible with the conservation of natural values. Indeed, the success of Mongolian tourism depends on this: it is the natural environment and its interrelationship with human culture and economic activity that is the country's principal tourist attraction.

Disturbance to wildlife

A number of tourist camps are situated close to wetlands of international importance, for example Terhiin Tsagaan Nuur, with unrestricted tourist access to the lake shore and to wetland habitats of high conservation value (K. Schleicher pers. comm.). Boating and fishing activities can increase disturbance and allow access to breeding bird colonies on offshore islands. The peak visitor period coincides with the breeding and post-breeding season when birds are on eggs, have vulnerable young and congregate to moult (when ducks and geese are flightless). Disturbance can lead to increased mortality (e.g. from increased predation). Mongolian wetlands are internationally important for a number of globally threatened bird species, including Hooded Crane *Grus monacha*, White-naped Crane *G. vipio* and Swan Goose *Anser cygnoides*, which are highly sensitive to disturbance.

Similar concerns have been expressed about disturbance to (and sometime chasing of) larger mammals, such as Mongolian Wild Ass *Equus hemionus*, Argali *Ovis ammon* and Mongolian Saiga Antelope *Saiga tatarica mongolica*, especially in open steppe and desert landscapes, where the use of off-road vehicles is of concern in some areas.

Disturbance can be easily addressed through the zoning of protected areas, restricted access to sensitive sites, and provision of location-specific guidance to park managers, tour operators and visitors.

Degradation of grassland steppe and deserts

Grassland steppe and desert habitats are extremely vulnerable to degradation from vehicular access.

The lack of sealed roads, Mongolia's often flat terrain and a constitutional right of access to the countryside leave protected areas open to off-road use by tourist vehicles. Indeed, this access to the countryside, and the sense of off-road adventure it can provide, is part of the attraction for many visitors. When dirt roads become impassable, new routes are opened up, and the 'road' can end up hundreds of metres wide, and meandering in many directions. This can lead to destruction of vegetation, erosion and unsightly scaring of the landscape, although the impact on wildlife populations is unlikely to be significant.

Where tour operators bring with them their own animals (for recreational riding, as draught animals, or for meat and milk), this can lead to an increase in summer grazing pressure around camps. Similarly the 'permanence' of *ger* camps can lead to an increase in grazing pressure, and result in grassland degradation and desertification.

The impact of vehicular access can best be addressed through park planning, restricting access, maintenance and judicious development of sealed roads, and provision of guidance to visitors and tour operators. An increase in grazing pressure is best addressed through promoting greater dependence on locally owned livestock, and, in places, *ger* camps may need to be relocated.

Pollution of lakes and rivers

The location of tourist camps close to lakes and rivers frequently results in localised pollution. The prime concern is sewage and waste water from tourist facilities, and use of soap and shampoo by tourists washing outdoors. This is frequently cited as being of concern at protected areas that receive visitors. The washing of tourist vehicles is also of concern. Swimming can also be regarded as pollution by local communities.

Pollution can lead to changes in salinity and wetland eutrophication, and can threaten the health of humans and animals. It is also unsightly and unpleasant, and something that visitors notice and are disturbed by. Hence, it can start to affect a site's reputation. The impact on nature is usually localised, however.

Issues related to waste water and sewage disposal are best addressed through tourism regulations, sharing and promoting best practice, and impact assessment and mitigation during the planning of new tourist camps.

Firewood collection

The collection of wood for cooking and heating is having a negative impact at some sites (e.g. Gorkhi-Terelj National Park). At other sites, there is ample dead wood available, and the number of visitors is so low that this issue is not of undue concern. Where this issue is of concern, tour operators need to bring in fuel supplies, and use of firewood needs to be regulated. As tourist numbers increase, this may become a more serious issue in remote areas.

Depletion of water resources

Water, especially freshwater, is one of the most critical natural resources, and is extremely limited in drier regions of the country. The tourism industry generally overuses water resources at hotels and camps, through personal use of water by tourists. This can result in water shortages and degradation of water supplies, as well as generating a greater volume of waste water.

Solid waste

In areas with high concentrations of tourist activities, waste disposal is a serious problem. As with pollution, visible solid waste pollution can be unsightly: despoiling rivers, scenic areas and tourist camps, and significantly undermining the attractiveness of a location. In remote areas, where solid waste collection and disposal facilities are unavailable, tourists often leave behind their garbage and unwanted equipment. Attempts to burn solid

waste, particularly plastics, are often only partly successful, and leave un-burnt material behind which is then wind-blown across the landscape. It is difficult to argue that this has any impact on nature, and some species may even benefit during the winter months from poor refuse disposal. Nevertheless it undermines the attraction of sites for visitors, and thus the justification for protecting them, and urgently needs to be addressed at many sites in Mongolia.

This issue is best addressed through enforceable solid waste disposal programmes for each protected area (including those not receiving significant numbers of visitors at this time). This may involve regulations requiring separation of compostable waste from plastics, for tour operators to take their waste with them, and for management to organise regular refuse collection and transport out of the park. A positive example has been set at Khovsgol Lake National Park, which is distributing biodegradable bags for collecting and transporting out solid waste (Schleicher and Hotz 2007)

Tourist infrastructure

Ger camps are part of the tourist attraction, and often fit well with a protected area's natural and cultural surroundings. They are often sensitively located, such that they do not undermine the aesthetics of a site. In this regard, Mongolia is more successful than many other countries in minimising the impact of infrastructure development in protected areas. However, sites' aesthetics can often be undermined by concrete buildings (e.g. staff accommodation, reception and dining facilities), which are out of place, and the location of parking, service and waste disposal areas. In addition, some tourist camps are poorly situated, despoiling the landscape or facilitating disturbance.

Tourist and protected area infrastructure does not generally have significant direct impacts on wildlife (although care is needed in the location of power and telecommunication lines, which can be a serious hazard for raptors, cranes and other large-bodied birds). Nevertheless, the aesthetic pollution it sometimes causes undermines the tourist attraction, and it is in the long term interests of the tourism industry to proceed with caution and tradition in the design and building of infrastructure. This requires guidelines, building regulations, inspection and enforcement.

Protected area management issues

From a nature conservation perspective, and taking into account information gathered from the 2007 IBA workshop, the tourist camp questionnaire, and a literature review, the following protected area management issues have been highlighted.

Zoning and management planning

The Law on Protected Areas allows for protected areas to be zoned. Strictly Protected Areas, for example, are divided into pristine zones, conservation zones and limited use zones, while National Parks are divided into special zones, travel and tourism zones and limited use zones. In practice however, zoning has rarely reflected wildlife values and often does not adequately address management needs. Zoning is rarely apparent on the ground, maps depicting management zoning are typically unavailable, and park managers and tour operators are often unclear about the location of different zones. Any change to management zoning within protected areas requires central government approval, which has yet to be tested. Lakeshores, for example, where disturbance can be a particular concern, do not appear to have been considered in management zoning (Wigsten 2005)

Protected area management

The tourism sector is dependent on government for protected area management and the upkeep of tourist destinations. Strictly Protected Areas and National Parks are managed by the central government and depend almost entirely on allocations from the national budget. As is the case in almost all developing countries, there are serious

budgetary constraints in Mongolia, and human and financial resources are extremely limited.

WWF's RAPPAM study (Batsukh and Belokurov 2005) analysed protected area inputs in terms of staffing, communication, infrastructure, facilities and financing. This revealed a system "that is chronically lacking resources in practically all levels of management", and where "low salary levels and other employment conditions hamper full recruitment of staff, causing few and inadequately qualified staff".

Mongolia's protected areas are thus under-funded, lacking in capacity, and "thereby a dysfunctional partner to private sector" (Wigsten 2005). If tourism is seen as a major focus for economic development, central government will need to view investment in protected area management as an important call on the national budget.

Environmental awareness amongst tourists

Most tourists have some understanding about the purpose and importance of protected areas in principle and about conservation in general. However, they are provided with little in the way of information about the biodiversity values and conservation issues at particular sites, or about what visitor conduct is appropriate. Tourists interviewed at Khuisin Naiman Nuur Natural Monument for example, did not have a clear understanding about correct behaviour at the site, or much background knowledge about the area; most would have liked to have more information, such as brochures, maps and information boards (Schleicher and Hotz 2007).

8. Recommendations

8.1 Recommendations for site safeguard with regard to mining and infrastructure

Recommendations to strengthen environmental safeguards in the mine licensing process

1. Article 5 of the 1998 Law on EIA and Articles 24 to 26 of the 2006 Minerals Law should be revised to make public consultation an explicit requirement of the EIA and mining licensing processes, respectively.

2. Article 19 of the 2006 Minerals Law should be revised to extend the 30 day deadline for aimag governors to comment on exploration licence applications to at least 90 days, and to make consultation with affected local communities (not simply their Citizen's Representative Khurals) a formal requirement.

3. Article 19 of the 2006 Minerals Law should be further revised so that MRPAM is required to circulate exploration licence applications to MNET for its review and approval *before* they are granted. If this step is taken in parallel to circulation of applications to aimag (or capital city) governors, the overall application process need not be lengthened.

4. Up-to-date GIS data layers on critical natural habitats (especially Local SPAs and IBAs) should be provided to MRPAM's Department of Geological and Mining Cadastre by the organisations that originally prepared them (i.e. WWF Mongolia, TNC and WSCC), and relevant staff should be briefed on the data's relevance to the review of licence applications, pursuant to Articles 19 and 24 of the 2006 Minerals Law.

Recommendations to resolve existing overlaps between exploration and mining licences and critical natural habitats

5. Exploration licences that have a marginal overlap with one or more critical natural habitats recognised as Special Needs Land under Article 16 of the 2002 Law on Land (i.e. State SPAs and Local SPAs) should have their exploration area boundaries revised when they come up for renewal.

6. Exploration licences that have a major overlap with one or more State SPAs and/or Local SPAs *and* where the protected

area(s) in question pre-dates the exploration licence should be immediately cancelled, without compensation, for being in direct contravention of Article 17 of the 2006 Minerals Law.

7. Exploration licences that have a major overlap with one or more State SPAs and/or Local SPAs *but* where the licence pre-dates the protected area(s) in question should remain valid for the duration of the present licence. Renewal of these licences should be conditional upon the boundaries of the exploration area being adjusted to excise the overlap.

8. Mining licences that overlap with one or more State SPAs and/or Local SPAs *and* where the protected area(s) in question pre-dates the licence are in direct contravention of Articles 24 and 26 of the 2006 Minerals Law. However, as the licence holder may be operating within the protected area(s) unknowingly, revoking the licence without compensation would be a draconian penalty. The authority that designated the protected area (usually the aimag or soum government, as most cases involve Local SPAs) should enter into negotiations with the licence holder, to promote exchange of their licence for one that does not overlap with any critical natural habitat. The licences used for exchange could belong to inactive or bankrupt companies or delinquent operations that have failed to pay taxes or comply with environmental protection regulations. All resale or transfer of mineral licences in such cases should be prohibited.

9. Mining licences that overlap with one or more State SPAs and/or Local SPAs *but* where the licence pre-dates the protected area(s) in question should remain valid. On an exceptional basis (for instance where the mine is compromising the protection of an area of extreme biodiversity importance), the authority that designated the protected area (in most cases the aimag or soum government) should revoke the licence and pay compensation to the licence holder, as specified under Articles 14 and 56 of the 2006 Minerals Law.

10. MRPAM should not issue any new mining licences within any State or Local SPA, regardless of whether there is a valid exploration licence for the area.

11. Objective, scientifically based guidelines and criteria should be developed, to ensure consistency in the designation of Local SPAs by aimag and soum governments, under Articles 3 and 28 of the 1994 Law on Special Protected Areas. These criteria should be retroactively applied to all existing Local SPAs, by the relevant local authorities, and sites shown not to meet them should be degazetted, following due process. In addition, standard management regulations for Local SPAs should be developed and introduced.

Recommendations to strengthen safeguard of critical natural habitats currently outside of Mongolia's protected area system

12. The definition of Special Needs Land in Article 16 of the 2002 Law on Land should be extended to explicitly include sites designated under multilateral environmental agreements (i.e. Ramsar Sites, Biosphere Reserve core areas and World Heritage Sites) and natural sacred sites, thus affording them protection from exploration and mining within their boundaries.

13. Ramsar Sites and IBAs that are not fully protected within nationally or locally protected areas should be considered for designation as either State SPAs or Local SPAs, particularly where their gazettal

would address gaps in the coverage of Mongolia's protected area system.

14. A provision should be included in the 1994 Law on Special Protected Areas to extend the prohibition on mining and exploration that currently applies to designated protected areas (State SPAs and Local SPAs) to sites that have been officially proposed by the government for protection but not yet formally designated. In order to prevent large areas of the country being declared off-limits to exploration and mining by pre-emptive protected area proposals, the moratorium on exploration and mining within proposed protected areas should be for a fixed time period (say, two years) from the point the proposal is made. If the site is not formally designated within this period, the moratorium should be lifted.

15. If the interpretation of Article 8 of the 2007 Law on Forests that exploration and mining are prohibited in all protected forests is correct, these areas should be mapped and inventoried, and GIS data layers should be provided to the Department of Geological and Mining Cadastre in MRPAM. Articles 17 and 24 of the 2006 Minerals Law should be revised to include protected forest among the categories of land for which exploration and mining licences cannot be granted.

16. A nationwide study should be undertaken to identify sites that maintain ecological conditions vital for the viability of protected areas, such as forests that protect the catchments of protected lakes, wildlife corridors, etc.

17. The World Bank should ensure that the list of IBAs in Mongolia (as well as those for other Asian countries) is used in screening all development projects it finances.

Recommendations to strengthen on-the-ground protection of critical natural habitats

18. The recommendations contained in a recent WWF review of the management effectiveness of the Mongolian protected area system (Batsukh and Belokurov 2005) should be implemented.

19. Enforcement of environmental protection regulations should be strengthened in areas with concentrations of artisanal mining. In particular, the prohibition on artisanal mining within protected areas and other Special Needs Land should be strictly enforced, following Article 10 of the temporary regulation on artisanal and small-scale mining.

20. A programme of support to the State Professional Inspection Agency at national, aimag and soum levels should be developed, with support from international donors. This programme should aim to address key barriers to effective on-the-ground monitoring and enforcement of environmental protection regulations, including staff capacity, transport and communication equipment, and inter-agency coordination.

Recommendations to improve the environmental performance of mining operations

21. Article 39 of the 2006 Minerals Law should be revised to require exploration licence holders to lodge refundable environmental protection bonds sufficient to cover the costs of reclamation, thereby ensuring that sites will be reclaimed even if a company abandons them or fails to complete its permit obligations.

22. As recommended in the recent World Bank review of environmental and social impacts in

Mongolia's mining sector (World Bank 2006), the government should support and facilitate the introduction of Best Available Techniques into placer gold mining, and adopt a law on artisanal and small-scale mining that restricts these activities to specific areas.

23. The government of Mongolia should give careful consideration to the wide range of best practice guidance available for mining activities relevant to Mongolia. In particular, the government should require mining companies to manage impacts on biodiversity following the mitigation hierarchy (i.e. avoid then minimise then rehabilitate/restore).

24. A feasibility study for capturing revenue streams from mining operations within or close to protected areas should be undertaken. This study should explore the channelling of such revenue to support the conservation management of these areas and the sustainable development of communities living in their buffer zones.

25. Informed by this feasibility study and the experience of initiatives such as the Business and Biodiversity Offsets Program (BBOP), the government of Mongolia should introduce regulations that require mining companies to compensate for any impacts on biodiversity that remain after mitigation has been pursued, by investing in biodiversity offsets.

8.2 Recommendations for site safeguard with regard to tourism

Recommendations to improve planning for sustainable tourism development

1. A national sustainable tourism strategy should be developed by the government of Mongolia, in consultation with stakeholders from the private sector, civil society and the donor community. This strategy should complement the Tourism Development Strategy for Mongolia 2007-2011 by informing the overall development of sustainable tourism in the country.

2. At the aimag level, spatial tourism development plans should be prepared. These plans, which should be informed by the national sustainable tourism strategy and the results of this study, should show sites (such as critical natural habitats) where mass tourism is not appropriate, as well as sites with potential for sustainable tourism development. Revenue flows from tourism may create an incentive for local government to protect these sites from incompatible forms of development.

3. To inform the development of these aimag-level plans, MNET should identify, based on local and expert consultation, the next set of protected areas where sustainable tourism might be developed. Tourism development should not be allowed to proceed at any new protected areas until appropriate sites have been identified, EIAs have been carried out and consulted on, and sustainable tourism plans are in place.

4. In those protected areas already allowing tourism, sustainable tourism plans should be prepared, following IUCN's *Guidelines for Tourism in Parks and Protected Areas of East Asia* (Eagles *et al.* 2001) (see Chapter 9.2). These, plans should be developed by MNET, in collaboration with other relevant bodies including local administrations, and building on the considerable in-country experience that exists in the conservation and tourism sectors.

5. After sustainable tourism plans have been prepared for protected areas where tourism impacts are an immediate concern, they should next be prepared for other protected areas where tourism is likely to be developed in the near future.

Recommendations to support the development of sustainable tourism

6. A centralised, web-based resource of sustainable tourism case studies and guidelines should be compiled and made publicly accessible. This resource could possibly be hosted at the STDC, and disseminated through the Community Based Tourism Network. These documents should cover such topics as the planning of sustainable tourism, development of tourist camps, visitor management, visitor awareness, solid waste management and waste water management.

7. A cross-sectoral fund should be established by one or more interested donors, to support collaborative initiatives, among tourism companies, conservation organisations and protected area management authorities, that address the objectives of the national sustainable tourism strategy.

Recommendations to realise tourism's potential for contributing to protected area financing

8. Innovative financing and governance models should be piloted at selected protected areas with significant tourism potential. These models could include protected area business plans, private sector representation on management boards, and local management of decentralised revenue streams. Experience from these pilots should be documented and used to inform the development of national policy.

9. A feasibility study for capturing revenue streams from tourism operations within protected areas or their buffer zones should be undertaken. This study should explore the channelling of such revenue to support the conservation management of these areas and the sustainable development of communities living in their buffer zones. Sustainable financing mechanisms such as these present an opportunity for tourism operators to contribute to the conservation of the attractions their clients are coming to see.

9. Best practice in site safeguard and mitigation

9.1 Examples of best practice with regard to mining and infrastructure

As described in Sections 6.1 and 6.2, while there is legislation in place in Mongolia to ensure that exploration and mining licences are applied for in a manner which gives an opportunity for environmental assessment, there clearly remain weaknesses in the process, which does not necessarily allow for the ready participation of MNET or of communities potentially effected by mining development at the local level.

This section looks beyond the existing regulatory and policy framework in Mongolia, to see what can be done to gain benefit from practices elsewhere that could both help the development of the regulatory framework and ensure that the practice of mine development planning becomes more effective at minimising environmental impacts. Relevant best practice from outside the country is considered, with particular respect to critical natural habitats and the species that they support, as well as to ensuring that the sustainable development context for mining brings ongoing support to biodiversity conservation in Mongolia. This section examines a selected range of examples of best practice from both environmental and mining legislation, reviews practical guidelines for the mining sector that go beyond compliance, and gives consideration to mine planning that has environmental targets based on the mitigation hierarchy. This last topic includes the need for and appropriate use of biodiversity offsets to achieve better industry performance.

Selected examples of effective legislation with respective to mining and the environment

While this section does not aim to effectively present a comprehensive review of environmental legislation from around the world, it does present some selected examples of environmental legislation that could be useful in informing opportunities for enhancing more effective legislation in Mongolia. Selected legislation from various countries includes legislation both for species and site safeguard and for the operational management of mining. It is recognised that to achieve responsible mining, there needs to be cross-compliance between legislation designed to protect the environment from incompatible forms of development, and legislation designed for the licensing and implementation of mining activities (e.g. access to land, mineral rights, mine closure and rehabilitation of mined land).

The European Union and its member states

The Habitats Directive and the Birds Directive underpin nature conservation policy within EU member states. This is built around two key safeguards: the Natura 2000 network of protected sites; and a strict system of species protection. The Habitats Directive[3] protects clearly identified animal and plant species (Annex II) and a range of over 200 so-called "habitat types" (Annex I), which are of European importance. Priority species and habitats are also identified, based on their conservation status. The Natura 2000 network identifies a protected area network that is based on biogeographical analysis of the EU's varied habitats and the species associated with them. The European Union has nine biogeographical regions. Natura 2000 sites are selected on the basis of national lists proposed by the Member States. For each biogeographical region, the European Commission adopts a list of Sites of Community Importance (SCIs), which then become part of the network. Finally, the SCIs are designated at the national level as Special Conservation Areas (SCAs).

The Birds Directive[4] is the EU's oldest piece of nature legislation and one of the most important, creating a comprehensive scheme of protection for all wild bird species naturally occurring in the EU. The directive was also introduced in recognition of the facts that wild birds, many of which are migratory, are a shared heritage of the Member States, and that their effective conservation required international co-operation. The directive recognises that habitat loss and degradation are the most serious threats to the conservation of wild birds. It therefore identifies sites critical for wild bird populations, highlighting the need for habitat protection for both threatened species and migratory species (listed in Annex I). It achieves this through the establishment of a network of Special Protection Areas, comprising all the most suitable sites for these species. Since 1994 all Special Protection Areas form an integral part of the Natura 2000 network. It is important to bear in mind that BirdLife International's global criteria for IBAs underpin EU Special Protection Areas, although not all IBAs in the EU are necessarily afforded Special Protection Areas status.

It is important to recognise that such nature conservation legislation is a horizontal legislation, which has a bearing on and needs to be taken into account when implementing other EU-policies, such as structural, transport or agriculture policy. Domestic development planning legislation and environmental legislation also needs to be consistent with both the EU Habitats and Birds Directives. In the United Kingdom, for example, all development planning legislation is required to be consistent with the EU Habitats and Birds Directives. Inconsistencies proposed by planning local authorities or by developers are subject to rigorous government review.

Key attributes of this legislation are that applies to a large and diverse geographic area and that protected species and sites are selected on the basis of both threat status and biogeographic significance. In addition, the legislation is horizontal and is generally met with a high degree of statutory cross-compliance.

United States of America

The 1973 Endangered Species Act is regarded as a very significant piece of legislation, which adopts a species-focused approach to habitat and ecosystem conservation. It has its critics, within both the conservation and the development sectors. The stated purpose of the ESA is to protect species and also "the ecosystems upon which they depend". It is administered by two federal agencies: the United States Fish and Wildlife Service (USFWS); and the National Oceanic and Atmospheric Administration (NOAA), which includes the National Marine

[3] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

[4] Council Directive 79/409/EEC on the conservation of wild birds.

Fisheries Service (NMFS). Interestingly, the Act contains a citizen suit clause, which allows citizens to sue the government to enforce the law; this has been a key influence on how species conservation has continued to make progress in the United Stares since the Act was promulgated. Civil society has had a major role in bringing conservation imperatives to the attention of government and of testing the accountability of federal agencies.

The ESA only protects species that are officially listed as "threatened" or "endangered", and can be listed in one of two ways. The first is for the federal agencies to take the initiative and directly list the species. The second is by petitioning from individuals or organisations, which prompts the respective agencies to undertake a scientific review. Civil society has played a key role in furthering this second approach in recent years.

With habitat loss recognised as the primary threat to most listed species, the Act allows the relevant federal agencies to designate specific areas as protected "critical habitat" zones. In 1978, the Act was amended to require critical habitat designation for all threatened and endangered species. Critical habitats are required to contain "all areas essential to the conservation" of the target species (Section 3(5)(A)). Such lands may be private or public. Federal agencies are prohibited from authorising, funding or carrying out actions that "destroy or adversely modify" critical habitats (Section 7(a)(2)). While the regulatory aspect of critical habitat does not apply directly to private and other non-federal landowners, large-scale development, logging and mining projects on private and state land typically require a federal permit and thus become subject to critical habitat regulations.

Since 1973, the Act has been subject to various amendments reflecting changing political administrations and perspectives. While the Act is recognised as providing strong statutory protection to listed species through constraints to development within critical habitats, the incentives for positive engagement in conservation action has been limited. It is recognised, therefore, that the best incentives for positive conservation action are to prevent species from the necessity of becoming listed because their status does not require it. Listing of species has such significant implications for land management that developers often seek to avoid listing at all cost, sometimes to the detriment to the species and its associated habitats. Hence the Act has been and continues to be subject to political interference and amendment.

Public lands in the US make up the greatest proportion of protected areas in the country. Such public lands include National Parks Service, USFWS, Forest Service and Bureau of Land Management lands. Core areas within such lands are frequently identified as Wilderness Areas (under the 1964 Wilderness Act). Such areas could be regarded as the equivalent of the pristine zones within Mongolia's Strictly Protected Areas.

With respect to mining and reclamation, a useful and effective piece of legislation in the USA is the Surface Mining Control and Reclamation Act (1977), known as SMCRA. Administered by the US Office of Surface Mining Reclamation and Enforcement (OSM), the Act is aimed at securing appropriate standards of environmental performance at strip or open cast coal mines. It addresses permitting, where SMCRA requires that companies must describe the pre-mining environmental conditions and land use before mining takes place, what the proposed mining and reclamation will be, how the mine will meet the SMCRA standards, and what post-mining land-use will be after reclamation is complete. Such information is intended to help the government determine whether to permit the mine and set conditions that will ensure appropriate environmental protection. SMCRA also requires that companies post a bond sufficient to cover the cost of reclamation, ensuring that the site will be reclaimed even if the company abandons the mine or fails to complete its permit obligations. The bond is not released until the mining site has been completely rehabilitated and the government has (after an agreed period) found reclamation to

be successful. SMCRA also identifies protocols for inspection and enforcement, and identifies land restrictions where mining is inappropriate such as in National Parks and Wilderness Areas. It also allows citizens to challenge proposed surface mining operations on the ground, so ensuring public participation in the permitting process. While SMCRA has equivalent statutory mechanisms within Mongolia's 2006 Minerals Law, there are aspects of SMCRA which could be useful to consider when seeking to improve Mongolia's minerals law in the future.

Another useful legislative tool is the Clean Water Act (Section 404 programme), whereby the US Corps of Engineers, or a state programme approved by the Environmental Protection Agency, has authority to issue permits that would affect wetland habitat and to decide whether to attach conditions to them. This tool is of interest in that it established by statute the principle of biodiversity offset, although it was designed to be applied to wetland habitats. To achieve no net loss of wetlands within the Section 404 programme, a permittee is first expected to avoid deliberate discharge of materials into wetlands and then to minimise discharge that cannot be avoided. When damage is unavoidable, the Corps of Engineers can require the permittee to provide "compensatory mitigation" as a condition of issuing a permit. The creation of compensatory mitigation banks are one of several ways to compensate for unavoidable, negative impacts to wetlands and other aquatic resources. A mitigation bank is a site where wetland resources are restored, established, enhanced, and/or conserved for the purpose of providing compensatory mitigation for impacts authorised by permits issued by the Corps that result in impacts to natural wetlands through development.

The operation and use of a mitigation bank is governed by a mitigation banking instrument, which is the legal document for the establishment, operation, and use of a mitigation bank. The mitigation banking instrument must be approved by an Interagency Review Team, which is a group of federal, tribal, state, and/or local regulatory and resource agency representatives that advises the Corp's district engineer on, the establishment and management of a mitigation bank. The permit recipient, either on a permit-by-permit basis or within a single-user mitigation bank, carries out the mitigation action. There is also the option of creating a third-party mitigation bank (i.e. a commercial mitigation bank), where another party accepts a payment from the permittee and assumes the permittee's mitigation obligation. However, most compensatory mitigation has been undertaken by permit recipients, rather than by third parties.

This mechanism has been used by a number of mining companies in the US where tailing expansion and other mine developments have impacted natural wetlands. As a model it could be considered for application elsewhere, both geographically and in terms of offsetting net residual biodiversity loss associated with mine development.

Brazil

In 2006, the Brazilian Government passed Resolution 371, based on Law 9985 on the National System of Conservation Units (dated 18 July 2000). This requires developers of major projects to contribute at least 0.5 percent of the project budget as a compensatory investment in biodiversity conservation. These funds must be invested in the implementation and maintenance of a strict protected area, selected by a technical committee. Eligible sites for such a compensatory offset include:

- Existing protected areas or their buffer zones directly affected by the project, selected according to the criteria of distance, area, vulnerability and infrastructure;
- In the absence of the above, the priority is the creation, implementation or maintenance of strict protected areas in the same biome and, preferably, in the same catchment, and/or considering the results of the Priority Setting Exercise;

- Other sites proposed in writing to the government environment authority.

In order to comply with Resolution 371, a mining company would be required to invest in a biodiversity offset for the mine and associated developments, such as smelters and transport infrastructure. The offset associated with the mine development must be approved by the environmental licensing authorities at the federal level, whereas those associated with other ancillary infrastructure need to be approved at the state level.

Here is a statutory mechanism essentially recognising the value of biodiversity offset as a compensatory mechanism for addressing net residual impacts of development, which is built into the permitting process. In Brazil such a process brings valuable resources to IBAMA (the federal agency - Brazilian Institute for Environment and Renewable Resources), but whether the identification of such offsets effectively offsets the biodiversity impacts resulting from such development is not clear. It does provide funds for deployment at priorities identified by the federal agency. Such a mechanism could be useful in Mongolia where such resources could be used by an under-resourced MNET to support management of protected areas and expansion of the protected area network.

Australia

Various legislations in Australia have implemented a range of mechanisms that could usefully inform models for biodiversity offset in relation to mining development in Mongolia. The Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 makes provision for approval of developments that could impact biodiversity but include the need for conditions that relate to making good such damage in the form of biodiversity offsets.

Similar policies are underway at the state level in Victoria and New South Wales and other states. In Western Australia the Environmental protection Act makes specific reference to environmental offsets with reference to the clearing of native vegetation. Section 51H(1) states that a clearing permit may be granted subject to such conditions as regarded necessary for the purposes of avoiding, mitigating environmental damage or offsetting the loss of cleared vegetation. The permittee will be required to take specific measures to establish and maintain vegetation on land other than that cleared in order to offset the loss of cleared vegetation or make monetary contributions to a fund maintained for the purpose of conserving native vegetation. In South Australia, the Native Vegetation Act 1991 that the Native Vegetation Council may impose conditions when permitting native vegetation clearance. A set aside formula is applied where 10 ha is identified as an offset for every 1 ha cleared.

In New South Wales, the government has launched a Green Offsets programme which aims to ensure that there is a net environmental improvement as a result of development, with the offsets principles underpinned by needs for prerequisite impact avoidance and mitigation, the need to compliment other government programmes, to be based on and reward good, not poor environmental performance and result in a net positive gain for the environment. Such offsets as are identified must be enduring, quantifiable, targeted ("like-for-like" or better), located appropriately (preferably local to the impact), supplementary and enforceable.

In Queensland, recent development in environmental legislation and the consolidation and alignment of existing initiatives have resulted in the establishment of an innovative - Australian-first - green fund, Eco Fund Queensland (March 2008). Eco Fund Queensland will allow developers within government, the private sector and eventually such parties outside of Australia to invest in it. It aims to secure the benefit of adding to Queensland's conservation areas and will work as follows:

Based on a current need for developments to avoid or minimise environmental impacts, a calculation of the residual unavoidable impacts will see such

impacts being off-set by a financial contribution to the Fund. The Fund then professionally identifies and secures an appropriate offset on behalf of the developer, many of which will make their way into national parks and the Protected Area network in Queensland. In due course, once the offsetting procedure is well established, government, industry, and in time, interstate and overseas entities will be able to approach Eco Fund Queensland in order to offset their greenhouse emissions.

This mechanism will be underway by January 2009 and through this, Queensland proposes to increase its National Park estate by 50 percent by 2020, with the area under protection increasing from almost 7.6 million ha to around 12 million ha, covering the equivalent of almost two islands of Tasmania. Such a mechanism may be worthy of consideration by the Mongolian government which itself maintains an ambitious policy to increase the coverage or its protected area network to 30 percent.

Environmental guidelines for the mining sector that go beyond regulatory compliance: some examples with relevance for Mongolia

Much of Mongolia is classified as semi-arid or arid. Hence when considering mining development there will be issues that relate to minimising biodiversity impacts, addressing habitat recovery rates and water management that government and mining companies should be particularly aware of.

In addition, the analysis in this report indicates that nearly 90 percent of the total area covered by mining licences is accounted for by just three minerals: coal, gold and copper. Therefore it is appropriate that awareness of best practice guidelines for managing the environmental issues associated with these products is profiled in this report.

Best practice for mining in semi-arid or arid environments

In semi-arid and arid environments there are a number of key considerations to bear in mind when conducting mineral exploration and operational and rehabilitation activities. Semi-arid and arid areas frequently are considered to be intrinsically devoid of life, or at least are not valued as having other land-uses associated with them, with the exception perhaps of extensive grazing. Therefore mining activities have been typically and traditionally undertaken with little account for the sparse but nevertheless significant biodiversity that is associated with desert environments. The physical footprints of mine activities have often been imposed on desert habitats with impunity, with little constraint imposed on the locational nature and extent of vehicle tracks, drilling pads, overburden and waste rock dumps and tailings facilities. In addition, water abstraction has frequently been irresponsible and unsustainable, with tailings facilities losing considerable volumes of water to evaporation, and groundwater reservoirs being depleted to the detriment of riparian corridors and emergent springs that are of crucial importance to biodiversity in such environments.

Fortunately, many of the problems associated with large scale mining activities in semi-arid and arid environments have been recognised and addressed with the development of best practice guidelines. Such guidelines for mining in desert environments should address such issues as:

- Minimising the physical footprint represented by vehicle tracks, exploration activities, heap-leaching processes, waste rock and overburden dumps and tailings facilities;
- Minimising groundwater water abstraction by introducing efficient water recycling schemes into operational management for metallurgical processing, heap-leaching, tailings management, dust suppression and domestic use;
- Minimising inappropriate availability of (potentially) contaminated water to wildlife and livestock in semi-arid and arid environments;

- Implementing effective waste management procedures that:
    - minimise artificial water availability;
    - avoid pollution to groundwater and drainage systems;
    - avoid artificial availability of food to wildlife populations (such availability can lead to distortions in predator and scavenger populations and their impacts on other biodiversity).
- Topsoil harvesting and storage to facilitate more effective rehabilitation of disturbed habitats;
- Management of wind and water erosion;
- Effective dust suppression management;
- Appropriate landscape assessment and planning for development in environments where such impacts are difficult to mitigate.

An IUCN publication in the Ecosystem Management Series was published in 2003 specifically addressing problems and approaches for best practice associated with extractive industries in semi-arid and arid zones (Gratzfeld 2003). This document is useful and should be available to all stakeholders concerned about mining development in such zones.

Best practice guidelines for strip and opencast coal mining

While underground coal mining is still widely practiced globally, most modern coal mining adopts strip mining or opencast techniques. While such techniques have the potential for significant primary impacts, the geology of coal seams can allow for an ongoing operational approach to reclamation that can be implemented while the mine is in operation. This allows for habitat recovery to proceed while production continues, so reducing the extent and duration of the primary impact of the mine on habitats and other land-uses.

As discussed earlier in this section, the 1977 Surface Mining Control and Reclamation Act in the USA has been a useful statutory tool ensuring acceptable standards of reclamation practice in the coal industry, although coal mining landscapes throughout the country have experienced varying levels of successful reclamation with respect to biodiversity outcomes. In the mountainous Appalachians of the east impacts have been generally more significant and difficult to mitigate and reclamation more challenging. However, in the west the SMCRA has been more effective. Furthermore, the industry, together with OSM, has collectively developed a Handbook of Western Reclamation Techniques that has been very useful in realising high standards of habitat reclamation throughout the mine cycle (Hansen 1996).

The handbook covers operational management and reclamation techniques, addressing in great detail the following issues:

- Topsoil management: salvage and replacement;
- Hydrology: control structures; sediment control; reconstruction of hydrological features;
- Topography: hill and slope analysis; topographic shaping and backfill techniques;
- Wildlife mitigation and protection during the mining process: fencing; reducing powerline impacts; traffic and roads; providing interim habitat; raptor nest relocation;
- Vegetation: designing revegetation programmes; seeding, drill and hydroseeding and mulching techniques; planting and vegetation establishment; surface stabilisation; revegetation husbandry and monitoring;
- Post-mining land use: planning; establishing and managing new grazing regimes and ongoing livestock management.

The areas where coal mining is most prevalent in the west USA such as northern Colorado and Wyoming, with steppe and mountain landscapes that bear some similarity to Mongolia. Therefore

these techniques outlined in this document may be useful for consideration, modification and application in the country.

Copper and gold mining: managing Acid Rock Drainage

Acid Rock Drainage (or Acid Mine Drainage) is a weathering process where sulphide minerals exposed to water and air through mining of hard rock ore bodies react to produce an acid solution. The resulting acid solution can significantly affect water quality both for wildlife and for human use. Acid Rock Drainage is one of the problems associated with the mining of ore bodies rich in sulphides, such as those associated with copper-rich porphyries. Acid Rock Drainage is a major environmental risk that is regularly assessed for new mines and remains a problem at many historical and abandoned mines. Historically, Acid Rock Drainage was not a matter for regulation and as it is a long term problem, Acid Rock Drainage becomes a lasting and costly negative environmental legacy. Where recognised as a potential problem, Acid Rock Drainage can often be prevented and managed for. Even so, such management programmes will need to be in place often long after the mine has been closed. Current practices in mine development and impact assessment identify the potential for Acid Rock Drainage at an early stage, and should be fully addressed at EIA stage. The assessment should include includes strategies to control or manage Acid Rock Drainage at the outset of operations. There are several mine sites that have had the potential for Acid Rock Drainage and have operated and closed successfully without causing pollution problems. Water collection, retention and lime treatment is a typical method employed, allowing for de-acidified water to be released to the environment. However, treatment may be required in the long-term, beyond mine closure. The requirements and costs for managing Acid Rock Drainage should be identified in Mine Closure Plans and financial provisions or bonds provided to ensure that mining companies are able to manage the long term liability. In recognition of the serious, long-term nature of Acid Rock Drainage, the International Network for Acid Prevention (INAP) is an industry group that has formed to help address this challenge. INAP exists to fill the need for an international body which mobilises acid drainage information and experience. The network was founded in 1998. Since then INAP has become a proactive, global leader in this field. It comprises some of the leading mining companies in the world, many of which are ICMM members (www.inap.com.au).

Other organisations working on best practice responses to Acid Rock Drainage are:

- The Mine Environment Neutral Drainage Program (www.nrcan.gc.ca/ms/canmet-mtb/mmsl-lmsm/mend/);
- The Acid Drainage Technology Initiative (www.unr.edu/mines/adti/);
- The Australian Centre for Minerals Extension and Research (www.acmer.uq.edu.au/);
- The Partnership for Acid Drainage Remediation in Europe (www.padre.imwa.info/index.html).

Gold mining and mercury pollution

Artisanal and small-scale gold mining is widespread in Mongolia and in contrast to other mining sectors, where mercury pollution is decreasing, the artisanal mining of gold remains an area of serious concern, where a high percentage of small-scale miners use the mercury-based amalgamation process. Mercury is a key pollutant and a cause for growing concern because of the long-term impacts on ecosystems and human health. Artisanal mining accounts for about 25 percent of the world's gold output. The resulting associated contamination and introduction of mercury into the food chain have potentially catastrophic results for the environment, miners' health and the health of people living in catchments affected by such artisanal mining.

In response to this situation, much effort has gone into weaning small-scale miners off the mercury process. One such body addressing the problem has been the United Nations Industrial Development Organisation (UNIDO). UNIDO has been conducting a global programme on the Abatement of Mercury in Artisanal Mining funded by the Global Environment Facility (http://www.gefweb.org) and participating countries.

UNIDO (http://www.natural-resources.org/minerals/cd/unido.htm) has been developing a programme for introducing cleaner artisanal gold mining and extraction technologies. In this respect, UNIDO offers a range of cross-discipline programmes, addressing measures for environmental protection, introduction of new technologies and manufacturing of relevant equipment and development of training programmes.

Some selected mining company approaches to responsible biodiversity safeguard and management

In the 1990s, the global mining sector recognised that it was perceived in a very poor light worldwide. The sector realised that attaining the 'Licence to operate' was becoming difficult and there was recognition that something needed to be done to improve standards and standing across sector. There was a realisation that a sector-wide response was necessary, because poor performers in the industry were influencing the reputation of better companies.

The Global Mining Initiative (GMI) was established in 1998 by nine of the leading mining companies in the world to address sectoral reform, undertake an internal review of the sector and a rigorous study of the societal issues the sector was facing. The GMI set out a programme of work that culminated in the development and completion of the Mining, Minerals and Sustainable Development Project, which presented its report to the 2002 World Summit on Sustainable Development in Johannesburg. Within this context, biodiversity and the environment became more clearly defined as issues requiring clear policy development among many of the leading companies in the sector. As a result of this sectoral collaboration, ICMM was established and now lists 16 of the world's leading mining companies and 27 industry associations as members. This organisation has been a very significant vehicle for the ongoing development of best practice, both in terms of biodiversity as in terms of societal issues.

In the meantime, individual mining companies, themselves ICMM members, have been developing policies and practices for more strategic and effective management of the biodiversity risks that they face**.** A number of examples are given below:

BHP-Billiton

Within the context of BHP-Billiton's Sustainable Development policy of 2007, which aspires to Zero Harm to people, host communities and the environment, the policies on biodiversity and the environment reads as follows:

- Identify, assess and manage the risks to employees, contractors, the environment and our host communities;
- Set and achieve targets that promote efficient use of resources and include reducing and preventing pollution;
- Enhance biodiversity protection by assessing and considering ecological values and land-use aspects in investment, operational and closure activities.

With this overarching policy statement in mind it appears that BHP-Billiton product groups across the company are responding to local challenges for addressing biodiversity management. So for example, BHP Billiton Iron Ore is developing a Biodiversity Strategy informed by the issues that are being met in the Pilbara region of Western Australia. The development of the strategy has involved a consultative approach engaging relevant

stakeholders (government, academia, NGOs) as well as consultants, in order to build an informed strategy. The resulting goals are:

- To conserve, protect and minimise impacts on biodiversity;
- To ensure no loss of species;
- To leave sustainable, functioning ecosystems that mimic regional landscapes.

It would appear that the initiative to develop such strategies are business-unit or product-group led, rather than through an overarching global approach. Whether this approach can result in a true global strategic appreciation for biodiversity priority-setting and action planning is not clear at this time.

Newmont

The company acknowledges that mining intrinsically impacts the land where it operates. As a company it is committed to protect biodiversity throughout the lifecycle of its mines, from exploration through construction, and operations to closure. The approach is to conduct relevant detailed baseline surveys to identify key ecological sensitivities in areas where they plan to operate. These surveys help assess potential environmental impacts and plan ways to minimise negative impacts throughout the mine lifecycle.

In 2005, Newmont began collaborating with Conservation International, an NGO focused on conserving global biodiversity, to help it better understand its impacts and develop a global biodiversity strategy. Newmont's relationship with Conservation International is intended to help integrate biodiversity issues into their environmental policies, operating standards and management systems.

Newmont intended to develop its global biodiversity policy through 2006, with a view to undertaking site-targeted biodiversity risk assessments. As of 2007, biodiversity risk mapping was conducted at two operations and one exploration site. However, the global biodiversity policy and strategy target was not completed as climate change became a priority issue for 2007.

Rio Tinto

In 2004, Rio Tinto completed the development of a corporate biodiversity strategy. The strategy was informed by Rio Tinto's leading participation in ICMM and its biodiversity partnerships with some of the world's leading conservation NGOs, such as BirdLife International, Conservation International, Fauna & Flora International and the Smithsonian Institution. The development of the strategy was managed by an internal Rio Tinto steering group, supported by an external advisory panel of six invited international experts from conservation and community development organisations, chaired by BirdLife International.

Rio Tinto published its biodiversity strategy in 2004, and launched the strategy at the IUCN World Conservation Congress in Bangkok. It declared its position statement on biodiversity to be as follows:

"Rio Tinto recognises the importance of the conservation and responsible management of biological diversity as a business and societal issue. We aim to have a Net Positive Impact on biodiversity.

We are committed to the integration of biodiversity conservation considerations into environmental and social decision making in the search for sustainable development outcomes. We recognise that this may mean that we do not proceed in some cases.

Rio Tinto seeks a position of leadership and influence in the mining industry on biodiversity issues. We believe that recognition of that position and of our performance on biodiversity issues will create benefits for our business. We are committed to:

- *The prevention, minimization and mitigation of biodiversity risks throughout the business cycle;*
- *Responsible stewardship of the land we manage;*
- *The identification and pursuit of biodiversity conservation opportunities, and;*

- *The involvement of communities and other constituencies in our management of biodiversity issues."*

The implementation of this strategy across the Rio Tinto group has been underway for many years. The aspirational position on achieving Net Positive Impact requires that the mitigation hierarchy approach be followed, seeking to reduce the impacts they have on biodiversity by: avoiding impacts in the first place; minimising them where they cannot be avoided; and restoring natural ecosystems after operations are complete (or during operations if possible). If, after all mitigation measures are undertaken to reduce impacts, there is still recognised to be net residual loss of biodiversity, then compensation in the form of a "biodiversity offset' can be used to meet, and in some cases exceed, this residual loss. With new mine project under design and the permitting process it is recognised that identifying and assessing the quantified values along the mitigation hierarchy is possible, and that the appropriate biodiversity offset can be identified at an early stage in the project's development. In addition, Rio Tinto is currently developing a methodology for identifying biodiversity offsets, with advice from BirdLife and other NGOs.

Rio Tinto has produced a guidance document for its operations, entitled *Sustaining a Natural Balance: a Practical Guide to Integrating Biodiversity into Rio Tinto's Operational Activities*. The guidance is designed to help Rio Tinto staff evaluate, assess and manage biodiversity issues on their sites. It helps them to work with their neighbouring community and other interested groups (including external specialists when needed) to set priorities for action. Biodiversity Action Planning and biodiversity value assessments (at new projects) are underway at mining projects in Brazil, Guinea, Madagascar, and Namibia. In addition, through collaborative partnership with various biodiversity NGOs, Rio Tinto is supporting relevant conservation actions in the vicinity of their many operations that can contribute to an assessment of their contribution to achieving Net Positive Impact.

Xstrata

Xstrata's Health Safety and Environment standard for biodiversity and land management requires all operations and projects to identify biodiversity-rich and sensitive areas systematically. It requires such operations and projects to develop and implement biodiversity action plans. Biodiversity-rich sites are those associated with Protected Areas and non-protected areas recognised for their biodiversity value, while sensitive sites are those associated with significant levels of species endemism and globally threatened species. The company has a clear and documented appreciation of the location and significance of its global managed operations with respect to Protected Areas and areas of high biodiversity value.

Within the context of their sustainability policy, "all significant potential and actual impacts of their activities and operations on the environment, biodiversity and landscape functions are identified, analysed, evaluated and eliminated or otherwise treated, with the aim of preserving the long-term health, function and viability of the natural environments affected by their operations. Scientifically sound technologies and procedures are developed and implemented for the effective management and conservation of biodiversity and landscape functions in the areas affected by their operations".

Xstrata appears committed to address comprehensively all aspects of site and project operations that could impact the natural environment and to undertake baseline surveys and EIAs at appropriate points in the project or operating life cycle. Essentially Xstrata appear to be addressing the mitigation hierarchy in their systematic approach to evaluating biodiversity features of interest, undertaking priority-setting and identifying and addressing the potential impacts on these, with respect to the full range of operational activities associated with their mining operation.

Systems and procedures are established and implemented to identify and document significant natural resource conservation issues, such as the use of water, energy and raw materials. An emphasis on achieving high levels of understanding on baseline biodiversity and landscape function at an early stage is commendable, with an appreciation on ecosystem function a significant attribute of their approach.

A monitoring commitment throughout the life cycle of a project including post-closure, with regard to species and habitat loss or gains; factors that impact on biodiversity; security of protected areas; management of biological resources; ongoing rehabilitation and restoration of ecosystems. Xstrata has adopted an approach to identifying and safeguarding biodiversity offsets at some of its operations and appreciates the value of achieving like-for-like offset outcomes.

The International Council for Mining and Metals (ICMM)

ICMM commenced its dialogue with IUCN in 2002, following the WSSD Summit in Johannesburg, in an effort to progress better value exchange between the biodiversity conservation sector and the global mining community. Since then there have been a number of useful outcomes clarifying ICMM's position and approach to developing best practice. These are few selected examples:

- Position Statement on Mining and Protected Areas (August 2003);
- Integrating mining and biodiversity conservation: case studies from around the world (2004);
- ICMM Biodiversity Offsets paper (2005);
- Mining and Indigenous Peoples issues (March 2006);
- WCPA Management Categories Task Force – response to IUCN in 2007.

A landmark document was the production of the Development of *Good Practice Guidance for Mining and Biodiversity* (2006); this was a key outcome of the IUCN – ICMM dialogue and involved an exhaustive public consultation through regional stakeholder workshops with NGOs and ICMM members during 2005. The resulting document is a very useful toolkit addressing mine project development and associated biodiversity risks and management throughout the mine cycle from exploration through to closure.

The publication documents different components of the mine cycle through exploration, pre-feasibility assessment, construction, development of ancillary infrastructure, extraction and mineral/metals processing, closure planning and implementation.

It presents a very straightforward practical approach to the identification of potential impact intersections between biodiversity and environmental features through the various activities associated with project development, mine operations and closure planning and implementation, highlighting the relationships between these activities and the environmental features that might be impacted by them.

It outlines management systems and assessment tools both in terms of Social and Environmental Impact Assessment, scoping and screening, determining, evaluating biodiversity significance, determining significant biodiversity aspects, and how this process leads on to the development of targeted biodiversity action planning. It also looks critically at the stakeholder engagement process. In short, as a toolkit, it is an extremely useful document, which if used by the mining sector and government, will guide effective best practice in managing and safeguarding biodiversity throughout the mining cycle.

The ICMM is a valuable forum for global and national engagement, one where a variety of best practices relevant to the industry are being debated, developed and shared. It is recommended that the Mongolian National Mining Association consider the benefits of engaging with ICMM and that all sectors in Mongolia (private, public and civil society) consider the capacity that ICMM and its members can bring to achieving improved

standards of environmental and social practice to the extractives sector in Mongolia at this important time of growth and development.

Addressing biodiversity impacts and conservation through the Mitigation Hierarchy: aspiring to "no net loss"

Considerable mention has been made previously of the concept of the mitigation hierarchy. This has been a concept adopted by many in the extractives industries sector to identify a system of understanding whereby the extent and responsibility for biodiversity (and other) impacts are clarified and the process of minimising those impacts can be realised and put into practice as a mine project develops. Ultimately, it is about recognising that efforts should be made at the outset of project development and design that seek to minimise environmental and biodiversity impacts at the earliest possible stage.

We have seen that such companies as BHP-Billiton and Rio Tinto aspire to "no net loss", "Zero Harm" or "Net Positive Impact" (NPI). These are inherently quantitative commitments that can only be achieved and accounted for if adequate baseline data on the biodiversity interests pertinent to the mine project site and its wider area is secured and appreciated. If adequate baseline is not achieved, then any claims to zero harm or NPI cannot be verified and efforts at mitigation throughout the various operational phases of mine development will not have the benefit of clearly identified biodiversity targets. For existing mine projects, many of which may have operated for decades, the absence of adequate baseline at the EIA stage precludes the ready achievement of "no net loss" or NPI. Such operations may attempt to retrospectively identify a baseline but this will be difficult. For new projects, at exploration or pre-feasibility stage, the task is more straightforward. Nevertheless achieving an adequate baseline will require a clear commitment, one that government should require as standard for assessing permit applications and that the company should obtain to effectively enter the process of following the mitigation hierarchy.

What should be aspired to in obtaining an effective and adequate baseline data set for a project? The screening and scoping of biodiversity issues is critical. It is appreciated that many areas will not have ready data on biodiversity but this will only be established after a thorough desktop search has been undertaken, looking at all historical and current survey activities that may have been undertaken in the area. This will help identify the gaps and inform which surveys are appropriate and necessary. Protected areas and their local, regional, national and international significance needs to be established, both in terms of the impact assessment but also to potentially inform offset options in the future. Even if the area is not formally protected, has it been identified as a biodiversity priority (many IBAs will fall into this category)? What is the government or other stakeholder value regarding the area? Does the area support globally or nationally threatened species?

A thorough baseline analysis is a key prerequisite to an effective and thorough EIA. As part of the EIA or following receipt of an environmental licence or permit, a company may wish to undertake a further Biodiversity Values Assessment: identifying appropriate areas for targeted management action within the context of the project's development and operation. This will in turn inform the company's engagement with the mitigation hierarchy, as it will be able to:

- Avoid unnecessary impacts by the undertaking of informed project design;
- Avoid unnecessary impacts through an understanding of the project's potential indirect impacts in the wider environment and plan accordingly;
- Minimise its impacts through project development, construction and ongoing operational management;
- Avoid unnecessary impacts through informed project design when mine

expansion phases are considered;
- Achieve optimum outcomes for restoration and rehabilitation based on best practice restoration techniques appropriate to the outcomes identified in the biodiversity values assessment.

On the basis of biodiversity impacts being avoided where possible and minimised and mitigated throughout mine operation and restoration to closure, then the application of an appropriate *offset* can be identified. In practice of course, a biodiversity offset need not only be identified when a mine is going into closure. Effective and informed forward planning can obtain a clear sense of what the net residual loss of biodiversity may be during the mine cycle, and inform a prior decision as to the identity and extent of biodiversity action required to offset such residual loss. It is this practice which can bring biodiversity offsets into the permitting process and which is receiving a considerable amount of attention at the present time. Permitting legislation in Brazil and Australia, as discussed earlier, institutionalise the process of biodiversity offsetting for development permitting. However, it is important that the process of identifying and permitting a biodiversity offset be based on a clear set of principles to ensure legitimacy of the concept in serving to safeguard and protect biodiversity. In addition such principles will ensure a clear rationale that brings transparency to the process and encourages appropriate stakeholder participation and support.

Biodiversity offsetting

The concept of biodiversity offsetting is gaining momentum as a biodiversity and development tool. While as a rough concept it has been in use in various countries in a variety of forms (e.g. mitigation banking in the US, compensatory measures for development in Brazil) , it is now receiving considerable cross-sector attention as a key tool for offsetting residual impacts to biodiversity through various types of development, be it mining, built development, agriculture or forestry. However, "biodiversity offsets" can be potentially abused, should they be used to gain permits where the biodiversity value is so critical that development is either inappropriate because of the significant and lasting losses that will result, or where no like-for-like offset can be identified to rectify such loss. In addition, loose and undisciplined use of the concept may become a currency for attaining development permits in many inappropriate situations, whether they are environmental or social impacts or both. As a result there is considerable criticism of the approach from some quarters and opposition to its development and mainstream use.

Consequently organisations that are working with industry to improve biodiversity outcomes are becoming aware of the need to use offsets only in appropriate circumstances. Some biodiversity working groups representing a range of stakeholders addressing biodiversity planning for specific mining projects recognise the need to identify biodiversity offsets within the rigorous context of the mitigation hierarchy, and with a clear need to achieve significant positive outcomes for biodiversity that may not otherwise be achievable.

Development of the concept is also being progressed by BBOP, a relatively new partnership between companies, governments and conservation

experts to explore the development of the biodiversity offset concept and how it should be implemented in practice to achieve "no net loss" for biodiversity. Its Secretariat is comprised of Forest Trends, Conservation International and the Wildlife Conservation Society. Technical guidance is provided by an International Advisory Committee, comprising experts from government (e.g. State Government of Victoria, Australia, and USFWS), civil society (e.g. TNC, WWF, BirdLife International and IUCN) and companies in different sectors (e.g. Rio Tinto, Anglo American, Newmont, Shell and Insight Investment).

BBOP is trying to demonstrate, through the development of best practice guidelines and a portfolio of pilot projects, that biodiversity offsets can help achieve significantly more, better and more cost-effective conservation outcomes than normally occurs in major development projects. BBOP expects that biodiversity offsets will become a standard part of business practice for those companies with a significant impact on biodiversity. The routine mainstreaming of biodiversity offsets into development practice will result in long-term and globally significant conservation outcomes. At the same time, demonstrating "no net loss" of biodiversity will help companies secure their license to operate and manage their costs and liabilities.

BBOP is clear that developers should pursue biodiversity offsets only at the end of the mitigation hierarchy, after they have reduced and alleviated residual environmental harm as much as possible. Offset activities must demonstrate additional, measurable conservation outcomes. While appropriate offset activities will vary from site to site, a range of different land (and marine) management interventions could typically be involved in biodiversity offsets, including:

- Strengthening and supporting ineffective protected areas: stewardship;
- Safeguarding and supporting unprotected areas;
- Establishing corridors linking protected areas and other key sites;
- Establishing buffer zones around protected areas;
- Removing invasive species;
- Addressing underlying causes of biodiversity loss;
- Developing sustainable livelihoods that benefit both local communities and biodiversity at such sites identified above.

Mindful of the risks associated with mainstreaming biodiversity offsets, BBOP, in order to minimise these risks, takes a strong stance, conveying to companies that:

- All operations should comply with all relevant international, national and customary law;
- Some projects may be inadvisable given their likely damage to biodiversity and associated business risk, even if they are allowed by law;
- The mitigation hierarchy of avoiding, minimising and mitigating harm to biodiversity should be followed prior to considering offsetting the residual impacts – the aim is to achieve "no net loss" to biodiversity.

Furthermore, biodiversity offsets should be developed through the identification and appreciation of key biodiversity values pertinent to the development site. There should be a rigorous attempt to quantify the residual impacts to determine the amount of offset required. There should be a range of appropriate options explored and there should be stakeholder consultation on the identification of the offset, engaging government, relevant NGOs and local communities.

Given that engagement in the offset approach is currently voluntary, the private sector is keen to ensure that their voluntary efforts are regarded as both scientifically credible and socially acceptable. There is therefore interest in BBOP helping design

a standard methodology, to provide credibility, practicality and political support for the approach. BBOP is therefore developing toolkits to provide guidance on designing and implementing biodiversity offsets to industry, policy makers, financial institutions and civil society organisations. BBOP profiled its draft guidelines at CBD COP 9 in Bonn, Germany in May 2008.

While it is important to maintain a disciplined approach to the identification and use of biodiversity offsets, this should not preclude creative consideration as to how such a mechanism, particularly if considered as a legislative tool (such as being developed and implemented in Queensland's Eco-Fund (Australia)), can bring real benefits to the national protected area network and to wider biodiversity and sustainable development interests. With Mongolia's joint aspirations for development in the mining and tourism sectors, expanding and bringing support to the national protected area network could be an exciting area for consideration.

Identifying the indirect impacts associated with mining development and the need for Strategic Environmental Assessment (SEA)

Understandably, most attention on assessing a mine development focuses on the primary impacts associated with the mine's "footprint". The primary impacts can be dramatic, involving the mass removal off vast amounts of rock, sometimes removing mountains, or covering significant areas of land under waste materials. However, the "indirect (secondary) footprint" of a mine, for which a company and government may share joint responsibility, is frequently ignored or underestimated. The reality of such an indirect impact may take years to manifest, until such time as the development really establishes itself, with considerable accumulative impacts on local and even regional populations. What follows are often associated impacts on biodiversity at considerable distance from the mine itself. Beyond its primary impacts, a mine may trigger or facilitate other socio-economic developments within its catchment that change land-use patterns and pressures.

A mine may develop within one of a range of development contexts. Understanding the nature of a particular context will be important in determining the nature of responsibility that a company, and government, should demonstrate if social and environmental risks are to be minimised. The following questions help assess the nature of the risk:

- Is the mine to be located in an area that has minimal infrastructure?
- Does it take place within an already well-established settlement pattern?
- Is it within a region with a developing economy?
- Is institutional capacity well developed or not?
- Is development planning adequately regulated?
- Will the proposed mine bring employment and other development benefits to the region, significantly beyond what is already present?
- Is the mine development isolated or is it part of a wider national or regional wave of development?
- Is it dependent on the provision of other resources, such as energy (power), water (pipelines, reservoirs), major transport facilities (roads, railways, ports)?
- Will it provide for these independently and exercise management control, or in partnership with regional/national government and other agencies?
- Are there existing but potentially related development issues in the region?
- Can the mine contribute to cumulative impacts?
- Will the mine have the potential to facilitate the spread of invasive species into/ throughout the region?

- Will the mine development be adjacent or near wilderness areas or protected areas?
- Are there globally threatened species conservation issues within the region?

Mine developments can trigger unintended impacts in a variety of ways:

- Through ancillary roads, provide access into areas that were previously inaccessible. e.g. exploration tracks can provide new access to loggers and herders and farmers;
- Through creating a perception of newly available employment, or by creating settlements that require a variety of services, effect the in-migration of peoples not previously associated with the area;
- The expanded population can pressurise regional resources at local levels. e.g. fuelwood, charcoal, meat from wild animals, recreational and commercial hunting and trapping;
- Where dependent on other resource developments, the mine becomes associated and identified with wider national development initiatives, such as road and port development or hydroelectricity and other energy provision schemes;
- Such developments may pressurise local resources accumulatively, leading to local or regional habitat degradation, transforming high quality biodiversity resources into highly developed landscapes;
- In addition, in-migrating populations with high expectations may suffer from a range of social problems if these expectations cannot be met;
- Changes in levels of regional development can impact local communities negatively as well as positively, if no socio-economic planning occurs;
- Pressure on communities can in turn put additional pressure on biodiversity (greater affluence and greater poverty).

In many countries to date, mine, infrastructural and other developments are frequently assessed and progressed in isolation. However, just as individual mining projects are not conceived in isolation, particularly where regional development initiatives are responsive to increasingly global commodity and energy markets, so their environmental and social impacts should be considered on a similar, wider scale. In today's increasingly globalised environment, where even some of the most remote areas are influenced by commodity and energy demands experienced in developing and developed regions of the world, there is a clear need for strategic environmental assessment that can underpin and inform regional planning initiatives. An example that BirdLife International is currently engaged with is in Namibia, where the global demand for uranium has increased to trigger a national "uranium rush", which is poised to have significant regional effects on the socio-economic environment and on the unique biodiversity and landscapes associated with the central Namib desert (which underpins Namibia's leading tourism industry). There is currently a belated but nevertheless welcome scramble to develop an SEA for the region, led by the Chamber of Mines of Namibia and supported by the growing number of mining companies arriving in the area and by a rapidly growing stakeholder community.

To this end, this section ends with a recommendation for developing Strategic Environmental Assessments at both regional and national levels within Mongolia, if the advantages to development are to be fully realised, while the risks associated with it to biodiversity and culture are to be avoided and minimised. Such SEAs will benefit from the development of the following:

- Biodiversity resource mapping: priority-setting;
- Ecosystem services mapping;
- Industrial development dependencies – power/energy, water, etc.;

- Settlement services – energy, water, agricultural products, etc.;
- Institutional mapping and stakeholder analysis;
- Analysis of the wider development environment;
- Wide stakeholder engagement;
- Options analysis – alternate sustainable developments; alternate locations;
- Development of integrated cross-sectoral planning frameworks – decision making institutions and issues (cultivating 'joined-up thinking');
- Lastly, it would not be inappropriate to consider the potential effects of climate change.

9.2 Examples of best practice with regard to tourism

IUCN guidelines for tourism in protected areas

IUCN's *Guidelines for Tourism in Parks and Protected Areas of East Asia* (Eagles *et al.* 2001) provide an excellent basis for developing sustainable tourism plans for protected areas in the region. Table 26 outlines the principal steps for formulating such plans, as recommended by IUCN, together with suggestions on how these could be applied in the Mongolian context. As the guidelines stress "some items, such as creating an inventory of natural, cultural and tourism resources, are best placed in the early planning stages. If tourism development is already in progress without a plan, it is never too late to incorporate steps from the checklist in an attempt to better plan for development and associated impacts".

Table 26: Steps for formulating sustainable tourism development plans for protected areas recommended by IUCN and their application to Mongolia

Recommended step	Application to Mongolia
1. State clear objectives for sustainable tourism for each park.	IUCN provides useful guidance (adapted from FNNPE 1993) on what these objectives might cover that is highly relevant to Mongolia. Environmental objectives might include: (1) ecological conservation, including conservation of biodiversity; (2) land conservation; (3) watershed management; and (4) and air quality maintenance. Cultural objectives might include: (1) better knowledge and awareness of conservation among local people and visitors; (2) appreciation of local natural and cultural heritage; and (3) making sustainable tourism part of local and national culture. Social objectives might include: (1) visitor satisfaction and enjoyment; (2) improvement of living standards and skills of local people; (3) demonstration of alternatives to mass and package tourism and promotion of sustainable tourism everywhere; and (4) enabling all sectors of society to have the chance to enjoy protected areas. Economic objectives might include: (1) improvement of the local and national economies; (2) provision of local business and employment opportunities; and (3) generation of increased revenue to maintain protected areas.

Recommended step	Application to Mongolia
2. Compile an inventory of natural and cultural features, as well as of existing tourism use and potential. Map and analyse the information.	The conservation importance of a protected area will vary from site to site, as will the extent to which this resource is vulnerable to tourism development. It is important, for example, to document the presence of breeding and moulting water birds, and ranging requirements of ungulates. This knowledge is essential for protected area planning and impact assessment. Detailed inventories are not essential, and can be built up over time, providing systems are in place to store and recover data. Local knowledge is often the best and quickest starting point.
3. Involve local people.	Perhaps more than in any other country in East Asia, both the tourist experience and the provision of tourist services in Mongolia are dependent on the involvement of local people. They need to be involved in the planning and provision of sustainable tourism and tour operators and government agencies need to ensure they derive real benefits. Opportunities should be taken to outsource the purchase of goods and services from local communities, and to link them to the supply chain where local communities themselves have invested in *gers* for tourists.
4. Work in partnership with local people, the tourism sector and other regional and local organisations.	Partnerships between protected area authorities, tour operators and local communities are essential. Given that a high proportion of visitors to protected areas in Mongolia are on organised tours it is important that their operations are sensitive to the environmental and cultural features of the site, follow protected area rules, and provide accurate and up-to-date information to visitors. Useful guidelines for tour operators have been produced by the Tourism Council of Australia (1999) and the Ecotourism Society (1993). The latter provides guidance on *inter alia* pre-departure programs, guiding programs, monitoring programs, management programs, and local accommodation. IUCN have adapted the Ecotourism Society guidelines, to focus on the following: (1) prepare travellers in advance of their trip by providing advice in advance on how negative impacts can be minimised, and how to interact with local cultures; (2) minimise negative visitor impacts by offering literature and briefings, leading by example, taking corrective actions, maintaining small enough tour groups, and avoiding areas that are under-managed and over-visited; (3) minimise nature tour company impacts by ensuring that managers and staff know and participate in all aspects of company policy to prevent negative impacts; (4) provide training to managers and staff in programs that will upgrade their ability to communicate with and manage clients in sensitive natural and cultural settings; (5) contribute to conservation of the regions being visited; (6) provide competitive local employment in all aspects of business operations; and (7) offer site-sensitive accommodation that is not wasteful of local resources or destructive to the environment and that provide ample opportunities for learning about the environment and sensitive interchange with local communities. It is essential that any guidelines developed are brought together in a participatory way to maximise the chances of ownership, adherence and self-regulation.

Recommended step	Application to Mongolia
5. Utilise zoning to identify and plan for areas where higher levels of tourism impacts may occur without harming areas of ecological significance.	As previously discussed, zoning of protected areas to accommodate tourism is critical. Zoning needs to be specific in covering access, use of vehicles, location of *ger* camps, suitable camping places and access to water, and visitor hotspots. Zoning needs to give primary consideration to areas that are especially sensitive from a wildlife point of view, and where soils and water supplies are especially vulnerable. It is important that zoning is as simple as possible, and translatable into management actions and visitor materials that are easy to understand and comply with. Advising on tourism development in Western Mongolia, Wigsten (2005) has commented that if *ger* camps are to be permitted within protected area boundaries they should not be allowed to develop freely, and that certain standards should be followed, including: (1) no concrete floors: *gers* should rest directly on the ground, as is the case for all herdsmen; (2) parking places should be kept at a distance from *gers* and the access road should be thought out; (3) windmills and solar panels should be used for power generation, and not diesel generators; (4) there should be a maximum 14 *gers* for guests, so that the site is manageable, possible to run with composting toilets, basic shower devices and solar and wind power generation for the freezer; (5) the tour company should demonstrate a readiness to buy meat and milk products from local people, hire their animals, and provide employment; (6) there should no flush toilets - long drop dry composting toilets should be used, kept 60m away from a water source; (7) staff (usually young and urban) should not be allowed to play loud music; and (8) *gers* should not be located at prime tourist attractions, but situated in such a way that visitors need to travel from the camp to the main attractions and therefore stay for longer at the camp. According to Wigsten, the above works well at some existing sites in Mongolia (i.e. Jalman Meadows and Arburd Sands in Tov aimag, Dungenee in Omnogobi aimag and Delger *Ger* Camps in Bulgan aimag). Wigsten's company, Nomadic Journeys, offers US$ 5 per person per night additional payment to *ger* camp owners that offer the above low impact services. Unfortunately, water conservation management and the development of low impact *ger* camps, such as those described above, are discouraged by current EIA processes performed by environmental inspectors at aimag level. *Ger* camps owners who do not put up sign posts to their *ger* camps, do not provide flush toilets and western style showers (with running tap water) are not getting so-called "flowers" certification, and are required to pay penalties every year for not conforming to these regulations. Moreover, there is no incentive for investing in the more expensive solar panels and windmills, rather than diesel generators (J. Wigsten *in litt.* 2008).
6. Develop the limits of acceptable use for all parts of the protected area, set environmental standards, and ensure they are met.	Each protected area should determine the limits of acceptable use and this should be incorporated in the management plan for each site. This will need to be based on the best available information and best judgement by those knowledgeable about the area. Once levels of acceptable use are established, environmental standards need to be set and then monitored.

Recommended step	Application to Mongolia
7. Determine which tourism activities are compatible with the protected area and which are not, and develop related policies.	Related to Step 6, and informed by Step 2, each protected area should consider what activities are compatible with the sites natural values, and what would not be compatible based on experience elsewhere in the country. As with Step 6, this will need to be based on the best available information and best judgement by those knowledgeable about the area.
8. Assess the environmental, economic, social and cultural impacts of proposals for tourism development	Development of tourist infrastructure, both inside and outside of protected areas, is covered by the legal requirement for EIAs, which sets out the process for screening new projects, and the contents for environmental protection plans where these are needed. Where major developments are planned, these should be subject to extensive public consultation. EIAs should be informed by the values identified by Step 2.
9. Develop education and interpretation programs for visitors and local people that increase understanding and appreciation of the area's environment, culture, heritage and important issues.	Critical to the success of any protected area is the need to develop education and interpretation programs for visitors and local people. These should aim to increase awareness about the natural and cultural values of an area, affect visitor behaviour of visitors in order to minimise any impact, explain the objectives of protected area management, and alert the visitor to the sites main attractions and how they might be reached and experienced At sites where there is limited or no management capacity, codes of conduct for visitors should be developed and made available though brochures and signs. These codes need to brief, provide clear guidance on conduct, and provide reasoning for what is expected of the visitor. At certain sensitive sites, where globally threatened or otherwise sensitive species are present, it should be a requirement that certified guides accompany tourists in these places, and charges should be levied for this, and paid to the protected area.
10. Design methods to channel visitors through desired areas with minimal negative impacts.	The problem of disturbance has been highlighted above, and this is best dealt with through the use of methods to channel visitors. These might be trails, blinds or hides for observing wildlife, or natural observation points. These should be located with caution, and with the interests of the target species taking priority. Structures should be kept simple and easy on the landscape. The IUCN guidelines advise that trails should be easy to find, take visitors to interesting or well-known features, be of varying distances allowing for short and longer duration trips, be easier to walk on than surrounding land, be contoured on hills, be circular, be clearly marked especially at junctions, and avoid very sensitive habitat or species. Where possible, trail guides and simple maps should be available.
11. Survey and analyse tourist markets and visitors' needs and expectations. Ideally, this occurs both before and after developing ideas for new forms of tourism.	Tour operators and protected area managers should collaborate to determine visitors' needs and expectation, under the guidance of the Tourism Department.

Recommended step	Application to Mongolia
12. Brainstorm tourism products to be potentially developed and influence types of visitors choosing to visit. Identify the values and image of the protected area on which to base sustainable tourism and outline a promotional strategy for them.	Protected area staff should take the opportunity of visits by tour companies to discuss the values, and tourism opportunities, for their protected areas, and how these might be developed and promoted as attractions with due consideration given to conservation priorities. Outside assistance will likely be needed in the development of promotional strategies and materials.
13. Establish a program for monitoring the protected area and its use by visitors. At appropriate intervals evaluate the success of the plan in ensuring that tourism use maintains environmental standards. Revise the plan as needed.	Simple monitoring systems can be designed, that can involve protected area staff and local communities. Monitoring schemes should cover key species and habitats, management activities and use of the protected area by visitors (e.g. arrival date, duration of stay, group size, nationality, name of the tour operator, and any impacts on the area).
14. Assess resource needs and sources, including provisions for training.	Capacity development and a shortage of financial resources have already been identified as major limiting factors in the sustainable management of protected areas. An assessment of requirements, extending beyond tourism-related needs, will help managers to push for a greater allocation of resources. Stressing the links between protected areas, growth in tourism, and overall economic development, provide an important basis for making the case for more resources.
15. Implement the plan.	All too often, plans sit on shelves, with more time and resources invested in their preparation than there implementation. Plans need to be used in planning activities, preparing budgets, assigning staff, and reporting on progress. Their implementation needs to be monitored regularly.

Australian example of a funding mechanism to support a national ecotourism strategy

In 1994, the Australian tourism industry developed a National Ecotourism Strategy. This strategy contained 12 programme areas, covering 12 key ecotourism issues, such as integration of indigenous people into tourism, trail development, etc. This strategy was developed entirely by the private sector. However, once the Australian government saw that there was consensus within the industry, it backed the National Ecotourism Strategy with an allocation of AUD 10 million over four years. This mechanism meant that companies, civil society organisations or other stakeholders who wished to address any of the issues identified in the strategy were able to make alliances across sectors and access funds. The funding mechanism enabled different stakeholders to work together on implementing the strategy, according to their own strengths and interests.

Such a fund could be developed in Mongolia, where there is considerable scope for strategic partnerships between private sector tourism companies, conservation organisations and protected area management authorities. It would fill a gap in donor funding for tourism development, which has concentrated on overseas marketing and community-based tourism, while conservation issues and spatial planning have yet to be addressed (J. Wigsten *in litt.* 2008).

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Annexes

Annex 1. Nationally protected areas in Mongolia

No.	Site name	Year(s) designated	GIS area (ha)	Official area (ha)
	Strictly Protected Areas			
1	Bogd Khan Uul	1778/1957/1978	41,383	41,651
2	Dornod Mongol	1992	615,732	570,374
3	Great Gobi "A"	1975	4,644,091	5,311,730
4	Great Gobi "B"	1975	921,551	
5	Khan Khentii	1992	1,233,351	1,227,074
6	Khasagt Khairkhan	1965	31,854	27,448
7	Khokh Serkhiin Nuruu	1977	74,474	65,920
8	Khoridol Saridag	1997	227,968	188,634
9	Mongol Daguur "A"	1992	85,085	103,016
10	Mongol Daguur "B"	1992	18,617	
11	Nomrog	1992	333,155	311,205
12	Otgontenger	1992	96,620	95,510
13	Small Gobi "A"	1996	1,166,346	1,839,176
14	Small Gobi "B"	1996	695,036	
15	Uvs Lake	1993/1995	462,503	712,545*
16	Altan Els	1993/1995	171,203	
17	Tsagaan Shuvuut	1993/1995	34,624	
18	Turgen	1993/1995	133,810	
	National Parks			
1	Altai Tavan Bogd	1996	623,220	636,161

No.	Site name	Year(s) designated	GIS area (ha)	Official area (ha)
2	Dariganga	1993/2004	70,086	62,860
3	Gobi Gurvan Saikhan	1993/2000	2,680,819	2,694,307
4	Gorkhi-Terelj	1993	292,010	293,168
5	Ikh Bogd Uul	2007	262,858	282,931
6	Khan Khokhii	2000	214,331	555,924**
7	Khyargas Lake	2000	374,746	
8	Khangain Nuruu	1996	889,986	888,455
9	Khar Us Lake	1997	862,014	850,272
10	Khogno Tarna	2003	78,798	84,390
11	Khorgo Trekhiin Tsagaan Nuur	1965/1995	85,007	77,267
12	Khovsgol Lake	1992	848,828	838,070
13	Khustain Nuruu	1993/1998	57,341	50,620†
14	Moltsog Els	1993/1998	488	
15	Munkhkhairhan Uul	2006	308,230	300,000
16	Myangan Ugalzat	2002	63,129	60,000
17	Noyon Khangai	1998	59,162	59,088
18	Onon Balj "A"	2000	291,814	402,100
19	Onon Balj "B"	2000	102,881	
20	Otkhonii Khundii	2006	92,955	90,000
21	Siilkhem "A"	2000	77,843	142,778
22	Siilkhem "B"	2000	76,647	
23	Tarvagatai Nuruu	2000	557,447	545,609
24	Tsambagarav	2000	113,012	111,462
25	Tujiin Nars	2002	70,864	80,691
26	Ulaantaiga	2003	108,832	108,000
	Nature Reserves			
1	Alag Khairkhan	1996	36,100	36,400
2	Batkhan	1957/1995	21,759	21,850
3	Bulgan River	1965/1995	11,892	7,657
4	Burkhan Buudai	1996	51,571	52,110
5	Develiin Aral	2000	10,022	10,338
6	Ergeliin Zoo	1996	57,581	60,910
7	Ikh Gazriin Chuluu	2003	34,096	35,000
8	Ikh Nartiin Chuluu	1996	70,088	43,740
9	Khanjargalant Uul	2003	62,971	60,000
10	Khar Yamaat	1998	51,274	50,594

No.	Site name	Year(s) designated	GIS area (ha)	Official area (ha)
11	Lkhachinvandad	1964/1995	55,382	58,800
12	Nagalkhan	1957/1995	4,806	3,076
13	Namnan Uul	2003	29,709	29,600
14	Sharga	1993	320,046	390,071‡
15	Mankhan	1993	84,701	
16	Tesiin Gol	2006	108,589	101,000
17	Toson Khulstai	1998	471,937	469,928
18	Ugtam	1993	42,595	46,160
19	Yahi Lake	1998	248,672	251,388
20	Zagiin Us	1996	283,832	273,606
	Monuments			
1	Bulgan Uul	1965/1995	2,002	1,840
2	Dayandeerkhiin Agui	2006	31,303	28,000
3	Eej Khairkhan	1992/1995	22,904	22,475
4	Khuisiin 8 Lake	1992/1995	11,158	11,500
5	Khurgiin Hundii	2004	6,109	6,000
6	Shiliin Bogd	2004	18,152	17,200
7	Suikhent Uul	1996	7,717	4,830
8	Uran Togoo-Tulga Uul	1965/1995	5,420	5,800
	TOTAL		**22,413,136**	**21,808,309**

Data sources: WWF Mongolia and MNE; GIS areas calculated from polygons provided by WWF Mongolia
Notes: * = the official area is a combined figure for Uvs Lake, Altan Els, Tsagaan Shuvuut and Turgen, which are under a common management body; ** = the official area is a combined figure for Khan Khokhii and Khyargas Lake, which are under a common management body; † = the official area is a combined figure for Khustain Nuruu and Moltsog Els, which are under a common management body; ‡ = the official area is a combined figure for Sharga and Mankhan, which are under a common management body.

Annex 2. Locally protected areas in Mongolia

Aimag	No. of Local SPAs	Aimag-level Local SPAs	Soum-level Local SPAs	Unknown level	Area of Local SPAs (ha)
Arkhangai	30	3	27	0	552,375
Bayankhongor	36	19	2	15	2,817,750
Bayan-Olgii	14	5	9	0	126,632
Bulgan	3	3	0	0	49,173
Darkhan Uul	16	4	12	0	56,830
Dornod	57	57	0	0	3,211,381
Dornogobi	95	15	80	0	49,870
Dundgobi	134	11	117	6	470,785
Gobi-Altai	43	5	33	5	759,360
Gobi-Sumber	0	0	0	0	0
Khentii	35	10	24	1	680,742
Khovd	10	7	3	0	257,499
Khovsgol	127	124	3	0	530,492
Omnogobi	23	8	11	4	2,149,805
Orkhon	1	1	0	0	3,544
Ovorkhangai	15	11	3	1	104,888
Selenge	51	47	3	1	277,222
Sukhbaatar	56	28	27	1	2,461,656
Tov	145	131	2	12	1,413,616
Ulaanbaatar	12	1	11	0	41,054
Uvs	14	0	14	0	379,686
Zavkhan	20	2	18	0	137,145
TOTAL	**937**	**492**	**399**	**46**	**16,531,505**

Data source: WWF Mongolia, TNC and ALAGC.

Annex 3. Internationally protected areas in Mongolia

Ramsar Sites in Mongolia

Site name	Year designated	Official area (ha)	GIS area (ha)	Mongolian protection status	Area not protected (ha)
Mongol Daguur (Mongolian Dauria)	1997	210,000	325,221	Partially protected (Mongol Daguur Strictly Protected Area and four Local SPAs)	155,393
Ogii Lake	1998	2,510	3,859	Partially protected (Local SPA)	720
Terkhiin Tsagaan Lake	1998	6,110	7,277	Fully protected (Khorgo Trekhiin Tsagaan Nuur Natural Park)	0
Valley of Lakes	1998	45,600	62,306	Partially protected (two Local SPAs)	7,289
Airag Lake	1999	45,000	45,799	Partially protected (Khyargas Lake National Park)	12,772
Khar Us Lake National Park	1999	321,360	374,147	Partially protected (Khar Us Lake National Park)	26,851
Lake Achit and its surrounding wetlands	2004	73,730	100,133	Partially protected (Develiin Aral Nature Reserve)	91,955
Lake Buir and its surrounding wetlands	2004	104,000	106,305	Partially protected (two Local SPAs)	16,767
Lake Ganga and its surrounding wetlands	2004	3,280	31,595	Partially protected (Dariganga National Park)	1,390
Lakes in the Khurkh-Khuiten river valley	2004	42,940	36,478	Partially protected (Local SPA)	33,929
Lake Uvs and its surrounding wetlands	2004	585,000	602,478	Partially protected (Uvs Lake Strictly Protected Area and Tesiin Gol Nature Reserve)	108,004
TOTAL		**1,439,530**	**1,695,598**		**455,069**

Data source: Ramsar Convention Secretariat; GIS areas calculated from polygons provided by scientists at the Mongolian Academy of Sciences who originally proposed the sites for Ramsar designation.

World Heritage Sites in Mongolia

Site name	Year designated	Area (ha)	Mongolian protection status	Area not protected (ha)
Uvs Nuur Basin (natural site)	2003	810,234 (excluding 258,619 in Russia)	Partially protected (Altan Els, Tsagan Shuvuut, Turgen and Uvs Lake Strictly Protected Areas and Tesiin Gol Nature Reserve)	16,191
Orkhon Valley (cultural site)	2004	121,967	Partially protected (Khangain Nuruu and Otkhonii Khundii National Parks)	13,490
TOTAL		**932,201**		**29,681**

Data source: UNESCO.

Biosphere Reserves in Mongolia

Site name	Year designated	Total area (ha)	Core area (ha)	Mongolian protection status	Area not protected (ha)
Great Gobi	1990	5,300,000	985,000	Fully protected (Great Gobi Strictly Protected Area)	0
Bogd Khan Uul	1996	67,300	41,651	Fully protected (Bogd Khan Uul Strictly Protected Area)	0
Uvs Nuur Basin	1997	771,700	366,080	Fully Protected (Uvs Lake Strictly Protected Area)	0
Khustain Nuruu	2002	778,000	50,000	Fully Protected (Khustain Nuruu National Park)	0
Dornod Mongol	2005	8,429,072	570,374	Fully Protected (Dornod Mongol Strictly Protected Area)	0
Mongol Daguur	2007	732,000	51,400	Fully Protected (Mongol Daguur Strictly Protected Area)	0
TOTAL		**16,078,072**	**2,064,505**		**0**

Data source: UNESCO.

Annex 4. Natural sacred sites in Mongolia

No.	Site name	Level	Aimag(s)	Mongolian protection status
1	Suvraga Khairkhan	Regional	Arkhangai	Fully protected (Khangain Nuruu National Park)
2	Tsogt Sumber	Aimag	Arkhangai	Fully protected (Khangain Nuruu National Park)
3	Ikh Bogd Uul	Aimag	Bayankhongor	Fully protected (Ikh Bogd Uul National Park and Ikh Khalbagant Local SPA)
4	Khongorkhairkhan	Aimag	Bayankhongor	
5	Khureemandal (Edenemandal)	Aimag	Bayankhongor	
6	Noyonkhairkhan	Aimag	Bayankhongor	Fully protected (Khangain Bus Local SPA)
7	Olziit Uul	Aimag	Bayankhongor	
8	Altai Tavan Bogd Uul	Aimag	Bayan-Olgii	Fully protected (Altai Tavan Bogd National Park)
9	Tsambagarav	Regional	Bayan-Olgii, Khovd	Fully protected (Tsambagarav National Park)
10	Bulgan Uul	Aimag	Bulgan	
11	Khognokhan	Regional	Bulgan, Tov	Fully protected (Khogno Tarna National Park)
12	Darkhan Uul	Aimag	Darkhan Uul	
13	Naidag Uul (Haliar)	Aimag	Darkhan Uul	
14	Noyon Khongor	Aimag	Darkhan Uul	
15	Ikh Burkhant	Regional	Dornod	
16	Bayanbogd	Aimag	Dornogobi	Fully protected (Bayanbogd Local SPA)
17	Shariliin Ovoo	Aimag	Dornogobi	
18	Baga Gazriin Chuluu	Aimag	Dundgobi	Fully protected (Baga Gazriin Chuluu Local SPA)
19	Gurvansaikhan Uul	Aimag	Dundgobi	Fully protected (Tevsh, Baruun, Dund, Zuun Saikhan Uul Local SPA)
20	Ikh Gazriin Chuluu	Aimag	Dundgobi	Fully protected (Ikh Gazriin Chuluu Local SPA)
21	Ikh Khongor	Aimag	Gobi-Sumber	
22	Otsol Sansar - Choiriin	Regional	Gobi-Sumber	
23	Eej Khairkhan	Aimag	Gobi-Altai	Fully protected (Eej Khairkhan Monument)
24	Bereeven Khiid	Regional	Khentii	
25	Burkhankhaldun	National	Khentii	Fully protected (Khan Khentii Strictly Protected Area)
26	Ondorkhaan	Aimag	Khentii	Fully protected (Ondorkhaan Local SPA)

No.	Site name	Level	Aimag(s)	Mongolian protection status
27	Dayan Deerkhiin Agui	Aimag	Khovsgol	Fully protected (Dayan Deerkhiin Khureenii Suuri Local SPA)
28	Nuuriin Khuis - Khovsgol	Aimag	Khovsgol	Fully protected (Khovsgol Lake National Park)
29	Oliin Ovoo	Aimag	Khovsgol	
30	Renchinlhumbe Uul	Aimag	Khovsgol	
31	Gurvansaikhan	Aimag	Omnogobi	Fully protected (Gobi Gurvan Saikhan National Park)
32	Bayan Ondur	Aimag	Orkhon	
33	Batkhan	Regional	Ovorkhangai, Tov	Fully protected (Bakhan Nature Reserve)
34	Ikh Baga Khangain Ovoo	Regional	Ovorkhangai	Fully protected (Otkhonii Khundii National Park and Kharkhorin Local SPA)
35	Amarbayasgalant	Aimag	Selenge	
36	Tovkhon Khan	Aimag	Selenge	Fully protected (Tovkhon Khan Local SPA)
37	Altan Ovoo	Regional	Sukhbaatar	Fully protected (Dariganga National Park)
38	Darkhan Khan	Regional	Sukhbaatar	
39	Monkhkhaan	Aimag	Sukhbaatar	
40	Lamtnii Ovoo	Aimag	Tov	Fully protected (Bogd Khan Uul Strictly Protected Area)
41	Bogd Khan Uul	National	Ulaanbaatar	Fully protected (Bogd Khan Uul Strictly Protected Area)
42	Khan Khokhii	Aimag	Uvs	
43	Tsagaan Ergiin Ovoo	Aimag	Uvs	
44	Ulaan Uul (Ulaangom)	Aimag	Uvs	
45	Altan Els	Aimag	Zavkhan	
46	Bayasgalant	Aimag	Zavkhan	
47	Otgontenger	National	Zavkhan	Fully protected (Otgontenger Strictly Protected Area)

Data source: ARC and WWF Mongolia.

Annex 5. Important Bird Areas in Mongolia

No.	Site name	Aimag(s)	IBA criteria met					Total area (ha)	Area not protected (ha)
			A1	A2	A3	A4i	A4iii		
1	Khoton-Khorgon Lakes	Bayan-Olgii	X	X	X	X		19,629	0
2	Tsengel Khairkhan Mountain	Bayan-Olgii	X	X	X			52,726	52,726
3	Dayan Lake	Bayan-Olgii	X	X	X	X		13,537	0
4	Bulgan River	Khovd	X					32,700	29,197
5	Khokh Serkhiin Nuruu SPA	Bayan-Olgii, Khovd	X	X	X			74,502	8,365
6	Tolbo Lake	Bayan-Olgii	X		X	X		16,334	9,342
7	Achit Lake	Bayan-Olgii, Uvs	X		X	X		98,278	88,272
8	Uureg Lake	Uvs	X		X	X		28,308	28,308
9	Uvs lake	Uvs	X		X	X	X	502,462	49,319
10	Baga and Bayan Lakes	Uvs			X	X		5,317	749
11	Uvsiin Khar Us Lake	Uvs	X			X		13,601	13,601
12	Airag Lake	Uvs	X		X	X	X	73,348	13,653
13	Khongil	Khovd	X					6,027	4,939
14	Khar Us Lake	Khovd	X		X	X	X	297,265	38,272
15	Jargalant Khairkhan Mountain	Khovd	X	X	X			162,264	18,019
16	Khar Lake	Zavkhan, Khovd	X			X		83,798	3,701
17	Khomiin Tal	Zavkhan, Khovd	X		X	X		78,059	73,644
18	Santmargatsiin Bayan Lake	Zavkhan	X			X		14,205	14,205
19	Ulaagchinii Khar Lake	Zavkhan	X					13,439	13,439
20	Oigon Lake	Zavkhan	X			X		20,189	20,189
21	Telmen Lake	Zavkhan	X		X	X		24,175	24,175
22	Otgontenger Mountain	Zavkhan	X	X	X	X		88,753	4,733
23	Zavkhan River - Ereen Lake	Gobi-Altai	X			X		65,735	63,205
24	Khasagt Khairkhan Mountain	Gobi-Altai	X		X			28,309	3,597
25	Taigam Lake	Gobi-Altai	X			X		4,170	3,243
26	Boon Tsagaan Lake	Bayankhongor	X		X	X		43,262	3,588
27	Ikh Bogd Mountain	Bayankhongor	X		X			86,440	0
28	Orog Lake	Bayankhongor	X		X	X		20,195	0
29	Taatsiin Tsagaan Lake	Ovorkhangai	X		X	X		12,385	12,385

No.	Site name	Aimag(s)	IBA criteria met					Total area (ha)	Area not protected (ha)
			A1	A2	A3	A4i	A4iii		
30	Khangain Nuruu National Park	Arkhangai, Bayankhongor, Ovorkhangai	X		X			897,840	33,034
31	Terkhiin Tsagaan Lake	Arkhangai	X			X		21,072	2,676
32	Khovsgoliin Sangiin Dalai Lake	Khovsgol, Zavkhan	X			X		25,194	25,175
33	Erkhel Lake	Khovsgol	X		X	X		3,537	1,055
34	Darkhad Depression	Khovsgol	X		X	X		195,223	187,117
35	Khovsgol Lake	Khovsgol	X			X		380,212	33
36	Bulgan Tal	Khovsgol	X					40,445	40,420
37	Teshigiin Olon Lakes	Bulgan	X			X		5,774	5,774
38	Airkhan Lake	Khovsgol, Bulgan	X			X		7,212	7,212
39	Tarialan	Khovsgol	X			X		31,630	31,630
40	Selenge - Teel	Bulgan	X		X			18,568	18,568
41	Sharga Lake	Bulgan	X			X		2,118	2,118
42	Ogii Lake	Arkhangai	X			X	X	10,189	6,998
43	Dashinchilen Bayan Lake	Bulgan	X			X		1,598	1,598
44	Erdenesant Mountains	Tov	X		X	X		34,776	34,323
45	Ulziitiin Sangiin Dalai Lake	Ovorkhangai	X		X	X		1,491	1,491
46	Govi Gurvan Saikhan Mountain	Omnogobi	X	X	X			544,794	25,583
47	Borzon Gobi	Omnogobi	X		X			399,467	45,483
48	Galba Gobi	Omnogobi	X		X			828,328	530,865
49	Ikh Gazriin Chuluu	Dundgovi	X					9,300	2,142
50	Ikh Nartiin Chuluu Nature Reserve	Dornogovi	X		X			66,601	7,606
51	Eej Khad	Tov	X					36,867	36,828
52	Khustain Nuruu National Park	Tov	X		X			49,932	690
53	Selengiin Tsagaan Lake	Selenge	X			X		17,143	16,970
54	Delta of Orkhon and Selenge Rivers	Selenge	X			X		21,405	19,203
55	Khan Khentii SPA	Tov, Khentii, Selenge	X		X			1,234,755	8,059
56	Gorkhi-Terelj National Park	Tov	X		X			293,937	1,762

No.	Site name	Aimag(s)	IBA criteria met					Total area (ha)	Area not protected (ha)
			A1	A2	A3	A4i	A4iii		
57	Maikhant Mountain	Khentii, Dornogobi	X					42,015	35,530
58	Valleys of Khurkh-Khuiten Rivers	Khentii	X			X		35,722	31,302
59	Onon-Balj	Khentii, Dornod	X		X	X		104,841	25,797
60	Khar Yamaat Nature Reserve	Khentii, Sukhbaatar	X					51,404	3,792
61	Ganga Lakes	Sukhbaatar	X		X	X		26,841	753
62	Shaazan Lake	Dornod	X			X		5,485	164
63	Tsengeleg Lakes	Dornod	X		X	X		8,877	768
64	Turgen Tsagaan, Zegst, Tuulaitiyn Bur	Dornod	X					35,282	24,860
65	Ugtam Nature Reserve	Dornod	X			X		46,162	6,111
66	Mongol Daguur	Dornod	X		X	X		309,440	176,614
67	Khukh Lake	Dornod	X		X	X	X	11,548	0
68	Buir Lake	Dornod	X		X	X		90,476	12,214
69	Tashgain Tavan Lakes	Dornod	X		X	X		53,304	53,304
70	Nomrog	Dornod	X		X			378,097	49,376
	TOTAL							**8,358,313**	**2,109,867**

Data source: WSCC.

Annex 6: Regulatory framework for environmental protection

Mongolia has a long tradition of environmental protection legislation, dating back to Chinggis Khan's 13th century legal code, the *Ikh Zasag*, which prohibited, among other things, the pollution of water and the destruction of soil (Khamaganova 2001 cited in Farrington 2005).

Since the introduction of a democratic system of government in 1990, Mongolia has introduced several key pieces of legislation related to environmental protection, including the Constitution of Mongolia (1992), and Laws on Environmental Protection (1995), Environmental Impact Assessments (1998), Special Protected Areas (1994), Buffer Zones (1997), Land (2002) and Forests (2007). However, there remain a number of important gaps and limitations.

The Constitution of Mongolia

The fundamental rights of Mongolian citizens are set out in the Constitution of Mongolia, adopted on 13 January 1992. These include "the right to a healthy and safe environment, and to be protected against environmental pollution and ecological imbalance" (Article 16.1.2). The constitution imposes on its citizens a sacred duty "to protect nature and environment" (Article 17.2), and empowers the government "to undertake measures on the protection of the environment and on the rational use and restoration of natural resources" (Article 38.2.4). More specifically, the constitution imbues the state with the right to "hold responsible the landowners in connection with the land, to exchange or take it over with compensation on the grounds of special public need, or confiscate the land if it is used in a manner adverse to the health of the population, the interests of environmental protection or national security" (Article 6.4).

Law of Mongolia on Environmental Protection

The purpose of the Law of Mongolia on Environmental Protection (promulgated on 30 March 1995) is to "regulate relations between the State, citizens, economic entities and organizations in order to guarantee the human right to live in a healthy and safe environment, an ecologically balanced social and economic development, the protection of the environment for present and future generations, the proper use of natural resources and the restoration of available resources" (Article 1).

Article 4 imposes on citizens certain duties with regard to protecting the environment, while also granting them certain key rights in this regard, including "to bring claims for compensation for damage to their property or health resulting from adverse environmental impact against the person responsible for causing the damage" (4.1.1) and "to commence legal action against persons whose conduct causes adverse environmental impact and jeopardises the enforcement of legislation on environmental protection" (4.1.2).

Article 6 clarifies ownership of natural resources. According to this article, "the land, its underground resources, forests, water, animals, plants and other natural resources shall be protected by the State and… …unless owned by citizens of Mongolia, shall be the property of the State" (6.1), and "unless otherwise provided by law, citizens, economic entities, organizations, foreign citizens and legal persons may use natural resources upon the payment and collection of relevant fees in accordance with any contract, special permit, or licence" (6.2).

Article 14 confers a number of powers on the government with regard to environmental protection, including the power "to prohibit

citizens, economic entities and organizations from conducting production and other activities which would have an adverse effect on human health and the environment regardless of the form of ownership" (14.1.3).

Article 16 confers on aimag (or capital city) Citizens' Representative Khurals the power to establish Local SPAs. Specifically, they are granted the power to "make decisions on putting items not under special State environmental protection under local protection and to establish boundaries and protection regimes and to supervise their implementation" (16.1.3).

Article 25 places a general obligation on citizens, economic entities and organisations using natural resources for commercial purposes (i.e. including mining and tourism) to "maintain and enhance the land and environment if natural resources are used" (25.1.2).

Articles 26 and 27 concern the appointment, rights and duties of State environmental inspectors. Specifically, State environmental inspectors are conferred the authority "to require citizens, economic entities and organizations to eliminate adverse impacts or to suspend their activities for a certain period of time if they adversely affect the environment in breach of legislation on environmental protection, standards and permissible maximum levels" (27.1.3) and "to impose administrative penalties on those in breach of legislation on environmental protection as provided by law" (27.1.7).

Article 31 sets out the duties of private companies ("economic entities and organisations") with regard to protecting the environment and natural resources. These include a specific requirement for companies "engaged in environmentally adverse production" to budget for and implement measures to mitigate adverse effects and protect and restore natural resources (31.1.4). These duties, as they apply to mining companies, are further elaborated in the 2006 Law on Minerals.

Article 34 provides for economic incentives to companies to protect the environment, by such means as "the introduction of modern non-polluting and non-waste technology, progressive methods for environmental protection, the use and restoration of natural resources, and the reduction of adverse environmental impacts" (34.1.1). The carrot of Article 34 is combined with the stick of Article 35, which provides for fees and payments for the use of natural resources, and for compensation in the event that usage of natural resources or discharge of wastes or pollutants exceeds the limits permitted by contract and licence. Moreover, Articles 37 and 38 provide for compensation and fines to be paid by companies and individuals causing direct damage to the environment and natural resources as a result of unlawful conduct.

Law of Mongolia on Environmental Impact Assessments

Provision for EIAs is made by Article 7 of the 1995 Law on Environmental Protection. This provision is expanded upon by the Law of Mongolia on Environmental Impact Assessments (promulgated on 22 January 1998), the purpose of which is to "regulate relations concerning protection of the environment, prevention of the ecological misbalance, the use of natural resources, assessment of the environmental impact and decision-making on the start of a project" (Article 1).

Article 4 sets out the process for screening new projects, explicitly including mining. According to this Article, "the project implementer shall submit a project description… …and other related documents to the state central administrative body in charge of nature and environment or the local administrative body for screening" (4.4). This body will then determine whether "a detailed environmental impact assessment is required" (4.6).

The screening process will determine the scope of work for the detailed EIA, if required, the contents of which are set out in Article 5. In particular, EIAs must include an Environmental Protection Plan,

for implementing the recommendations of the EIA, and an Environmental Monitoring Programme, for monitoring processes and performance (Article 6). The Environmental Protection Plan shall include "measures to minimize, mitigate and eliminate adverse impacts identified during the detailed environmental Impact assessment as well as determine the timeline and estimated budget for implementation of those measures" (6.1.1).

Article 6 also provides for the placing of pecuniary guarantees, amounting to no less than 50 percent of the total cost of the environmental protection measures, in the environmental protection account of the local soum. However, this Article explicitly states that it does not apply to mining licence holders, adding that "the pecuniary guarantee of the environmental protection measures of the mining project shall be regulated by the legislation on mining" (6.3). Indeed, this is the case, as pecuniary guarantees for mining companies are addressed by Articles 38 and 39 of the 2006 Minerals Law.

Articles 12 and 13 provide for criminal and administrative penalties and financial compensation in the event of violations of EIA legislation. In particular, provision is made for suspension of project implementation "if project implementation activities do not meet the requirements defined in the environmental impact assessment report" (12.2.2).

Apart from a requirement that EIA reports contain "opinion of citizens and Presidiums of soum and [Citizens' Representative Khurals] of the area of the project implementation" (Article 5.4.8), there is no specific provision for public consultation in the EIA process. The public is only guaranteed access to EIA reports after they have been completed and approved. Article 5 stipulates that a copy of the EIA report is to be deposited with the state central administrative body in charge of nature and environment (i.e. MNET), which is required, by Article 7.5, to "ensure public access to the report".

Mongolian Law on Special Protected Areas

The purpose of the Mongolian Law on Special Protected Areas (promulgated on 15 November 1994) is "to regulate the use and procurement of land for special protection and the preservation and conservation of its original conditions in order to preserve the specific traits of natural zones, unique formations, rare and endangered plants and animals, and historic and cultural monuments and natural beauty, as well as research and investigate evolution" (Article 1).

To this end, Article 3 provides for the designation, at the national level, of State SPAs, which comprise the following four categories: (i) Strictly Protected Areas; (ii) National Parks ("National Conservation Parks"); (iii) Nature Reserves; and (iv) Monuments (Article 3). This article also provides for the designation of Local SPAs at the aimag (or capital city), soum (or district) levels.

Articles 7 to 12 elucidate the management regulations of Strictly Protected Areas in greater detail. Strictly Protected Areas are divided into pristine zones, conservation zones and limited use zones (Article 8). Providing the appropriate permits are obtained and "environmentally safe technology" is used, eco-travel and tourism can be organised and accommodation for temporary residence or camping can be built within limited use zones (Article 11). **Exploration and mining is prohibited throughout all zones of Strictly Protected Areas by Article 12**. Proscribed activities include changing "natural characteristics by plowing, digging, use of explosives, exploration of natural resources, mining, extracting sand or stone, [etc.]", conducting "any activities which pollute the soil, water and air" and "using open water sources such as lakes, rivers, streams, springs or ponds for commercial purposes" (12.1).

Articles 13 to 18 elucidate the management regulations of National Parks in greater detail. National Parks are divided into special zones, travel and tourism zones and limited use zones (Article

14). The management regulations for National Parks are similar to those for Strictly Protected Areas, insofar as tourism activities are permitted (within travel and tourism zones and limited use zones; Articles 16 and 17) and **exploration and mining is prohibited throughout all zones of National Parks by Article 18**.

Articles 19 to 21 elucidate the management regulations for Nature Reserves. There are four categories of Nature Reserve: Ecological Reserves (for the purpose of preserving unique virgin ecosystems); Biological Reserves (for the purpose of conserving rare and endangered plants and animals); Palaeontological Reserves (for the purpose of preserving the remains of ancient animals and plants); and Geological Reserves (for the purpose of preserving unique geological formations and structures; Article 20). **Exploration and mining is prohibited within Nature Reserves by Article 21**. Specifically, this article proscribes "any activities for commercial purposes that change the natural original condition and which are likely to have a negative environmental impacts such as the construction of buildings, the digging of land, the use of explosives, the exploration and mining of natural resources, [etc.]" (21.2). This article does not, however, appear to prohibit responsible tourism activities within Nature Reserves, provided that they have no negative environmental impacts.

Articles 22 to 24 elucidate the management regulations for Monuments, of which there are two categories: Natural Monuments; and Historical and Cultural Monuments (Article 23). **Exploration and mining is prohibited within and in the direct vicinity of Monuments by Article 24**. Specifically, it is prohibited to "construct buildings which soil the view and scenery, to plough or dig land, to use explosives, to explore or mine natural resources, to touch, erode or remove Natural or Cultural and Historical Monuments, or conduct any other activities which causes damage to them" (24.2). Responsible tourism activities appear to be permitted at Monuments, provided they do not contravene Article 24.

Sources of financing for protected areas are specified in Article 6. Alongside state and local budgets, these include "donations and aid by citizens, economic entities and organizations" and "income from compensation for damage caused by persons who violate the Mongolian Law on Special Protected Areas and its regulations". This creates a provision for mining and tourism companies to contribute to protected area financing through voluntary contributions or in cases where they violate legislation. However, it does not go as far as providing for a general mechanism for channelling revenue from these industries to protected areas, in compensation for impacts they may cause.

Designation of all State SPAs and approval or changing of the boundaries of Strictly Protected Areas and National Parks requires approval by the Mongolian Parliament (*Ikh Khural*) (Article 25). The Cabinet Secretariat has authority to establish boundaries for Nature Reserves and Monuments (Article 26). An implication of these Articles is that MNET does not have the power to designate or degazette protected areas or modify their boundaries. The significance of this fact was demonstrated in 2002, when parliament rejected a proposal from the former MNE to remove protection status from 434,000 ha in 10 protected areas, aimed at stimulating investment in exploration and mining (World Bank 2006).

According to Article 28, designation of Local SPAs and definition of their boundaries and management regulations is the responsibility of the Citizens' Representative Khural at the relevant level (i.e. aimag/capital city or soum/district). One implication of this article would appear to be that there are no standard management regulations for Local SPAs and, therefore, that **whether tourism is permitted within Local SPAs appears to be determined on a case-by-case basis by the relevant Citizens' Representative Khural**. Another shortcoming of the Law is that no criteria for the designation of Local SPAs are defined (unlike in the case of State SPAs, for which criteria for each category are given in Articles 7, 13, 19 and

22). Consequently, the Law does not require that the designation of Local SPAs be justified against any biological criteria.

Articles 33 to 38 regulate the use of land within protected areas. Paragraph 2 of Article 33 appears to prohibit foreign companies and individuals and Mongolian companies using foreign investment from using land within protected areas. However, this appears to be contradicted by paragraph 3, which states that "the provision set out in the paragraph 2 of this Article shall not apply to the activities of foreign and international organizations conducted in accordance with their project in the appropriate zones of Special Protected Areas within the framework allowed by this Law." The implications of this for tourism development within protected areas are unclear. One possible interpretation of Article 33 is that commercial activities involving foreign firms, individuals or investment are prohibited within protected areas but that this prohibition does not extend to conservation projects implemented or funded by foreign or international organisations, which are consistent with the objectives of the law.

One loophole in the Law on Special Protected Areas is that, while mining and exploration are strictly and explicitly prohibited within designated protected areas, there is no moratorium on the issuance of exploration or mining licences within sites proposed for protection (Farrington 2005). This is inconsistent with World Bank OP/BP 4.04 on Natural Habitats, which does not support projects that involve the significant conversion or degradation of natural habitats within existing protected areas *and areas officially proposed by governments as protected areas*. Because exploration licences are inexpensive (only US$0.1 per ha for the first year, rising in increments to US$1.50 in the ninth year), it is theoretically possible for mining companies or speculators to legally obtain exploration rights to a proposed protected area for as little as several thousand dollars (Farrington 2001b).

While, the 1994 Law on Special Protected Areas remains the current legislation on the subject, MNET has prepared a concept for amendments to this law, which is currently under consideration. In 2007, with funding from the World Bank, IUCN's Regional Environmental Law Programme, Asia, reviewed and commented on amendments to the law that were proposed in 2006. After consideration of that review, MNET decided to prepare the new concept for amending the law.

Mongolian Law on Buffer Zones

The establishment of protected area buffer zones was provided for by Article 4 of the 1994 Law on Special Protected Areas. This provision was expanded upon by the Mongolian Law on Buffer Zones, promulgated on 23 October 1997, the purpose of which is to "regulate the determination of Special Protected Area Buffer Zones and the activities therein" (Article 1).

Article 3 provides for the establishment of buffer zones to "minimize, eliminate and prevent actual and potential adverse impacts" to protected areas (3.1). For Strictly Protection Areas, Nature Reserves and Monuments, buffer zones lie outside of the protected area; for National Parks, they may overlap with the limited use zone.

Article 6 provides for the establishment of voluntary "Buffer Zone Councils", for the purpose of "advising on the development of buffer zones, the restoration, protection and proper use of natural resources, and the participation of local people" in protected area management (6.1). Buffer Zone Councils have a right to "develop proposals and recommendations regarding land and natural resource use in the Buffer Zone and to develop a Buffer Zone Management Plan" (6.4.2).

Article 7 permits Buffer Zone Councils to create "Buffer Zone Funds", which can be used for various purposes, including "to restore environmental damage and minimize degradation" (7.4.1), "to provide support for local people's

livelihood" (7.4.2) and "to conduct training and public awareness activities regarding nature conservation" (7.4.4). These funds can receive income from various sources, including "donations from foreign and domestic organizations, economic entities and organizations" (7.2.1) and "a certain amount of revenue from projects, activities and services conducted within the Buffer Zone" (7.2.2), with the precise amount in the latter case being determined by the local Khural. Hence, this article provides for the capture of revenue streams from mining and tourism projects conducted within the buffer zones of protected areas.

Finally, Article 9 requires all companies conducting exploration or mining in buffer zones to be subject to a detailed EIA, which shall include comments and conclusions from the administration of the relevant protected area.

As in the case of the 1994 Law on Special Protected Areas, proposed amendments to the Buffer Zone Law were drafted in 2006. Following a review of the law and the proposed amendments in 2007 by IUCN's Regional Environmental Law Programme, Asia, MNET decided to reconsider the 2006 amendments and, in 2008, drafted a completely new concept for amending the law, which is currently under consideration.

Law of Mongolia on Land

The revised Law of Mongolia on Land was promulgated on 7 July 2002, replacing an earlier law dating from 1995. The purpose of the law is to regulate the ownership and use of land by citizens, organisations and other entities (Article 1). The definition of "Land" under Article 3 encompasses "the land surface, its soil, forests, water and plants" (3.1.1), it does not include subsoil, the ownership and use of which is regulated by the 1988 Law on Subsoil (updated in 1995).

Of particular significance to environmental protection is the creation of a special category of land, called Special Needs Land, which is the property of the state and may not be given for private ownership (Article 5). **Special Needs Land includes Special Protected Areas at state and local levels (Article 16).** The prohibition on private ownership of Special Needs Land reinforces the prohibition of mining activities within protected areas under the Law on Special Protected Areas.

Articles 27 to 48 deal with Land Possession Certificates (which can only be given to Mongolian individuals, companies or organisations) and Land Use Certificates (which can be given to foreign legal entities, international organisations and foreign countries). Articles 42 and 43 provide for the withdrawal of Land Possession/Use Certificates for areas the government wishes to designate as Special Needs Land (for instance, as a State or Local SPA). In these circumstances, the possessor of the land may be compensated in full or in part, and may or may not receive replacement land. Land users, on the other hand, do not receive compensation.

Article 50 requires land possessors and users to protect the land. Specifically, possessors and users are required to: "take measures at their expense to preserve land characteristics and quality, to prevent deterioration of soil fertility, deterioration of flora, soil erosion, degradation, soil infertility, extra hydration, soil salinization, its pollution and poisoning (chemical pollution)" (50.1.1); "restore and maintain at their expenses the land eroded and damaged due to digging it for mining purposes, production of construction materials, building railways and motor roads, mineral exploration and surveying, testing, research works and other activities" (50.1.2); not "cause an adverse impact on the environment and the land when using land, its resources and common mineral resources" (50.1.3); and "preserve and protect lands with forests, rare and endangered animals and plants, historical and cultural memorials" (50.1.4).

Law on Forests

A new version of the Law on Forests was promulgated on 17 May 2007, it replaced an earlier

law dating from 1995. The purpose of the law is to "regulate relations from protection, possession, sustainable use and reproduction of the forest in Mongolia" (Article 1).

Forests are classified into protected forests and commercial (utilisation) forests (Article 5). Article 8 sets out the definition and management regulations for protected forests, which comprise "sub-tundra forests, forests in Special Protected Areas and those designated for training and research, green belts, prohibited forest strips, saxaul and oasis forests, groves and bush stands of up to 100 ha of area and forests on slopes greater than 30 degrees" (8.1), as well as "forests within a radius of 1,000 meters around lakes, mineral and other water springs, and off riverbanks, and within 100 meters on both sides of national roads and railroads" (8.2). The management regulations for forests within protected areas are provided by the Law on Special Protected Areas (8.4). For other protected forests, all activities are prohibited "except for the construction of roads, bridges, water, power and telecommunications lines, fire lines, as well as forest regeneration, cleaning activities and use of non-timber resources" (8.6). **Article 8 appears to extend the prohibition on exploration and mining within areas of natural habitat to all protected forests**: a very broad category. Construction of mining-associated infrastructure (roads, power lines, etc.) does not appear to be prohibited within protected forests, however.

Exploration and mining are not prohibited in commercial forests (Article 9) but a number of specific regulations apply to these activities in forests. Article 35 provides for companies to pay compensation to the budget of the soum (or district) concerned for damage to forest inflicted in the course of mining activities. Moreover, Article 37 requires entities requesting exploration or mining licences to compensate the forest for direct forest protection and regeneration costs, as well as the owner's forfeited income from the forest.

Annex 7: Regulatory framework for mining

Over the past decade, the government of Mongolia has evolved from being an owner and operator of mines to being a manager and regulator. This transformation has required the government to establish a legal framework to regulate the sector and ensure environmentally sustainable growth (World Bank 2006).

The Constitution of Mongolia

The fundamental basis for regulation of exploration and mining in Mongolia was put in place by the 1992 Constitution of Mongolia. Regarding the ownership of mineral resources, Article 6 of the constitution stipulates that "the land except that given to the citizens of Mongolia for private ownership, as well as the subsoil with its mineral resources, forests, water resources and wildfowl shall be the property of the State" (6.2). This article goes on to explain that private ownership of land does not extend to the subsoil (6.3), and that the state reserves the right to exchange or take over land in the event of a special public need, or to confiscate land if it is "used in a manner adverse to the health of the population, the interests of environmental protection or national security" (6.4). Finally, this article provides for foreign individuals and companies to "lease land for a specified period of time under conditions and procedures as provided for by law" (6.5).

Minerals Law of Mongolia

The Minerals Law of Mongolia was promulgated on 8 July 2006; it superseded a previous law, dating from 1 July 1997. The purpose of the law is to "regulate prospecting, exploration and mining of minerals within the territory of Mongolia" (Article 1).

The Minerals Law applies to the "exploration and mining of all types of mineral resources except water, petroleum and natural gas" (Article 3.1). However, artisanal and small-scale mining are explicitly excluded from the law, on the expectation that they will be regulated separately (Article 3.2).

Article 5 reiterates the Constitution, by stating that "Mineral resources naturally occurring on and under the earth's surface in Mongolia are the property of the State" (5.1). This article goes on to explain that "the State, as the owner, has the right to grant exploration and mining rights" (5.2). Article 5 also clarifies that the state can participate in partnerships with private companies, but that its stake is limited to a maximum of 50 percent (where the proven reserves were found by the state) or 34 percent (where they were found with other sources of funding).

Private companies and partnerships registered and operating under the laws of Mongolia can be issued with "exploration licences" and "mining licences" (Article 7.1). Exploration licences grant the right to prospect or conduct exploration (Article 4.1.14), while mining licences grant the right to conduct mining (Article 4.1.15). Provided that it takes place outside of reserve areas and Special Need land, reconnaissance, which means "an investigation identifying mineral concentrations through rock sampling, airborne surveys and reviewing related geological and minerals information without actually disturbing the subsoil" (Article 4.1.2), does not require a licence. It does, however, require the company or partnership responsible to notify the State and local administrative bodies in advance (Article 15.1), and obtain permission from the relevant land owners or land users (Article 15.2).

The procedure for obtaining an exploration license is set out in Articles 17 to 19. Exploration licences are issued on a first-come-first served basis (Article 18.1), for three-year periods (Article 19.8)

extendable twice (Article 21.1.4). There is no limit to the number of exploration licences a company or partnership may hold (Article 17.5).

Article 17 stipulates that licence applications must include a map of the requested exploration area, and **that no part of the requested exploration area may overlap with a reserve area or Special Needs Land** (a category that includes State SPAs and Local SPAs, following Article 16 of the 2002 Law on Land). The article adds that requested exploration areas should be between 25 and 400,000 ha in area, and rectangular in shape, with borders following lines of longitude and latitude, unless deviations are necessary to avoid overlap with Special Needs Land, national borders, etc.

Article 19 stipulates that, upon receiving an exploration licence application, the responsible government agency (i.e. MRPAM) shall enter it onto the application registry, conduct a preliminary screening to check for administrative compliance, and determine whether it overlaps with any area with restrictions or prohibitions on mineral exploration or mining, including Special Needs Land. After completing the aforementioned steps, and within 20 days of receipt of the application, MRPAM must notify the applicant in writing that the application has been refused, that the requested area is available for issue under an exploration licence or that only part of the requested area is available (e.g. if there is overlap with Special Needs Land).

Article 19 goes on to describe the process for consultation with representatives of the public. MRPAM must notify the relevant governor about exploration licence applications in their aimag (or capital city). The governor than has 30 days to solicit comments from the Citizens' Representative Khurals in the relevant soum (or district), and to send feedback to MRPAM. The governor is entitled to refuse the granting of an exploration license, "on grounds provided in the laws of Mongolia" (19.5). However, if the governor supports the decision, MRPAM shall grant the exploration licence. A critical clause in the regulations is that failure to respond within the 30 day deadline "shall be deemed as approval" (19.4), and the licence will be granted automatically.

At a recent meeting on Citizens' Engagement in Mine Licensing, held in Ulaanbaatar on 28 January 2008, as part of the Responsible Mining and Resource Use Discussion Series, Article 19 was a key issue of contention for representatives of NGOs and community-based organisations. Specific concerns included that the formal requirement for public participation is limited to soliciting comments form Citizens' Representative Khurals, that the time period for commenting on licence applications is too short, and that applications are automatically passed if no response is received within the 30 day period.

After an exploration licence has been granted, MRPAM shall notify MNET, governors of the relevant aimags and soums and the State Professional Inspection Agency (Article 19.10). It is notable that MNET will only be notified *after* the exploration licence has already been granted, as this gives the ministry no opportunity to double-check that the requested area does not overlap with any protected area. Some degree of environmental safeguard is, however, provided by Article 37, which states that a "license holder may not commence exploration operations without first obtaining written approval from [the] relevant environmental agency" (37.2).

Applicants for a mining licence for a given area must hold an exploration licence covering that area (Article 24.1), unless the exploration licence holder fails to submit an application, in which case the mining licence will be issued by tender (Article 24.2). Mining licences are issued for 30-year periods (Article 26.5) extendable twice for a period of 20 years each time (Article 27.1.6).

The process for obtaining a mining licence is set out in Articles 24 to 26. The process is similar to that for exploration licences and, once again, **the requested mining area cannot overlap with any**

Special Needs Land (Article 24.2.2). One key difference from the process for exploration licences is that MRPAM is required to perform an additional check, following the preliminary screening, to determine "whether the size and evaluation of the mineral reserve estimated by exploration would be sufficient for reclamation of environmental damages that might result from mining activities" (Article 26.2.3). To this end, applicants for mining licences are required to submit EIAs together with their application (Article 25.1.7).

Another key difference is that there is no provision whatsoever for public consultation: after conducting an internal review, MRPAM will either approve or refuse the application within 20 days of registering it (Article 26.3). This step does include one key environmental safeguard, that if the requested area overlaps in any way with Special Needs Land, "the application for the mining license shall be refused" (Article 26.3.4). As in the case of the exploration licence application process, however, there is no provision to notify MNET about licence applications before they have been granted. As Article 26.7 states, "within seven (7) business days following the issuance of a mining license, the Government agency shall notify the Government Ministry in charge of the environment, the Government agency in charge of taxation and fiscal issues, the aimag, soum and Representatives Governors where the licensed area is located and professional inspection agency and publish an official notice informing the public of the granting of the license".

Specific regulations on environmental protection are set out in Articles 37 to 40. Within 30 days of receiving an exploration licence, licence holders are required to prepare an Environmental Protection Plan, and submit it for approval to the governor of the soum (or district) where the exploration area is located. This plan must ensure that pollution does not exceed acceptable limits and that measures are taken to reclaim the mining area and leave it suitable for future public use. Ideally, these plans should be prepared in advance of the exploration licence being granted, so that they can inform the licence application review process. However, Article 38.1.1 only requires exploration licence holders to develop these plans within 30 days of receiving their licence.

As a measure for ensuring that licence holders properly discharge their responsibilities with respect to environmental protection, Article 38 requires that they "deposit funds equal to 50 percent of [their] environmental protection budget for that particular year in a special bank account established by the Governor of the relevant soum or Representatives" (38.1.8). This deposit will be returned to the licence holder if they comply with the Environmental Protection Plan (38.4). However, if they fail to fully implement the plan, the Governor of the relevant soum (or district) shall use the deposit to implement the necessary environmental protection measures, and the licence holder must provide any additional funds that are required (38.3).

In addition to preparing an Environmental Protection Plan, mining licence holders are also required by Article 39 to prepare an EIA. Unlike in the case of an exploration licence, the Environmental Protection Plan and EIA must be prepared *before* the mining licence is obtained. The EIA must "identify the possible adverse environmental impacts from the proposed mining operations… …and shall include preventive measures that avoid and minimize such adverse impacts" (39.1.2). The Environmental Protection Plan must "contain measures to ensure that mining operations are conducted in the least damaging way to the environment [and] also identify preventive, comprehensive measures to protect air and water, humans, animals and plants from the adverse effects of mining operations" (39.1.3). Furthermore, the plan must address: (i) "storage and control of toxic and potentially toxic substances and materials"; (ii) "protection, utilization and conservation of the surface and underground water"; (iii) "construction of tailings dams and ensuring the mine area safety"; and (iv) "reclamation measures" (39.1.4).

Mining licence holders are also required to prepare an annual report on the implementation

of the Environment Protection Plan, containing all instances of adverse environmental impacts resulting from mining activities, and submit it to MNET, the State Professional Inspection Agency and the governor of the relevant aimag (or capital city) or soum (or district).

Similar to the case for exploration licence holders, mining licence holders are required to "deposit funds equal to 50 percent of [their] environmental protection budget for the particular year into a special bank account established by [MNET]" (39.1.9). Once again, this deposit will be returned to the licence holder if they comply with the Environmental Protection Plan (39.4). However, if they fail to fully implement the plan, MNET shall use the deposit to implement the necessary environmental protection measures, and the licence holder must provide any additional funds that are required (39.3). It has been noted that this requirement for licence holders to deposit funds for environmental protection has not resulted in the expected higher level and quality of environmental protection. This is mainly due to lack of institutional capacity to ensure the implementation of environmental protection measures, plus a lack of willingness and capacity on the part of mining licence holders to provide the additional funding necessary to complete the environmental protection work once mining has ceased (World Bank 2006).

The Minerals Law recognises Special Needs Land ("Special Purpose Territory") designated by national and local authorities following the Land Law, where "exploration and mining are either restricted or prohibited" (Article 4.1.2). Regarding Special Needs Land (which includes both State SPAs and Local SPAs), the Mongolian Parliament has a general power to "restrict or prohibit exploration and mining activities on or grants of exploration and mining licenses for certain territories" (Article 8.1.5). In addition, the Mongolian Parliament is responsible for supervising reconnaissance, exploration and mining of minerals in State SPAs (Article 8.1.3), while the government is responsible for supervising these activities in other types of national-level Special Needs Land (Article 9.1.3). At the local level, local administrative bodies are responsible for establishing Special Needs Land, following the regulations provided by the Land Law (Article 12.1.4).

Further restrictions and prohibitions on mining within Special Needs Land are provided by Article 14. This article requires state and local authorities to notify MRPAM whenever they designate Special Needs Land, and for MRPAM to record the coordinates of the land in the exploration license, mining license and cartographic registries. The article goes on to state that, "if a special purpose territory overlaps entirely or in part with a territory covered by a valid license, prohibiting further exploration or mining in the overlapping area the authority whose decision it was to establish the special purpose territory shall be obligated to compensate the license holder" (14.4). Regarding the amount of compensation, this "shall be negotiated and agreed by the authority that decided to establish the [Special Needs Land] and the affected license holder. If the parties fail to reach an agreement, the amount of compensation and time for payment shall be determined by the Government agency based on conclusion of an authorized independent body" (14.5). The provision for revoking an exploration or mining licence on the grounds that the area has been designated as Special Needs Land and the license holder has been fully compensated is repeated in Article 56.

Articles 14 and 56 establish a mechanism for withdrawing land from exploration and mining licences for special needs (including for the establishment of protected areas) but creates an obligation for the relevant authority to compensate the licence holder. In practice, the lack of specific funds for compensation means that the relevant authorities (often MNET) are unable to extinguish licenses that overlap with newly established protected areas (Farrington 2005). It is unclear what additional environmental standards, if any, must be met exploration and mining licences holders when a

protected area is designated over their licences but compensation is not paid.

With regard to disputes and irregularities concerning the boundaries of exploration and mining licences, Article 13 empowers the government to temporarily place under state control areas that were previously granted under licence, and to suspend reconnaissance, exploration and mining activities within them. Among other things, such areas, termed "reserve areas", can be established to "improve the quality of the registry of licences" (13.1.1) and "resolve boundary disputes among licence holders" (13.1.2).

In general, the rights and obligations of a licence holder cease upon termination of their licence. The one exception is their "obligations with respect to environmental protection, reclamation and mine closure… …and other obligations pursuant to laws and legislations on environmental protection" (Article 53.3.). These obligations include to "take all necessary measures to ensure safe use of the mine area for public purposes and reclamation of the environment" prior to mine closure (Article 45.1).

Sanctions are foreseen for breaches of the Minerals Law that do not constitute a criminal offence. These range from fines of 100,000 tugriks (US$90) to suspension or, even, revocation of the licence. However, it has been reported (e.g. World Bank 2006) that enforcement of the environmental provisions in the Minerals Law has been problematic, and that the State Professional Supervision Agency has refused to circulate a list of fines imposed on mines.

Law of Mongolia on Subsoil

The Law of Mongolia on Subsoil was promulgated on 29 November 1988, and then updated on 17 April 1995. The purpose of the law is "to regulate relations concerning the use and protection of subsoil in the interests of the present and future generations" (Article 1). The law complements the Law on Land (which excludes subsoil) and provides some general regulations with regard to exploration and mining of minerals, which are greatly expanded on by the 2006 Minerals Law.

Subsoil includes all types of gravel, minerals and other geological objects under the soil (Article 4). According to Article 3, subsoil is the exclusive property of the state. Consequently, it can be granted for use but never for ownership. Article 9 provides for subsoil to be used by Mongolian and foreign individuals and companies, provided this is permitted by the relevant Mongolian legislation.

Article 10 provides for the use of subsoil for geological surveys and mining, and states that "relations concerning the exploration and mining of mineral resources in subsoil shall be regulated by the Law on Minerals" (10.2). With regard to environmental protection, Article 20 requires users of subsoil to "ensure reliable protection of air in the stratosphere, the land, the forests, waters, springs, the livestock, the wildlife, other objects of nature, and constructions and structures, to ensure safety and protection of specially protected areas, and items of importance to natural, historical or cultural studies" (20.2.3) and to rehabilitate any land that was damaged when using the subsoil, before handing it back to the local administrative body (20.2.4).

Temporary regulation on artisanal mining

As mentioned previously, artisanal and small-scale mining are explicitly excluded from the Minerals Law. In 2001 and 2002, the government attempted to address this gap by enacting interim regulations for these informal types of mining. These regulations proved to be largely ineffective, and were not renewed. Subsequently, the government drafted an Artisanal Mining Law but this failed to gain parliamentary approval and was finally abandoned in August 2005 (World Bank 2006). Subsequently, the Swiss Agency for Development and Cooperation (SDC) commenced with MRPAM an initiative on artisanal and small-scale mining, which emphasised drafting of legislation and regulations, mediation

and conflict resolution, technology transfer, training and minimising of risks to health, and safety and environment (World Bank 2006).

Recent outputs of this initiative include Government Resolutions 71 and 72, dated 27 February 2008, which approved a Sub-programme on the Development of Artisanal and Small-scale Mining until 2015, and Temporary Regulation on Artisanal and Small-scale Mining Operations. The temporary regulation, which will remain in place until the Mongolian Law on Artisanal and Small-scale Mining is adopted, provides a legal basis for the regulation of artisanal and small-scale mining operations, including the formation of miners' cooperatives and the allocation of land to these cooperatives under contracts.

Under the temporary regulation, Citizens' Representative Khurals of soums (and districts) are entitled to allocate, at their discretion, up to two pieces of land in their soum (or district) for artisanal and small-scale mining. These pieces of land may comprise: (i) mineral deposits that are economically inefficient for large-scale mining in terms of the size and quality of their mineral reserves; (ii) mined-out areas that have no reclamation and tailings; or (iii) land within mining licence areas designate for use for artisanal and small-scale mining under a tripartite agreement among the licence holder, the soum/district governor and the cooperative (i.e. tributing arrangements). Miners' cooperatives will sign contracts with the relevant soum/district governor. Among other things, these contracts must specify proposed and planned activities for environmental restoration, and must contain compulsory obligations not to use chemicals and explosives without permits or licences.

Article 10 of the temporary regulation explicitly prohibits artisanal and small-scale mining within Special Protected Areas, Special Needs Areas, reserve areas (defined under Article 13 of the Minerals Law), locally worshipped sites, areas with forest and water resources, and various other types of area.

Extractive Industries Transparency Initiative

The Extractive Industries Transparency Initiative (EITI) aims to increase transparency over payments from oil, gas and mining companies to governments and government-linked entities, as well as transparency over revenues by host country governments. On 4 January 2006, the government of Mongolia issued an order establishing a National EITI Council, charged with implementing the initiative (World Bank 2006).

Annex 8: Safeguard policies of international development banks

Safeguard policies of the World Bank

As stated above, the principle environmental safeguard policy of the World Bank is the Operational Policy (OP)/Bank Procedure (BP) 4.01 on Environmental Assessment. Environmental assessments are conducted for each investment loan, to determine the extent and type of EIA to be conducted, and whether the project triggers any other safeguard policy. Of particular relevance is OP/BP 4.04 on Natural Habitats, but OP/BP 4.11 on Physical Cultural Resources and OP/BP 4.36 on Forests are also relevant.

Responsibility for undertaking the assessments required by the World Bank's safeguard policies lies with the borrower government, while the World Bank is responsible for overall compliance with the policies.

The World Bank's Operational Policy on Natural Habitats (OP 4.04, June 2001) opens with the following words: "The conservation of natural habitats… is essential for long-term sustainable development", and *inter alia*, states the following:

- The Bank supports the protection, maintenance, and rehabilitation of natural habitats and their functions in its economic and sector work, project financing, and policy dialogue;
- The Bank's economic and sector work includes identification of (a) natural habitat issues and special needs for natural habitat conservation, including the degree of threat to identified natural habitats (particularly critical natural habitats), and (b) measures for protecting such areas in the context of the country's development strategy;
- The Bank does not support projects that, in the Bank's opinion, involve the significant conversion or degradation of critical natural habitats;
- The Bank encourages borrowers to incorporate into their development and environmental strategies analyses of any major natural habitat issues, including identification of important natural habitat sites, the ecological functions they perform, the degree of threat to the sites, priorities for conservation, and associated recurrent-funding and capacity-building needs.

Critical natural habitats are (i) existing protected areas and areas officially proposed by governments as protected areas (e.g., reserves that meet the criteria of the World Conservation Union [IUCN]); and (ii) sites identified on supplementary lists prepared by the Bank or an authoritative source determined by the Regional Environment Sector Unit. Such sites may include areas recognised by traditional local communities (e.g., sacred groves); areas with known high suitability for biodiversity conservation; and sites that are critical for rare, vulnerable, migratory or endangered species. Listings are based on systematic evaluations of such factors as species richness; the degree of endemism, rarity, and vulnerability of component species; representativeness; and integrity of ecosystem processes.

Significant conversion is defined as "the elimination or severe diminution of the integrity of a critical or other natural habitat caused by a major, long-term change in land or water use", while *degradation* is defined as "modification of a critical or other natural habitat that substantially reduces the habitat's ability to maintain viable populations of its native species".

Safeguard policies of the International Finance Corporation

The International Finance Corporation's is the private-sector lending arm of the World Bank Group. Its key environmental safeguard policy

is Performance Standard 6 on Biodiversity Conservation and Sustainable Natural Resources Management.

According to this performance standard, the client will not significantly convert or degrade areas of natural habitat, unless the following conditions are met:

- There are no technically and financially feasible alternatives;
- The overall benefits of the project outweigh the costs, including those to the environment and biodiversity; and
- Any conversion or degradation is appropriately mitigated.

Performance Standard 6 places even stricter conditions on areas of so-called 'critical habitat'. In these areas, the client will not implement any project activities unless the following requirements are met:

- There are no measurable adverse impacts on the ability of the critical habitat to support species populations or ecosystem functions;
- There is no reduction in the population of any recognised critically endangered or endangered species; and
- Any lesser impacts are mitigated.

The term 'critical habitats' used by the IFC is defined slightly differently from the term 'critical natural habitats' used by the World Bank. Critical habitats include areas:

- With high biodiversity value, including habitat required for the survival of critically endangered or endangered species;
- With special significance for endemic or restricted-range species;
- With unique assemblages of species or which are associated with key evolutionary processes or provide key ecosystem services;
- Critical for the survival of migratory species;
- Supporting globally significant concentrations or numbers of individuals of congregatory species.

Safeguard policies of Asian Development Bank (ADB)

ADB has also incorporated environmental considerations into its operations, including adoption of a systemised procedure for environmental review of proposed loan projects. ADB's environmental safeguard procedures are set out in its Environment Policy and the accompanying Environmental Assessment Guidelines.

ADB requires an EIA of all its loans and private sector investments. As with the World Bank and IFC, the borrower is responsible for conducting the assessment, in accordance with ADB's environmental assessment requirements, while ADB is responsible for ensuring compliance, and monitoring agreed mitigation measures by the borrower.

Environmental classification of projects is undertaken during the project screening process, to evaluate the potential significance of environmental impacts and determine whether an EIA should be conducted.

In 2003, ADB implemented new guidelines for environmental assessment, with aimed to improve analysis and documentation leading to the environmental categorisation of projects at the concept stage, through the use of rapid environmental assessment checklists.

The most stringent environmental review is required for projects sited adjacent to or within 'Environmentally Sensitive Areas'. These areas are defined as cultural heritage sites, protected areas and their buffer zones, wetlands, mangroves, estuaries, and special areas for protecting biodiversity.

The availability of information on important sites for biodiversity could assist the application of the rapid environmental assessment checklists, by helping to determine whether projects are sited adjacent to or within environmentally sensitive areas.

Safeguard policies of European Bank for Reconstruction and Development (EBRD)

Under its Environmental Policy, EBRD seeks to ensure that its operations include measures to safeguard and, where possible, enhance natural habitats and the biodiversity they support.

EBRD screens projects, in order to assess environmental risks and determine the level of environmental assessment required. Investments are categorised into three categories, according to the nature and magnitude of their potential environmental impacts. Projects that could result in potentially significant adverse future environmental impacts are placed in Category A, and require an EIA and the formulation of measures to prevent, minimise and mitigate adverse impacts.

Projects that are placed in Category A include those that are planned to be carried out in or have a perceptible impact on so-called 'Sensitive Locations'. Sensitive locations include national parks and other protected areas, wetlands, forests with high biodiversity value, areas of archaeological and cultural significance, and areas of importance for indigenous peoples or other vulnerable groups.

The availability of information on important sites for biodiversity could assist the identification of 'Sensitive Locations', and thereby assist with the consistent application of this safeguard policy.

Safeguard policies of Japan Bank for International Cooperation (JBIC)

In October 2003, JBIC implemented a new set of environmental guidelines, which unified and updated two previous sets. Following these guidelines, JBIC conducts screening and environmental reviews of projects before it makes decisions on funding.

At the screening stage, proposed projects are classified according to the potential severity of their environmental impacts, in order to determine the scope of environmental review that is required. Projects that are likely to have significant adverse impacts on the environment are classified as Category A. Category A projects include those located in or near Sensitive Areas, which include:

- nationally designated protected areas;
- habitats with important ecological values; and
- habitats of rare species requiring protection under domestic legislation or international treaties.

Category A projects are subjected to environmental reviews with the greatest scope. These reviews examine potential negative and positive environmental impacts of projects, and evaluate measures necessary to mitigate negative impacts and promote positive impacts. In addition, borrowers must submit EIA reports, in line with the environmental laws and standards of the host governments concerned.

Incorporation of information on important sites into JBIC's safeguard policies could assist the application of its environmental guidelines. In the first place, it could lend consistency and clarity to the screening stage, particularly by providing standard lists of Sensitive Areas. In the second place, it could support the environmental review process, by highlighting potential negative environmental impacts of projects.

Annex 9: Overlap between nationally protected areas and exploration licences, mining licences and areas at high risk from mining-associated infrastructure

No.	Site name	Total area (ha)	Explor'n overlap (ha)	Mining overlap (ha)	Total overlap (ha)	% overlap	High risk area (ha)	% high risk
	Strictly Protected Areas							
1	Bogd Khan Uul	41,383			0	0.0	41,383	100.0
2	Dornod Mongol	615,732	698		698	0.1		0.0
3	Great Gobi "A"	4,644,091	2,450		2,450	0.1		0.0
4	Great Gobi "B"	921,551	358		358	0.0		0.0
5	Khan Khentii	1,233,351			0	0.0	114,382	9.3
6	Khasagt Khairkhan	31,854	1,149		1,149	3.6		0.0
7	Khokh Serkhiin Nuruu	74,474			0	0.0		0.0
8	Khoridol Saridag	227,968	1		1	0.0		0.0
9	Mongol Daguur "A"	85,085	676		676	0.8		0.0
10	Mongol Daguur "B"	18,617			0	0.0		0.0
11	Nomrog	333,155			0	0.0		0.0
12	Otgontenger	96,620			0	0.0		0.0
13	Small Gobi "A"	1,166,346	14,989		14,989	1.3	66,368	5.7
14	Small Gobi "B"	695,036	14,195		14,195	2.0	24,553	3.5
15	Uvs Lake	462,503		48	48	0.0	26,030	5.6
16	Altan Els	171,203			0	0.0		0.0
17	Tsagaan Shuvuut	34,624			0	0.0		0.0
18	Turgen	133,810	5,220		5,220	3.9	84,183	62.9
	National Parks							
1	Altai Tavan Bogd	623,220			0	0.0	32,124	5.2
2	Dariganga	70,086	2,421		2,421	3.5		0.0
3	Gobi Gurvan Saikhan	2,680,819	5,975		5,975	0.2	98,937	3.7
4	Gorkhi-Terelj	292,010			0	0.0	62,352	21.4
5	Ikh Bogd Uul	262,858			0	0.0		0.0
6	Khan Khokhii	214,331	10,724		10,724	5.0	38,306	17.9
7	Khyargas Lake	374,746	1,360		1,360	0.4	52,539	14.0
8	Khangain Nuruu	889,986	132	428	560	0.1	176,609	19.8

No.	Site name	Total area (ha)	Explor'n overlap (ha)	Mining overlap (ha)	Total overlap (ha)	% overlap	High risk area (ha)	% high risk
9	Khar Us Lake	862,014	11		11	0.0	78,934	9.2
10	Khogno Tarna	78,798			0	0.0		0.0
11	Khorgo Trekhiin Tsagaan Nuur	85,007			0	0.0	16,602	19.5
12	Khovsgol Lake	848,828			0	0.0		0.0
13	Khustain Nuruu	57,341	1,637		1,637	2.9	533	0.9
14	Moltsog Els	488			0	0.0		0.0
15	Munkhkhairhan Uul	308,230	37		37	0.0	12,830	4.2
16	Myangan Ugalzat	63,129			0	0.0	15,408	24.4
17	Noyon Khangai	59,162	43		43	0.1		0.0
18	Onon Balj "A"	291,814	626		626	0.2	47,913	16.4
19	Onon Balj "B"	102,881	21		21	0.0		0.0
20	Otkhonii Khundii	92,955			0	0.0	0	0.0
21	Siilkhem "A"	77,843			0	0.0	15,498	19.9
22	Siilkhem "B"	76,647	193		193	0.3	46,035	60.1
23	Tarvagatai Nuruu	557,447			0	0.0		0.0
24	Tsambagarav	113,012	493		493	0.4		0.0
25	Tujiin Nars	70,864			0	0.0	20,642	29.1
26	Ulaantaiga	108,832			0	0.0		0.0
	Nature Reserves							
1	Alag Khairkhan	36,100			0	0.0		0.0
2	Batkhaan	21,759			0	0.0		0.0
3	Bulgan River	11,892		2	2	0.0	11,892	100.0
4	Burkhan Buudai	51,571	3,293		3,293	6.4		0.0
5	Develiin Aral	10,022			0	0.0	10,022	100.0
6	Ergeliin Zoo	57,581	3,506		3,506	6.1		0.0
7	Ikh Gazriin Chuluu	34,096	21,301		21,301	62.5		0.0
8	Ikh Nartiin Chuluu	70,088	6,516	1	6,517	9.3	42,287	60.3
9	Khanjargalant Uul	62,971			0	0.0	17,530	27.8
10	Khar Yamaat	51,274	343	1	344	0.7	40,653	79.3
11	Lkhachinvandad	55,382	7		7	0.0	4,935	8.9
12	Nagalkhan	4,806	1,455		1,455	30.3	4,806	100.0
13	Namnan Uul	29,709			0	0.0		0.0

No.	Site name	Total area (ha)	Explor'n overlap (ha)	Mining overlap (ha)	Total overlap (ha)	% overlap	High risk area (ha)	% high risk
14	Sharga	320,046	10,298		10,298	3.2	75,684	23.6
15	Mankhan	84,701			0	0.0		0.0
16	Tesiin Gol	108,589			0	0.0		0.0
17	Toson Khulstai	471,937	7,046	413	7,459	1.6	74,645	15.8
18	Ugtam	42,595	2,823		2,823	6.6	10,852	25.5
19	Yahi Lake	248,672	9,544		9,544	3.8	102,871	41.4
20	Zagiin Us	283,832	9,358		9,358	3.3		0.0
	Monuments							
1	Bulgan Uul	2,002			0	0.0	577	28.8
2	Dayandeerkhiin Agui	31,303			0	0.0		0.0
3	Eej Khairkhan	22,904			0	0.0	9,513	41.5
4	Khuisiin 8 Lake	11,158			0	0.0		0.0
5	Khurgiin Hundii	6,109	4		4	0.1		0.0
6	Shiliin Bogd	18,152			0	0.0		0.0
7	Suikhent Uul	7,717	2,112		2,112	27.4		0.0
8	Uran Togoo-Tulga Uul	5,420			0	0.0	2,277	42.0
	All sites	**22,413,136**	**141,014**	**891**	**141,905**	**0.6**	**1,480,670**	**6.6**

Annex 10: Overlap between IBAs and exploration licences, mining licences and areas at high risk from mining-associated infrastructure

No.	Site name	Total area (ha)	Explor'n overlap (ha)	Mining overlap (ha)	Total overlap (ha)	% overlap	High risk area (ha)	% high risk
1	Khoton-Khorgon Lakes	19,629			0	0.0	468	2.4
2	Tsengel Khairkhan Mountain	52,726	49,663		49,663	94.2	12,027	22.8
3	Dayan Lake	13,537			0	0.0		0.0
4	Bulgan River	32,700	7,212		7,212	22.1	3,731	11.4
5	Khokh Serkhiin Nuruu SPA	74,502			0	0.0		0.0
6	Tolbo Lake	16,334	2,761		2,761	16.9		0.0
7	Achit Lake	98,278	7,273		7,273	7.4	30,592	31.1
8	Uureg Lake	28,308			0	0.0	10,312	36.4
9	Uvs lake	502,462		11	11	0.0	22,755	4.5
10	Baga and Bayan Lakes	5,317			0	0.0		0.0
11	Uvsiin Khar Us Lake	13,601	4,239		4,239	31.2	8,773	64.5
12	Airag Lake	73,348			0	0.0		0.0
13	Khongil	6,027			0	0.0		0.0
14	Khar Us Lake	297,265			0	0.0	45,251	15.2
15	Jargalant Khairkhan Mountain	162,264	708		708	0.4		0.0
16	Khar Lake	83,798			0	0.0	39,930	47.7
17	Khomiin Tal	78,059			0	0.0	14,727	18.9
18	Santmargatsiin Bayan Lake	14,205	1,113		1,113	7.8		0.0
19	Ulaagchinii Khar Lake	13,439	1,584		1,584	11.8		0.0
20	Oigon Lake	20,189	4,758		4,758	23.6		0.0
21	Telmen Lake	24,175			0	0.0		0.0
22	Otgontenger Mountain	88,753			0	0.0		0.0
23	Zavkhan River - Ereen Lake	65,735			0	0.0		0.0
24	Khasagt Khairkhan Mountain	28,309			0	0.0		0.0
25	Taigam Lake	4,170			0	0.0		0.0
26	Boon Tsagaan Lake	43,262			0	0.0		0.0

No.	Site name	Total area (ha)	Explor'n overlap (ha)	Mining overlap (ha)	Total overlap (ha)	% overlap	High risk area (ha)	% high risk
27	Ikh Bogd Mountain	86,440			0	0.0		0.0
28	Orog Lake	20,195			0	0.0		0.0
29	Taatsiin Tsagaan Lake	12,385			0	0.0		0.0
30	Khangain Nuruu National Park	897,840	191	18	209	0.0	175,263	19.5
31	Terkhiin Tsagaan Lake	21,072			0	0.0	4,759	22.6
32	Khovsgoliin Sangiin Dalai Lake	25,194			0	0.0		0.0
33	Erkhel Lake	3,537			0	0.0	3,355	94.9
34	Darkhad Depression	195,223	3,409		3,409	1.7	30,559	15.7
35	Khovsgol Lake	380,212			0	0.0		0.0
36	Bulgan Tal	40,445	1,745		1,745	4.3		0.0
37	Teshigiin Olon Lakes	5,774			0	0.0	4,947	85.7
38	Airkhan Lake	7,212			0	0.0		0.0
39	Tarialan	31,630	537		537	1.7		0.0
40	Selenge - Teel	18,568	323		323	1.7		0.0
41	Sharga Lake	2,118			0	0.0		0.0
42	Ogii Lake	10,189			0	0.0		0.0
43	Dashinchilen Bayan Lake	1,598	1,598		1,598	100.0	1,598	100.0
44	Erdenesant Mountains	34,776			0	0.0		0.0
45	Ulziitiin Sangiin Dalai Lake	1,491			0	0.0		0.0
46	Govi Gurvan Saikhan Mountain	544,794	9,779		9,779	1.8	1,688	0.3
47	Borzon Gobi	399,467	43,487		43,487	10.9	3,026	0.8
48	Galba Gobi	828,328	497,627		497,627	60.1	61,183	7.4
49	Ikh Gazriin Chuluu	9,300			0	0.0		0.0
50	Ikh Nartiin Chuluu Nature Reserve	66,601	242	8	250	0.4	40,709	61.1
51	Eej Khad	36,867			0	0.0	15,510	42.1
52	Khustain Nuruu National Park	49,932			0	0.0		0.0
53	Selengiin Tsagaan Lake	17,143			0	0.0		0.0

No.	Site name	Total area (ha)	Explor'n overlap (ha)	Mining overlap (ha)	Total overlap (ha)	% overlap	High risk area (ha)	% high risk
54	Delta of Orkhon and Selenge Rivers	21,405			0	0.0	15,758	73.6
55	Khan Khentii SPA	1,234,755			0	0.0	111,675	9.0
56	Gorkhi-Terelj National Park	293,937			0	0.0	62,493	21.3
57	Maikhant Mountain	42,015	1,721	138	1,859	4.4	42,015	100.0
58	Valleys of Khurkh-Khuiten Rivers	35,722	460		460	1.3		0.0
59	Onon-Balj	104,841	219		219	0.2	14,951	14.3
60	Khar Yamaat Nature Reserve	51,404			0	0.0	41,521	80.8
61	Ganga Lakes	26,841	43		43	0.2		0.0
62	Shaazan Lake	5,485	3,752		3,752	68.4	5,485	100.0
63	Tsengeleg Lakes	8,877			0	0.0		0.0
64	Turgen Tsagaan, Zegst, Tuulaitiyn Bur	35,282	1,272		1,272	3.6	22,023	62.4
65	Ugtam Nature Reserve	46,162	442		442	1.0	12,245	26.5
66	Mongol Daguur	309,440	25,049		25,049	8.1	15,179	4.9
67	Khukh Lake	11,548			0	0.0		0.0
68	Buir Lake	90,476			0	0.0		0.0
69	Tashgain Tavan Lakes	53,304	53,304		53,304	100.0		0.0
70	Nomrog	378,097			0	0.0		0.0
	All sites	**8,358,313**	**724,512**	**175**	**724,687**	**8.7**	**874,505**	**10.5**

Annex 11. Tourist camps located in or adjacent to State SPAs

Tourist camp name	State SPA name	Category
Bogdkhaan Complex	Bogd Khan Uul	Strictly Protected Area
Manzushir	Bogd Khan Uul	Strictly Protected Area
Ovoonii Enger	Bogd Khan Uul	Strictly Protected Area
River Beach	Bogd Khan Uul	Strictly Protected Area
Star Observatory	Bogd Khan Uul	Strictly Protected Area
Tsagaan Shonkhor	Bogd Khan Uul	Strictly Protected Area
Ulaanbaatar Camp 1	Bogd Khan Uul	Strictly Protected Area
Ulaanbaatar Camp 2	Bogd Khan Uul	Strictly Protected Area
Ulaanbaatar Camp 3	Bogd Khan Uul	Strictly Protected Area
Ulaanbaatar Camp 4	Bogd Khan Uul	Strictly Protected Area
Ulaanbaatar Camp 7	Bogd Khan Uul	Strictly Protected Area
Ulaanbaatar Camp 8	Bogd Khan Uul	Strictly Protected Area
Ulaanbaatar Camp 9	Bogd Khan Uul	Strictly Protected Area
Buuveit	Gorkhi-Terelj	National Park
Melkhii Khad	Gorkhi-Terelj	National Park
San Juulchin	Gorkhi-Terelj	National Park
Terelj Bumban	Gorkhi-Terelj	National Park
Terelj Camp 1	Gorkhi-Terelj	National Park
Terelj Camp 2	Gorkhi-Terelj	National Park
Terelj Camp 3	Gorkhi-Terelj	National Park
Terelj Camp 4	Gorkhi-Terelj	National Park
Terelj Camp 5	Gorkhi-Terelj	National Park
Terelj Camp 6	Gorkhi-Terelj	National Park
Terelj Camp 7	Gorkhi-Terelj	National Park
Terelj Camp 8	Gorkhi-Terelj	National Park
Terelj Camp 9	Gorkhi-Terelj	National Park
Terelj Camp 10	Gorkhi-Terelj	National Park
Terelj Camp 11	Gorkhi-Terelj	National Park
Terelj Camp 12	Gorkhi-Terelj	National Park
Terelj Camp 13	Gorkhi-Terelj	National Park
Terelj Camp 14	Gorkhi-Terelj	National Park
Terelj Camp 15	Gorkhi-Terelj	National Park

Tourist camp name	State SPA name	Category
Terelj Camp 16	Gorkhi-Terelj	National Park
Terelj Camp 17	Gorkhi-Terelj	National Park
Terelj Camp 18	Gorkhi-Terelj	National Park
Terelj Camp 19	Gorkhi-Terelj	National Park
Terelj Camp 20	Gorkhi-Terelj	National Park
Terelj Camp 21	Gorkhi-Terelj	National Park
Terelj Camp 22	Gorkhi-Terelj	National Park
Terelj Camp 23	Gorkhi-Terelj	National Park
Terelj Camp 24	Gorkhi-Terelj	National Park
Terelj Camp 25	Gorkhi-Terelj	National Park
Terelj Camp 26	Gorkhi-Terelj	National Park
Terelj Camp 27	Gorkhi-Terelj	National Park
Terelj Camp 28	Gorkhi-Terelj	National Park
Terelj Camp 29	Gorkhi-Terelj	National Park
Terelj Camp 30	Gorkhi-Terelj	National Park
Terelj Camp 31	Gorkhi-Terelj	National Park
Terelj Camp 33	Gorkhi-Terelj	National Park
Terelj Camp 34	Gorkhi-Terelj	National Park
UB 2	Gorkhi-Terelj	National Park
Khashkhan	Khangain Nuruu	National Park
Orkhon Camp 1	Khangain Nuruu	National Park
Orkhon Camp 2	Khangain Nuruu	National Park
Orkhon Camp 3	Khangain Nuruu	National Park
Orkhon Camp 4	Khangain Nuruu	National Park
Orkhon Camp 5	Khangain Nuruu	National Park
Orkhon Camp 6	Khangain Nuruu	National Park
Orkhon Camp 7	Khangain Nuruu	National Park
Talbiun	Khangain Nuruu	National Park
Khogno camp	Khogno Tarna	National Park
Khognokhaan Camp 1	Khogno Tarna	National Park
Khognokhaan Camp 3	Khogno Tarna	National Park
Khorgo Camp 1	Khorgo Trekhiin Tsagaan Nuur	National Park
Khorgo Camp 2	Khorgo Trekhiin Tsagaan Nuur	National Park
Sortiin Tulga	Khorgo Trekhiin Tsagaan Nuur	National Park

Tourist camp name	State SPA name	Category
Khovsgol camp 1	Khovsgol Lake	National Park
Khovsgol camp 2	Khovsgol Lake	National Park
Khovsgol camp 3	Khovsgol Lake	National Park
Khovsgol camp 4	Khovsgol Lake	National Park
Khovsgol camp 5	Khovsgol Lake	National Park
Khovsgol camp 6	Khovsgol Lake	National Park
Khovsgol camp 7	Khovsgol Lake	National Park
Khovsgol camp 8	Khovsgol Lake	National Park
Khovsgol Dalai	Khovsgol Lake	National Park
Khovsgol Khaan	Khovsgol Lake	National Park
Uyanga	Khovsgol Lake	National Park
Khetsuu Khad	Khyargas Lake	National Park
Moltsog Els	Moltsog Els	National Park
Khaan Taij	Otkhonii Khundii	National Park
Shiveet Mankhan	Otkhonii Khundii	National Park
Tsaidam	Otkhonii Khundii	National Park
Tsenkher Jiguur	Otkhonii Khundii	National Park
Ugtam	Ugtam	Nature Reserve

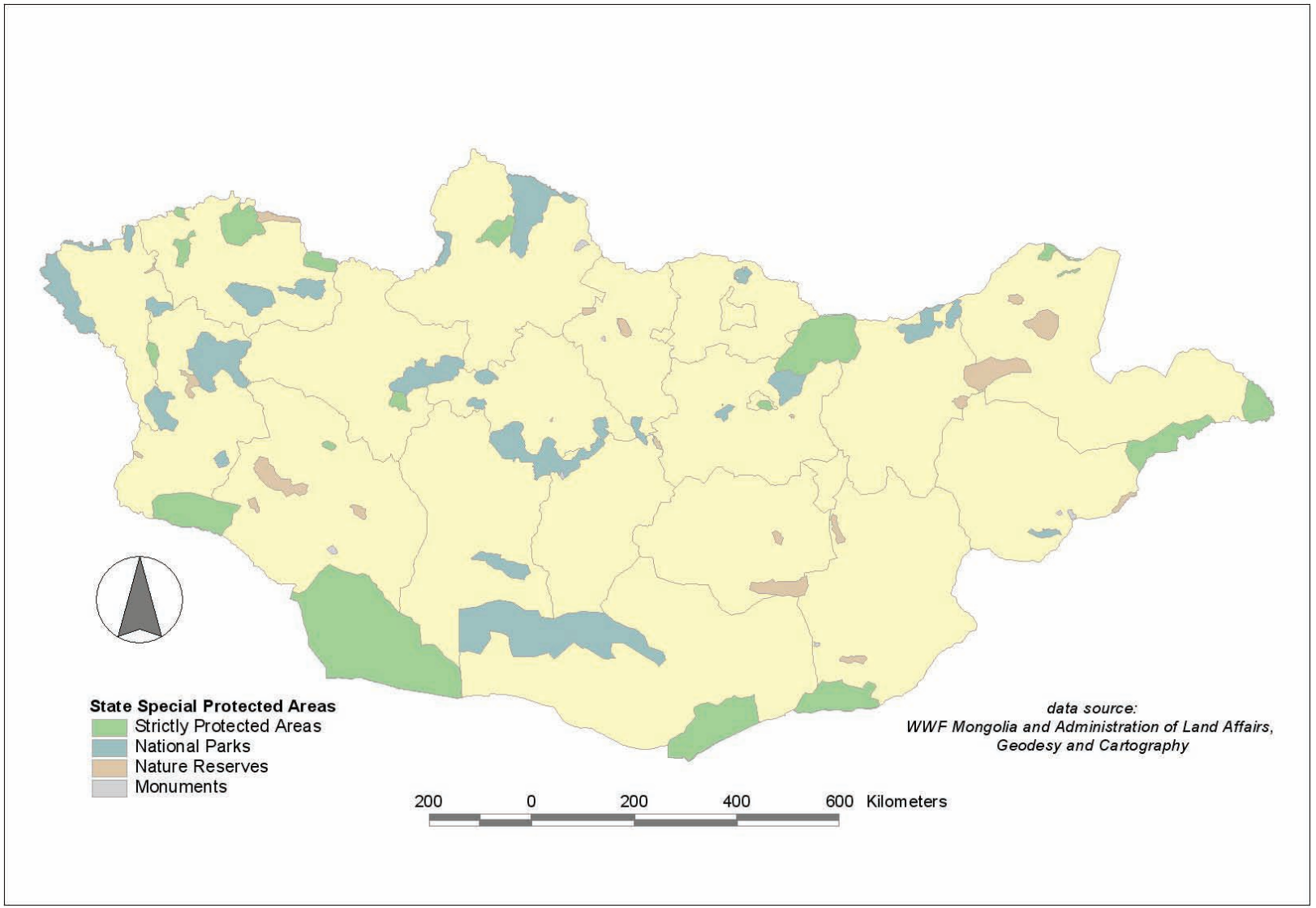
Annex 12. Tourist camps located in or adjacent to Local SPAs

Tourist camp name	Local SPA name
Baga Gazriin Chuluu	Baga Gazriin Chuluu
Enkh	Baruun Ol
Bayanzag Camp 1	Bayanzag
Khangai Discovery	Bulgan Khangai Uul
Gobi Camp 2	Gobi Gurvan Saikhan
Juulchin Gobi	Gobi Gurvan Saikhan
Tuvshin	Gobi Gurvan Saikhan
Khaan Taij	Kharkhorin
Orkhon Camp 7	Kharkhorin
Moltsog Els	Moltsog Els
Camp 5	Nariin Khamar
Khatan Ogii	Ogii Lake and surrounding area
Ogii Camp 1	Ogii Lake and surrounding area
Ogii Camp 2	Ogii Lake and surrounding area
Ogii Camp 3	Ogii Lake and surrounding area
Ikh Gobi	Ongiin Khiid
Shargaljuut	Tuin Gol River Valley

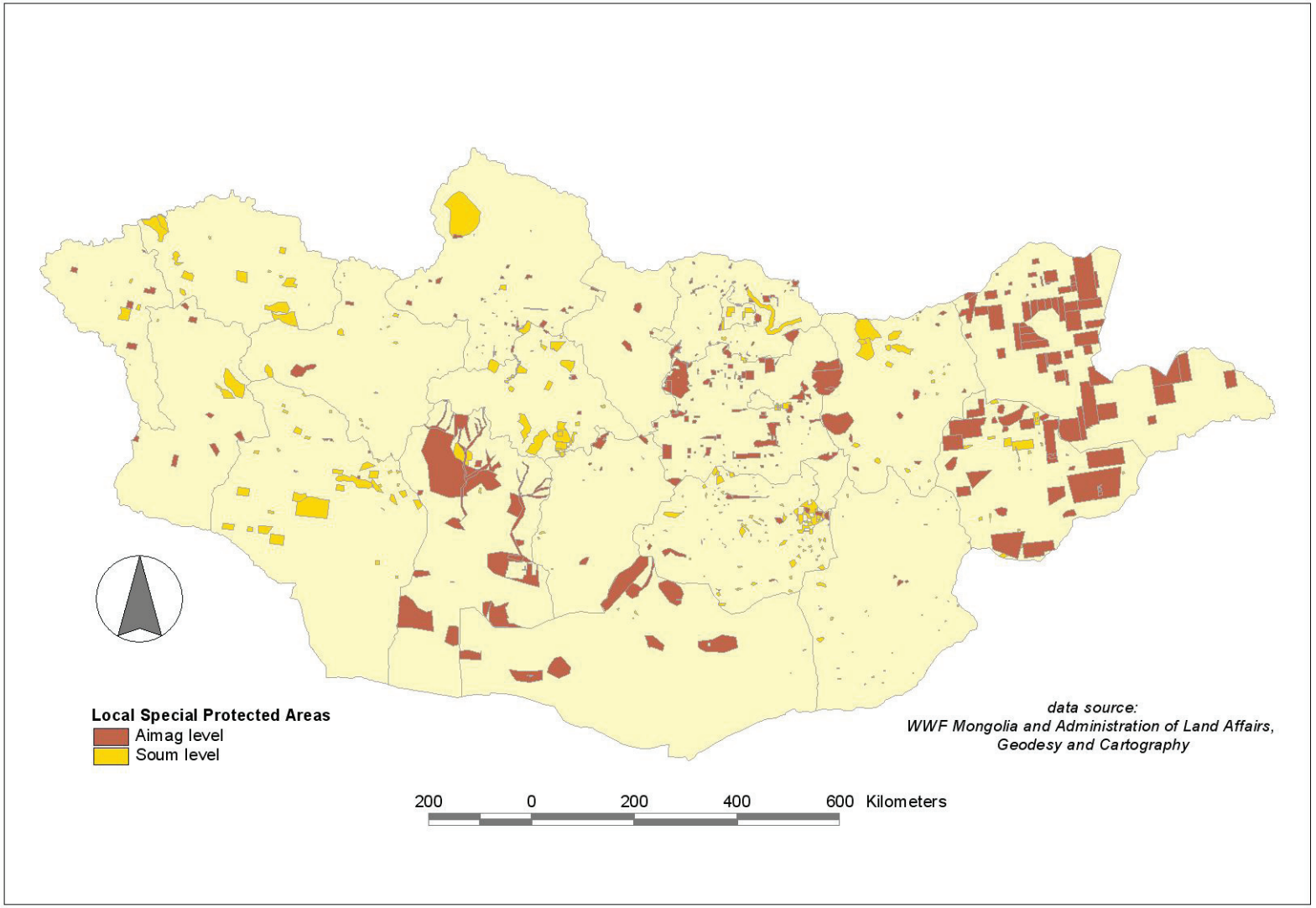
Annex 13. Tourist camps located in or adjacent to IBAs

Tourist camp name	Name of IBA
Khetsuu Khad	Airag Lake
Buuveit	Gorkhi-Terelj National Park
Melkhii Khad	Gorkhi-Terelj National Park
San Juulchin	Gorkhi-Terelj National Park
Terelj Bumban	Gorkhi-Terelj National Park
Terelj Camp 1	Gorkhi-Terelj National Park
Terelj Camp 2	Gorkhi-Terelj National Park
Terelj Camp 3	Gorkhi-Terelj National Park
Terelj Camp 4	Gorkhi-Terelj National Park
Terelj Camp 5	Gorkhi-Terelj National Park
Terelj Camp 6	Gorkhi-Terelj National Park
Terelj Camp 7	Gorkhi-Terelj National Park
Terelj Camp 8	Gorkhi-Terelj National Park
Terelj Camp 9	Gorkhi-Terelj National Park
Terelj Camp 10	Gorkhi-Terelj National Park
Terelj Camp 11	Gorkhi-Terelj National Park
Terelj Camp 12	Gorkhi-Terelj National Park
Terelj Camp 13	Gorkhi-Terelj National Park
Terelj Camp 14	Gorkhi-Terelj National Park
Terelj Camp 15	Gorkhi-Terelj National Park
Terelj Camp 16	Gorkhi-Terelj National Park
Terelj Camp 17	Gorkhi-Terelj National Park
Terelj Camp 18	Gorkhi-Terelj National Park
Terelj Camp 19	Gorkhi-Terelj National Park
Terelj Camp 20	Gorkhi-Terelj National Park
Terelj Camp 21	Gorkhi-Terelj National Park
Terelj Camp 22	Gorkhi-Terelj National Park
Terelj Camp 23	Gorkhi-Terelj National Park
Terelj Camp 24	Gorkhi-Terelj National Park
Terelj Camp 25	Gorkhi-Terelj National Park
Terelj Camp 26	Gorkhi-Terelj National Park
Terelj Camp 27	Gorkhi-Terelj National Park
Terelj Camp 28	Gorkhi-Terelj National Park
Terelj Camp 29	Gorkhi-Terelj National Park
Terelj Camp 30	Gorkhi-Terelj National Park
Terelj Camp 31	Gorkhi-Terelj National Park
Terelj Camp 32	Gorkhi-Terelj National Park
Terelj Camp 33	Gorkhi-Terelj National Park
Terelj Camp 34	Gorkhi-Terelj National Park
UB 2	Gorkhi-Terelj National Park
Khashkhan	Khangain Nuruu National Park
Orkhon Camp 1	Khangain Nuruu National Park
Orkhon Camp 2	Khangain Nuruu National Park
Orkhon Camp 3	Khangain Nuruu National Park
Orkhon Camp 4	Khangain Nuruu National Park
Orkhon Camp 5	Khangain Nuruu National Park
Orkhon Camp 6	Khangain Nuruu National Park
Orkhon Camp 7	Khangain Nuruu National Park
Talbiun	Khangain Nuruu National Park
Khovsgol Camp 1	Khovsgol Lake
Khovsgol Camp 2	Khovsgol Lake
Khovsgol Camp 3	Khovsgol Lake
Khovsgol Camp 4	Khovsgol Lake
Khovsgol Camp 5	Khovsgol Lake
Khovsgol Camp 6	Khovsgol Lake
Khovsgol Camp 7	Khovsgol Lake
Khovsgol Camp 8	Khovsgol Lake
Khovsgol Dalai	Khovsgol Lake
Khovsgol Khaan	Khovsgol Lake
Ogii	Ogii Lake
Ogii Camp 4	Ogii Lake
Enkh	Shaazan Lake
Khorgo Camp 1	Terkhiin Tsagaan Lake
Khorgo Camp 2	Terkhiin Tsagaan Lake
Ugtam	Ugtam Nature Reserve

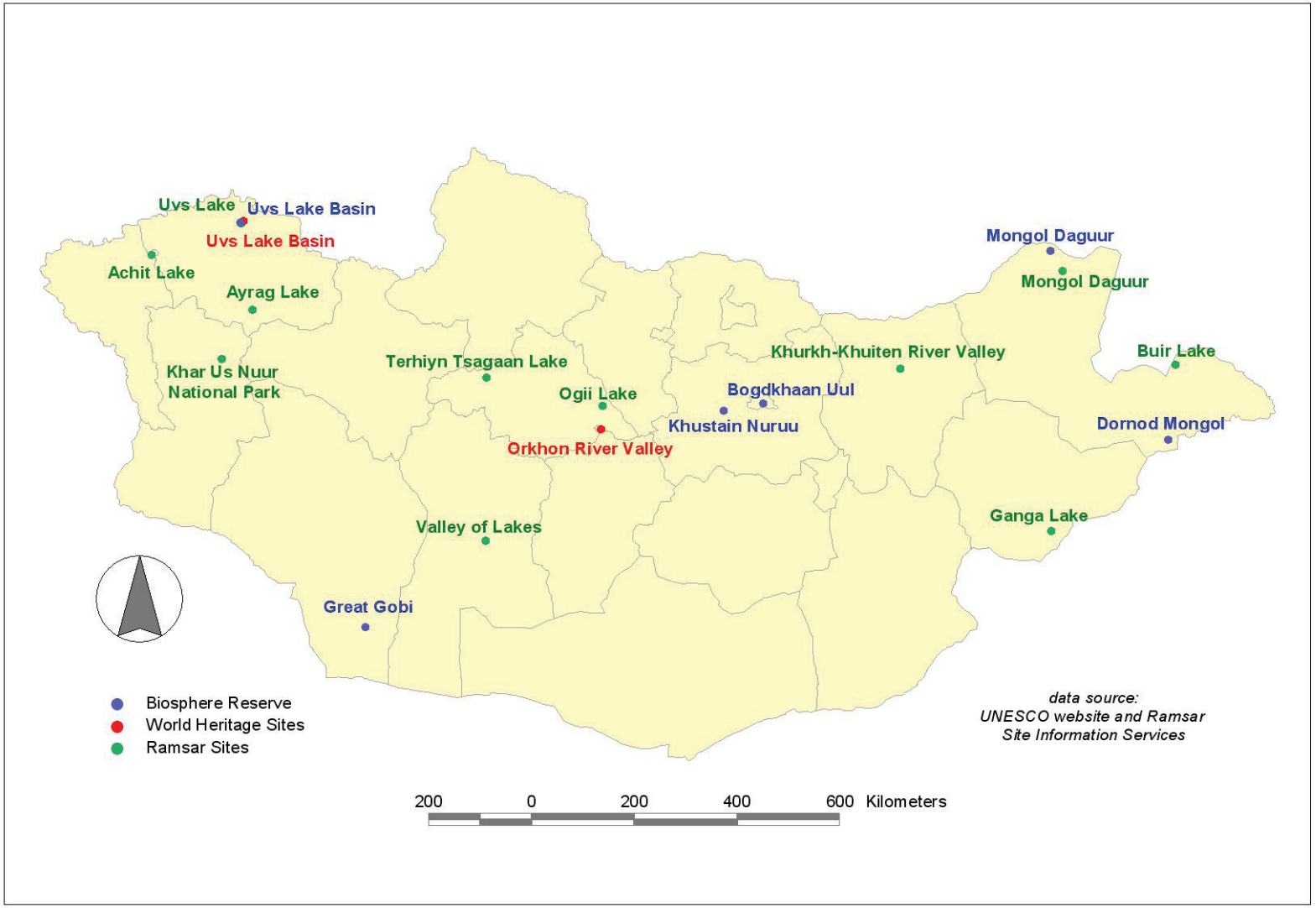
Map 1. State Special Protected Areas in Mongolia, *as of June 2008*



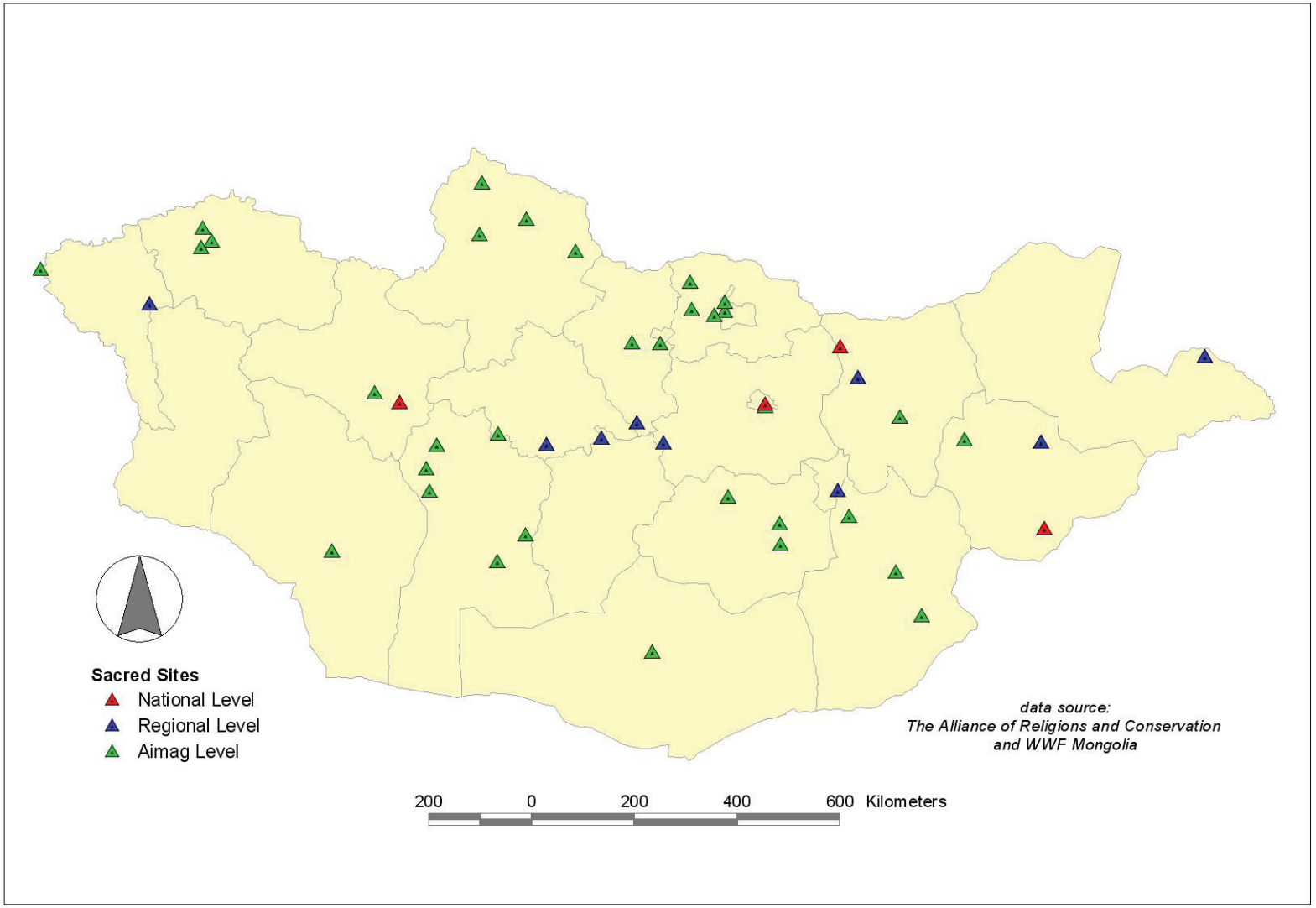
Map 2. Local Special Protected Areas in Mongolia, *as of May 2008*



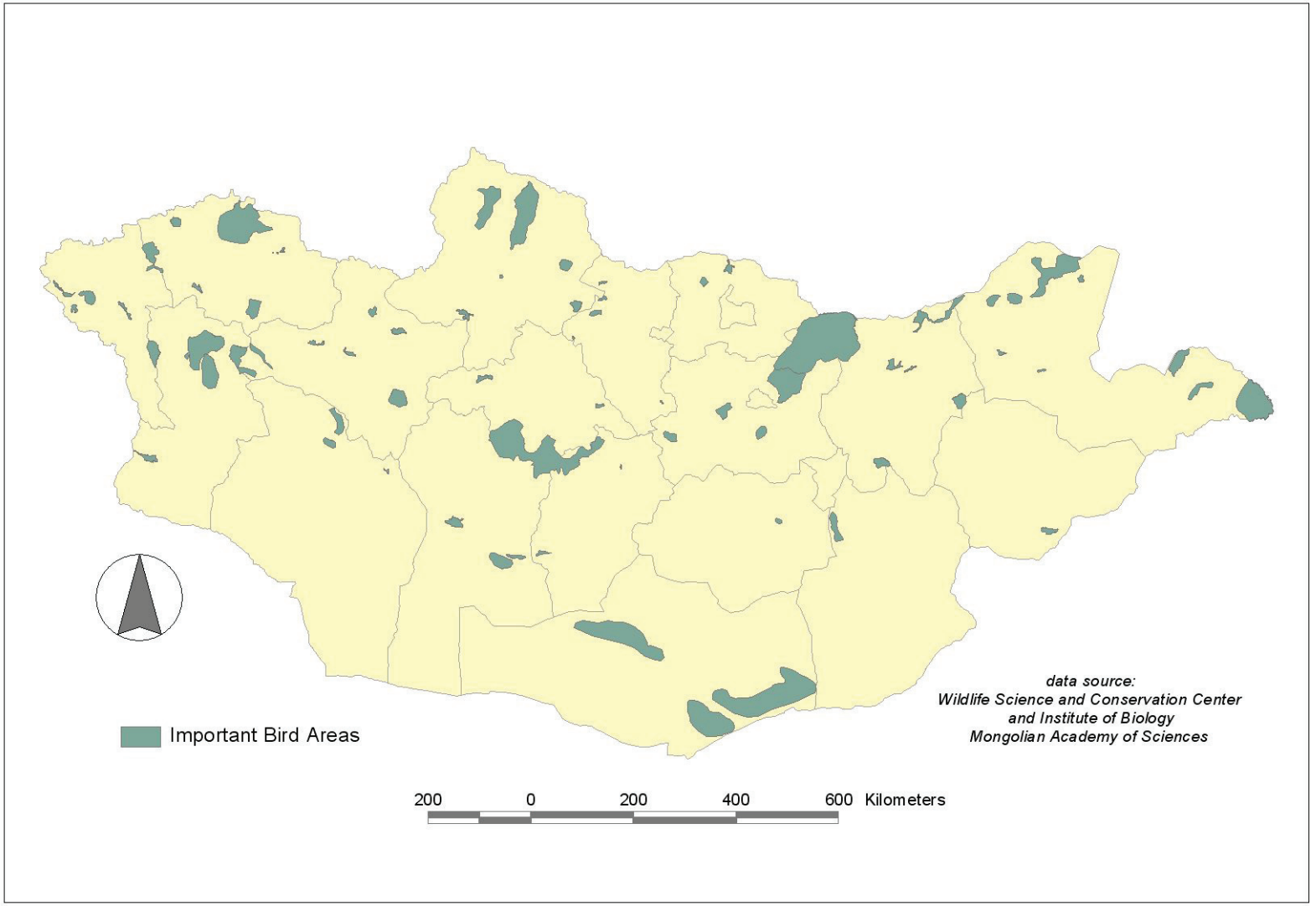
Map 3. Internationally protected areas in Mongolia



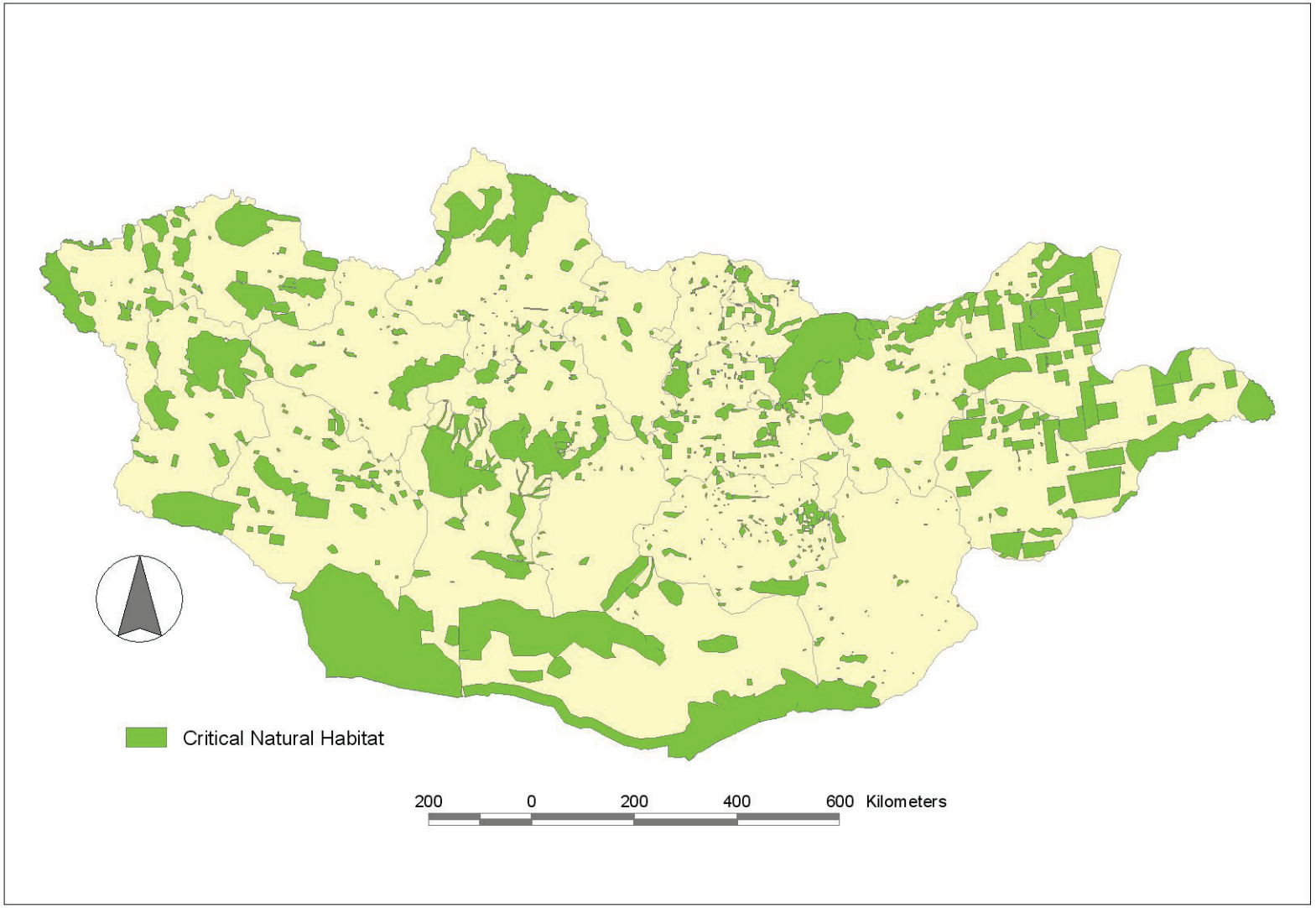
Map 4. Natural sacred sites in Mongolia



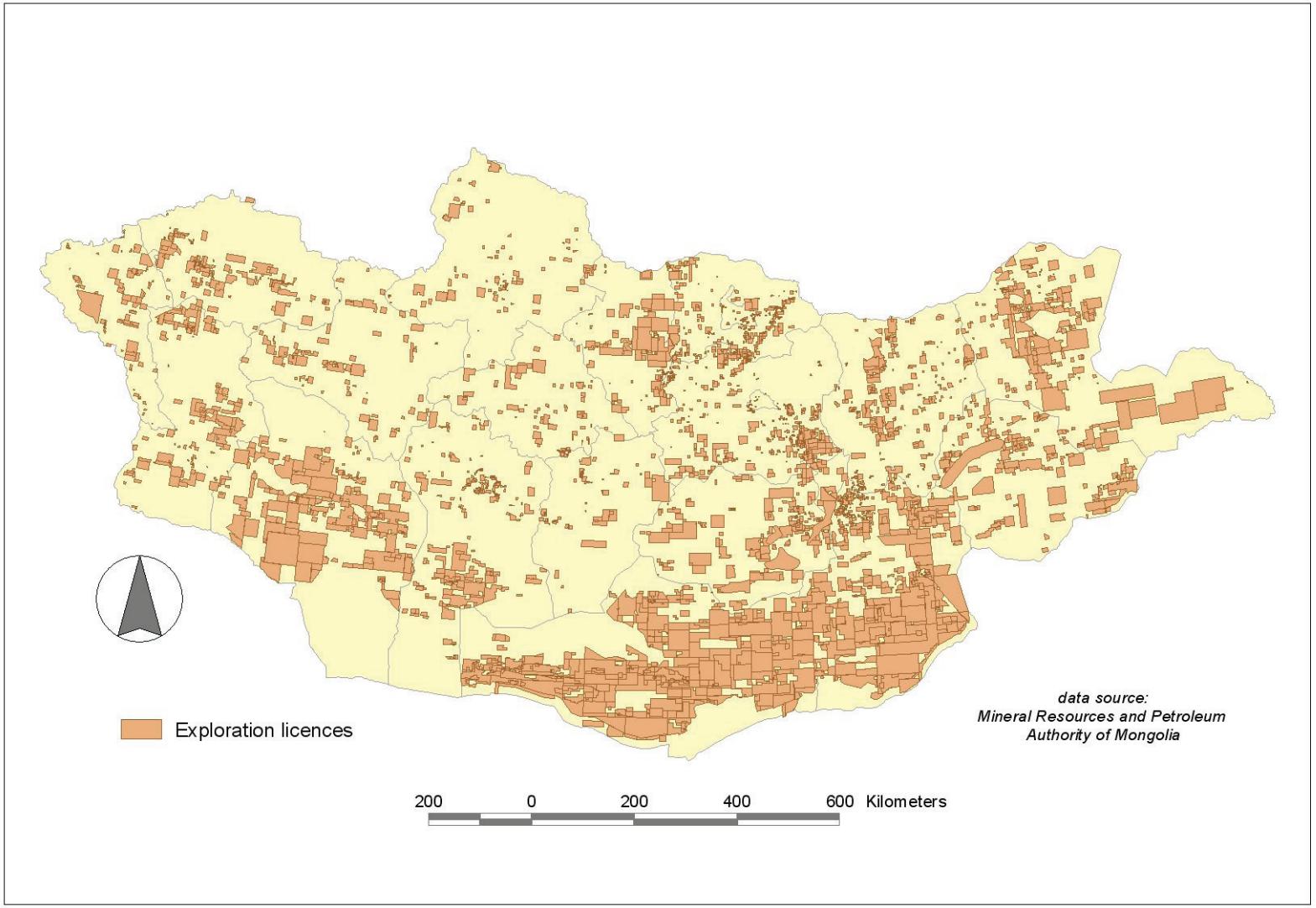
Map 5. Important Bird Areas in Mongolia



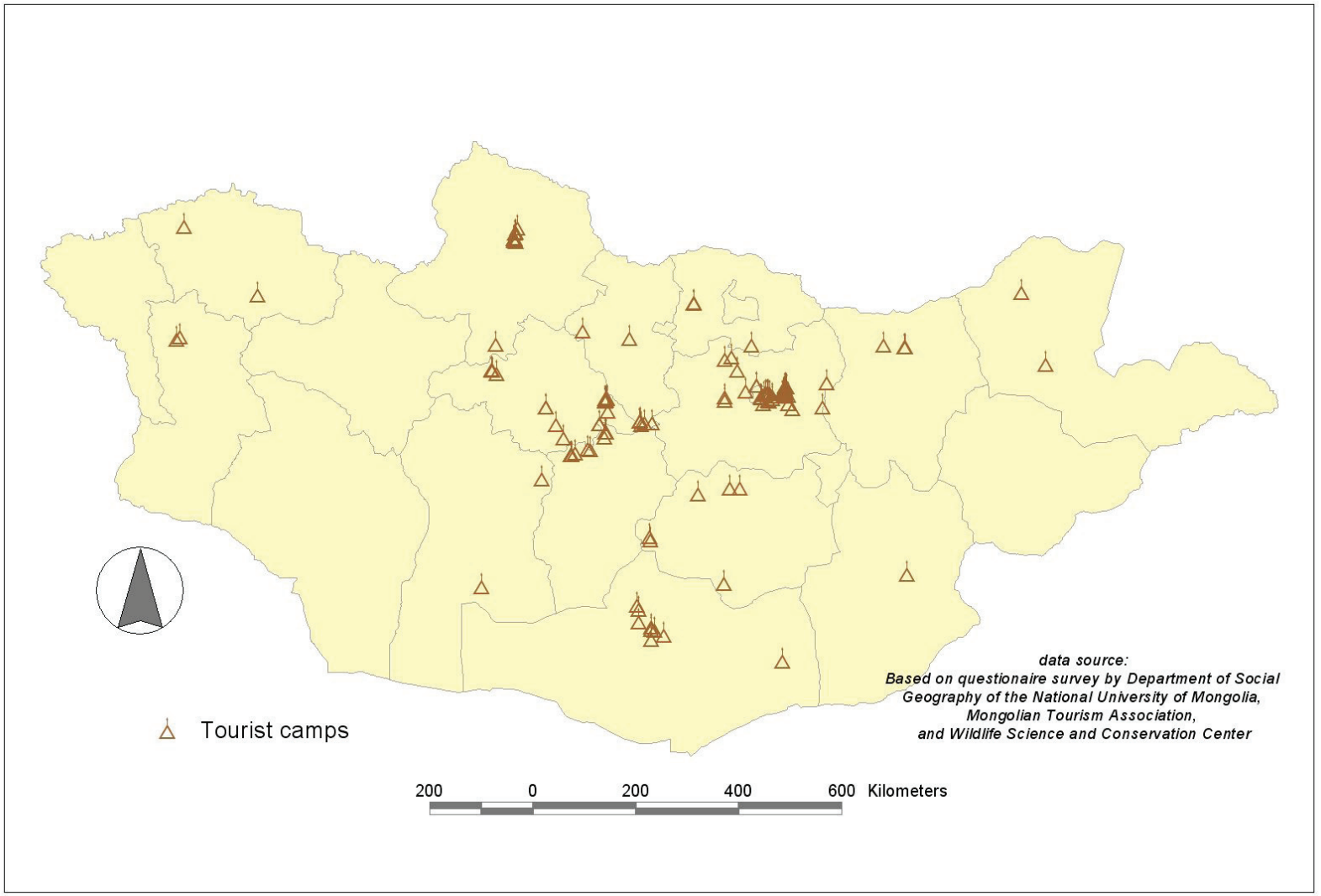
Map 6. Consolidated set of critical natural habitats in Mongolia



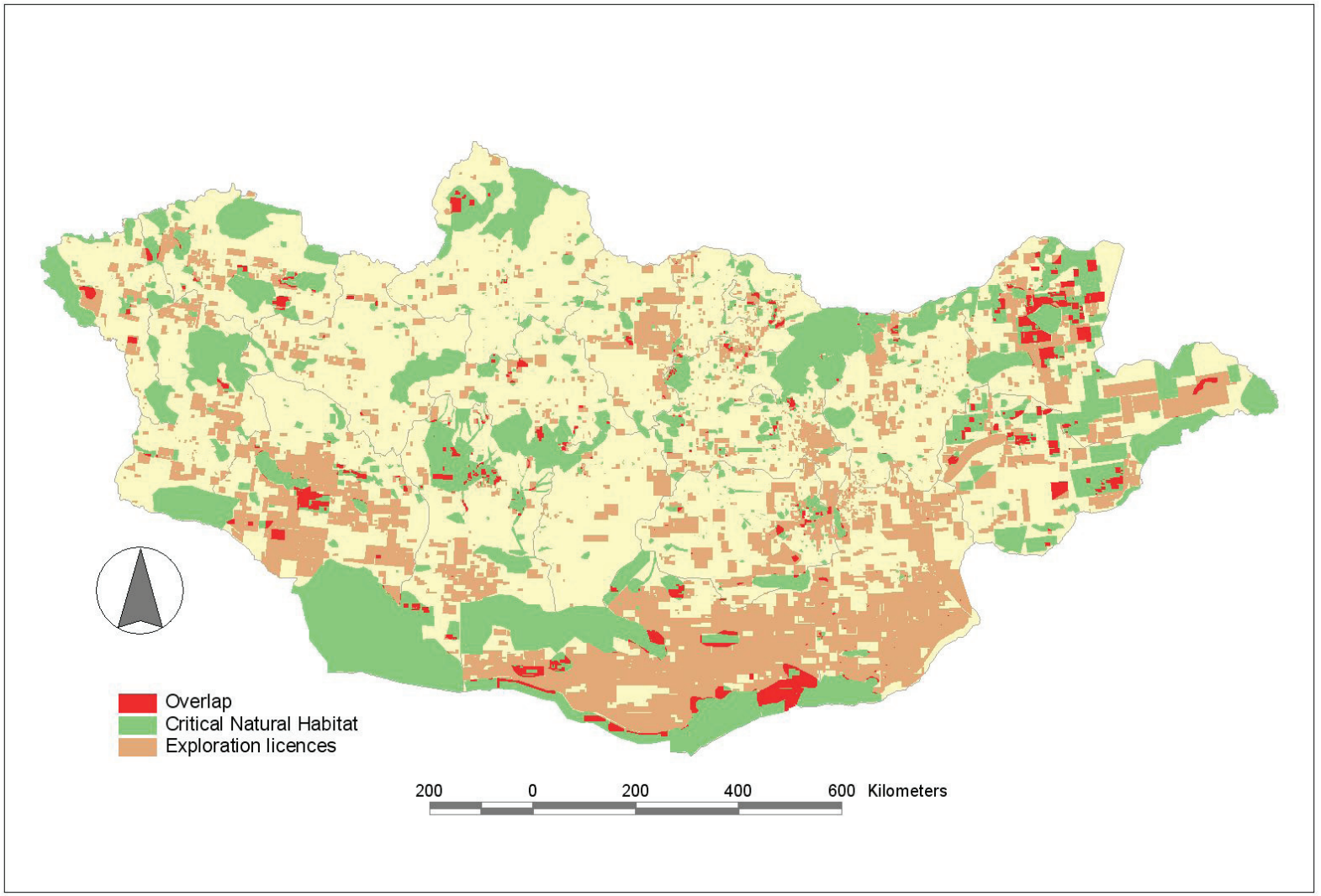
Map 7. Exploration licences in Mongolia, *as of May 2008*



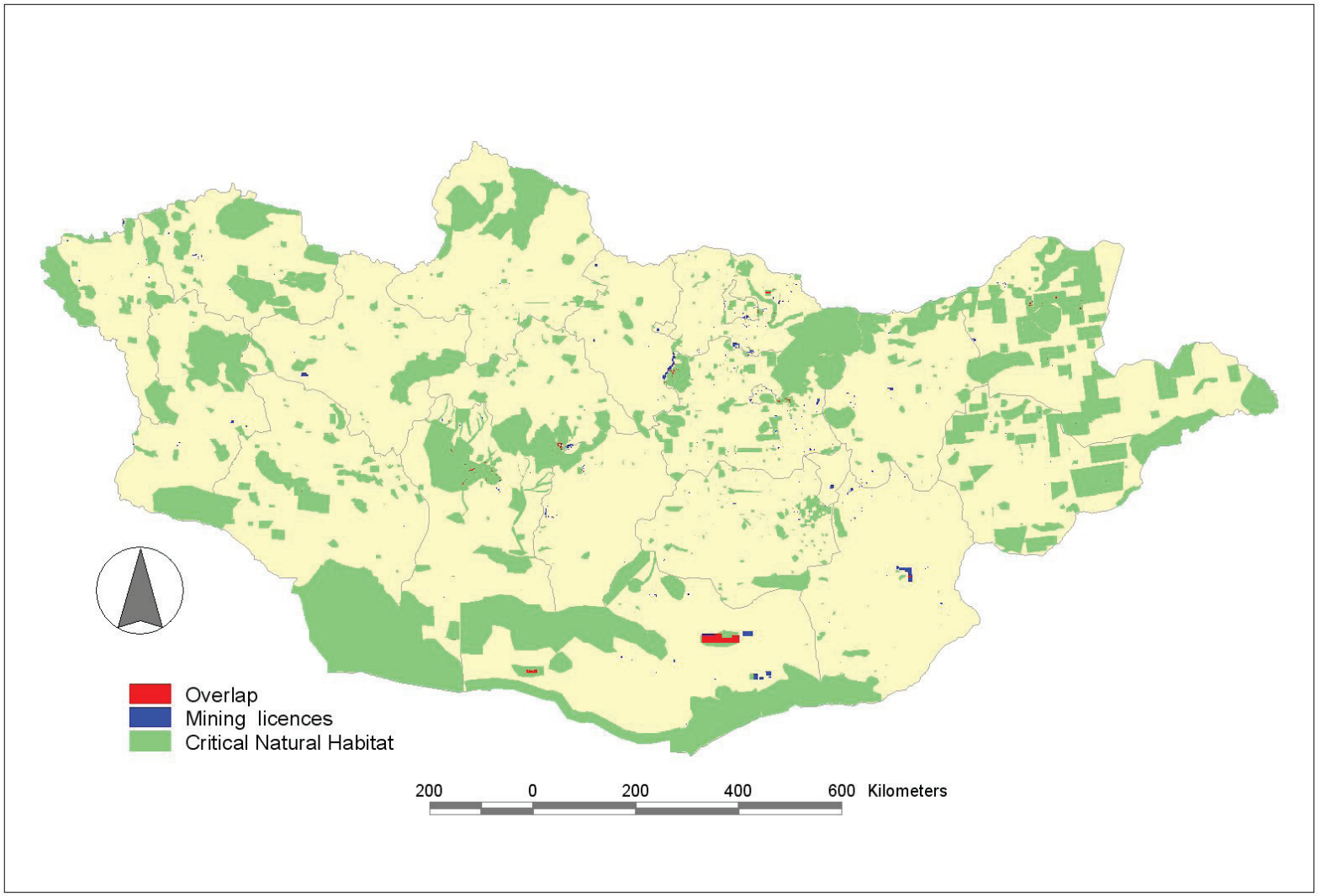
Map 8. Location of tourist camps in Mongolia



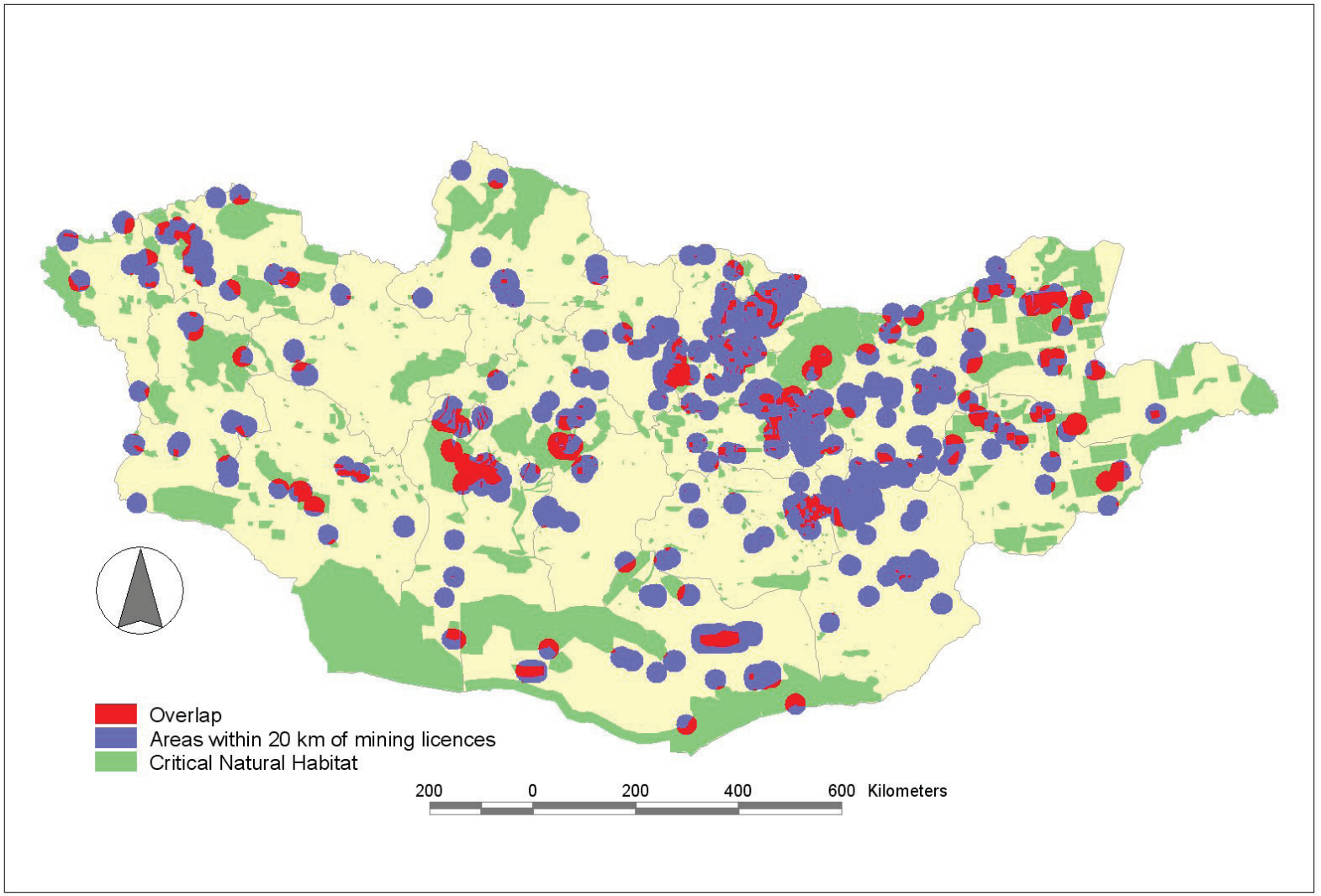
Map 9. Overlap between critical natural habitats and exploration licences



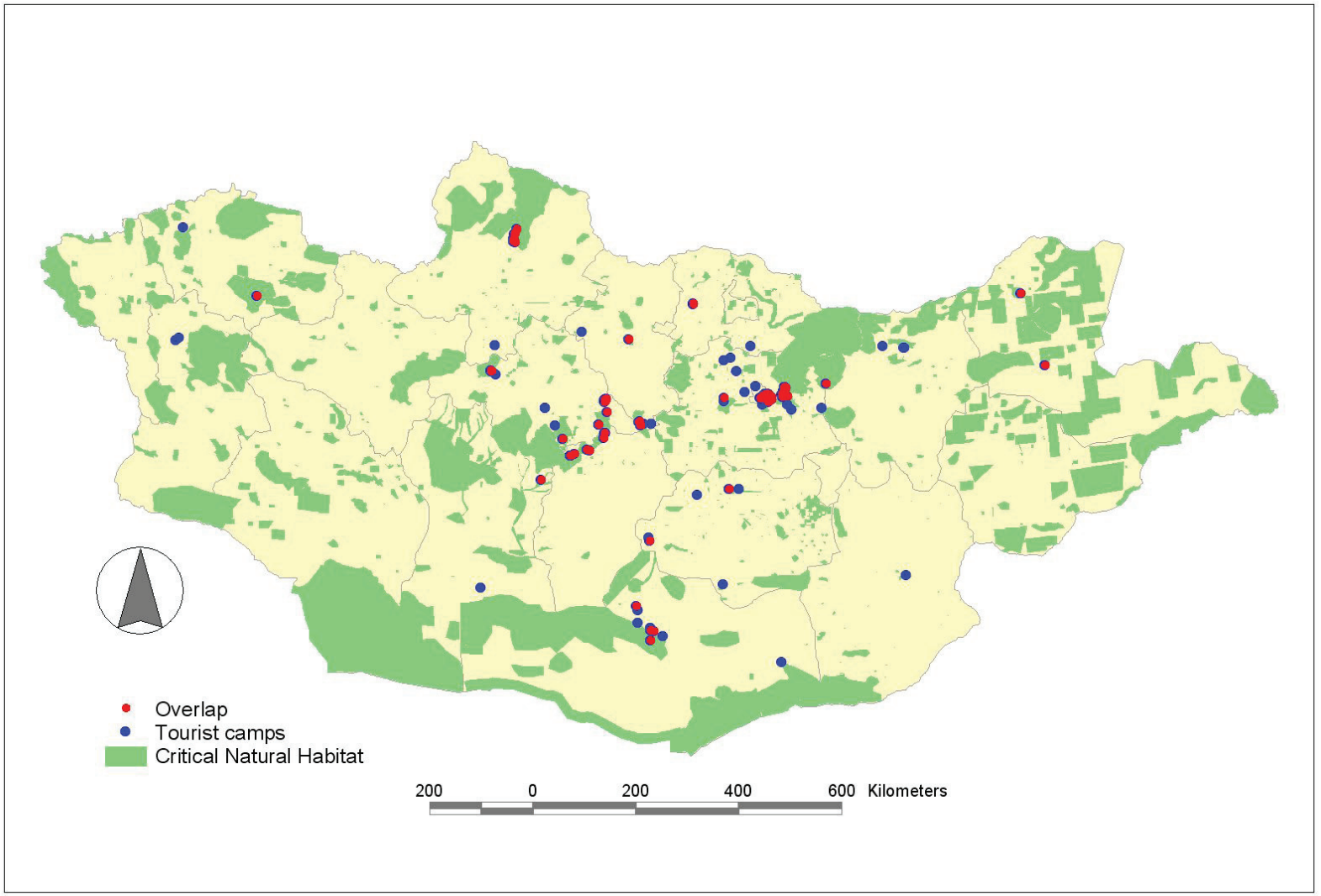
Map 10. Overlap between critical natural habitats and mining licences



Map 11. Overlap between critical natural habitats and areas within 20 km of mining licences

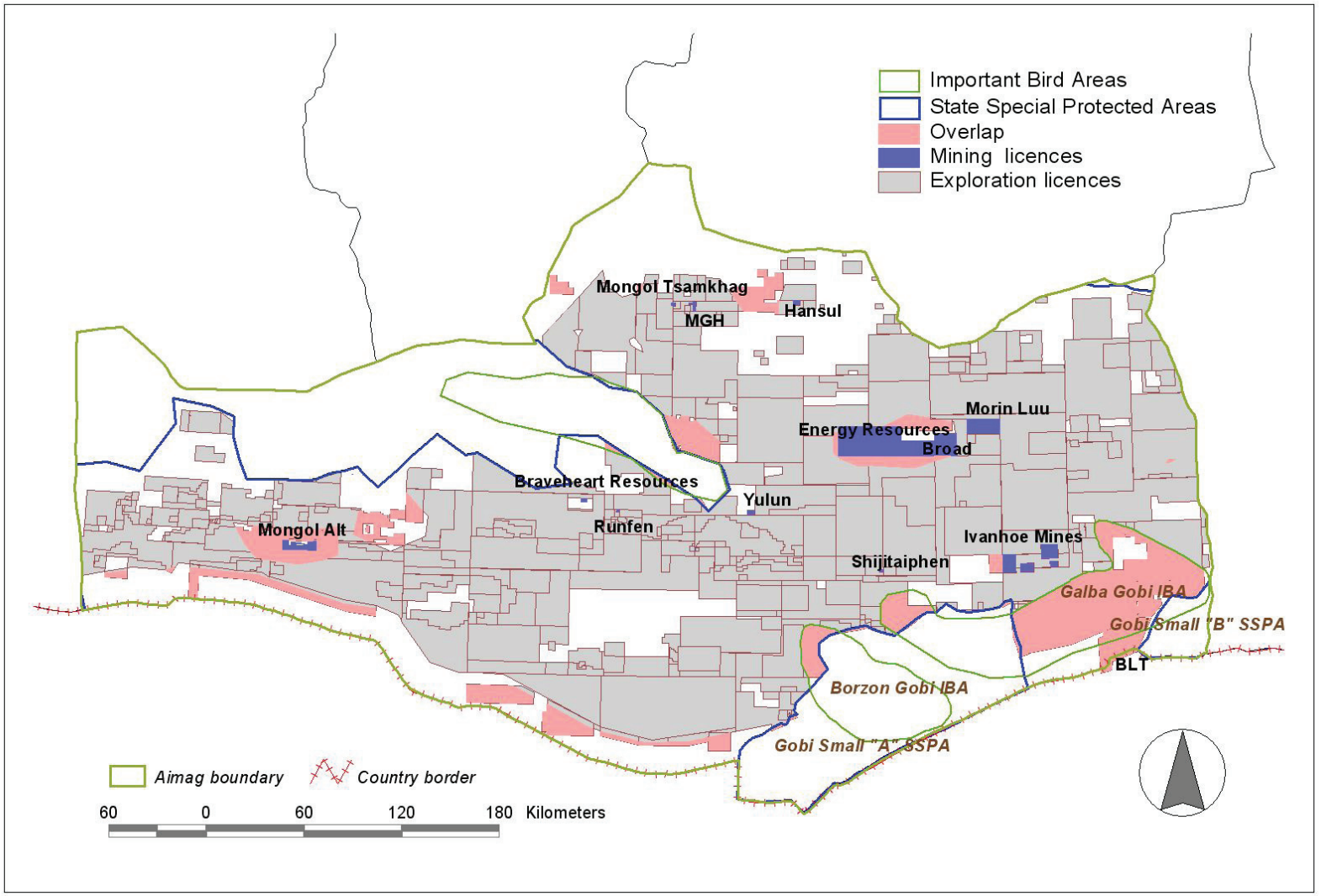


Map 12. Overlap between critical natural habitats and tourist camps

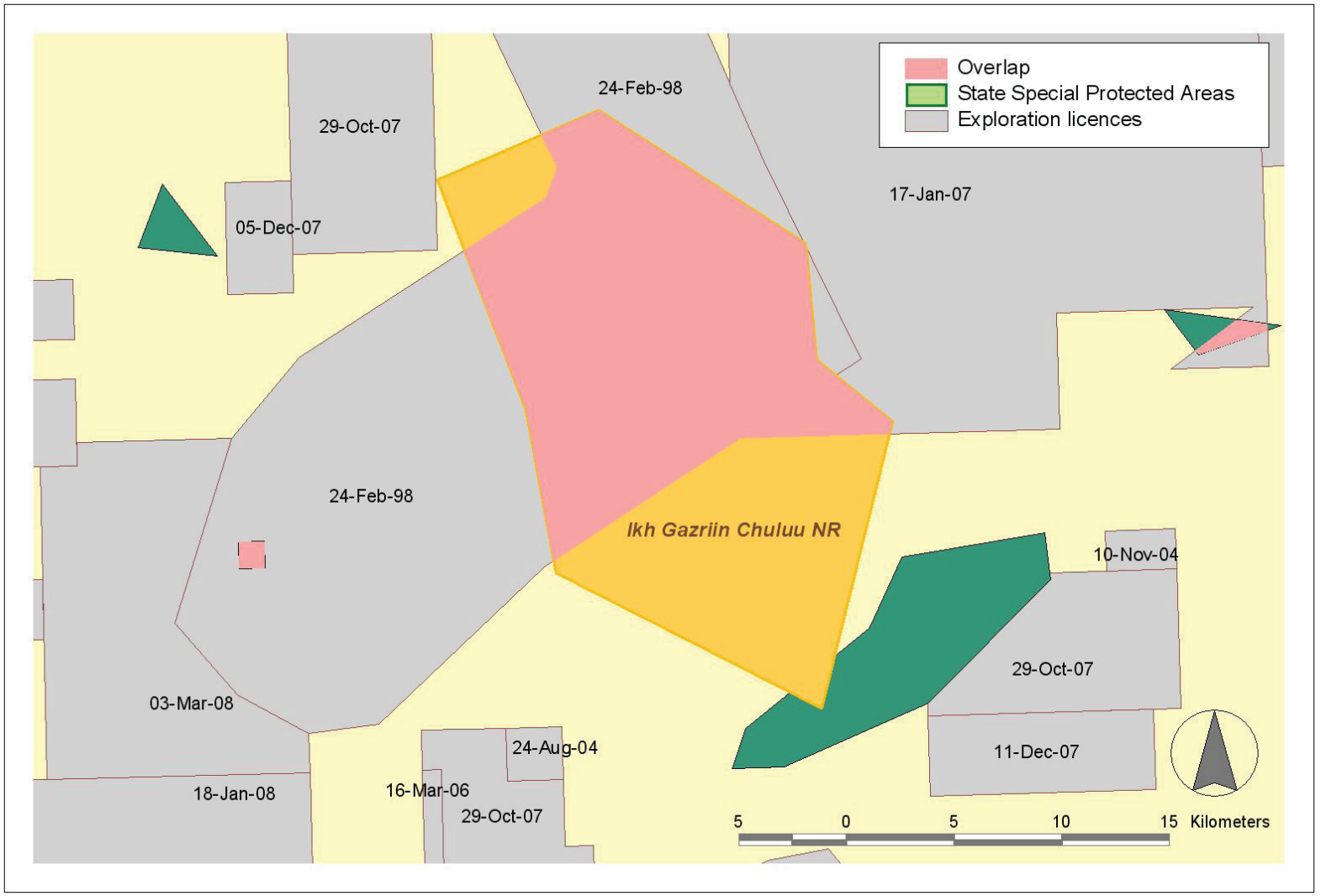


Map 13. Overlap between critical natural habitats and exploration and mining licences in the north-east of Dornod aimag

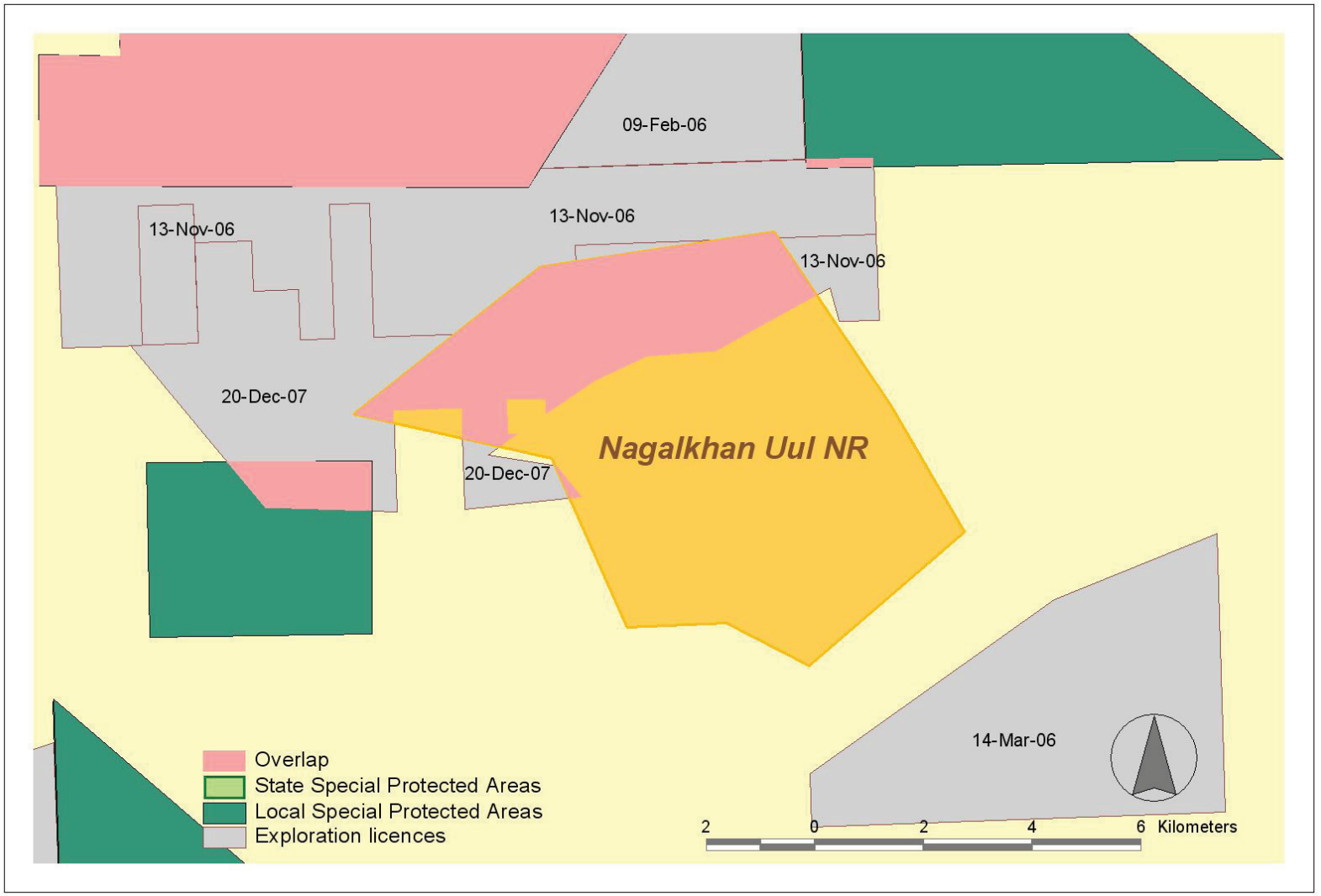
Map 14. Overlap between State SPAs, IBAs and exploration and mining licences in Omnogobi aimag



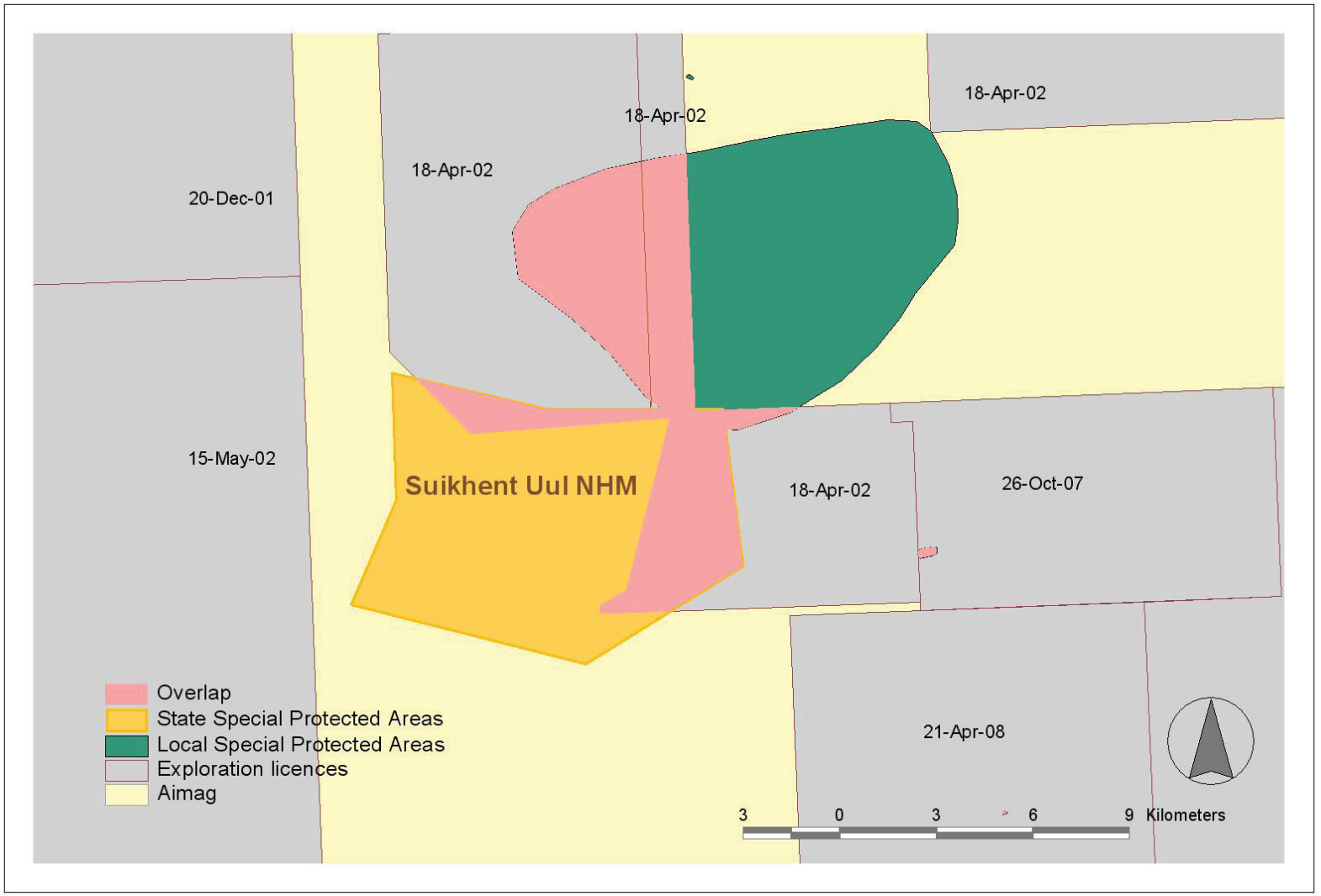
Map 15. Overlap between Ikh Gazriin Chuluu Nature Reserve and exploration and mining licences



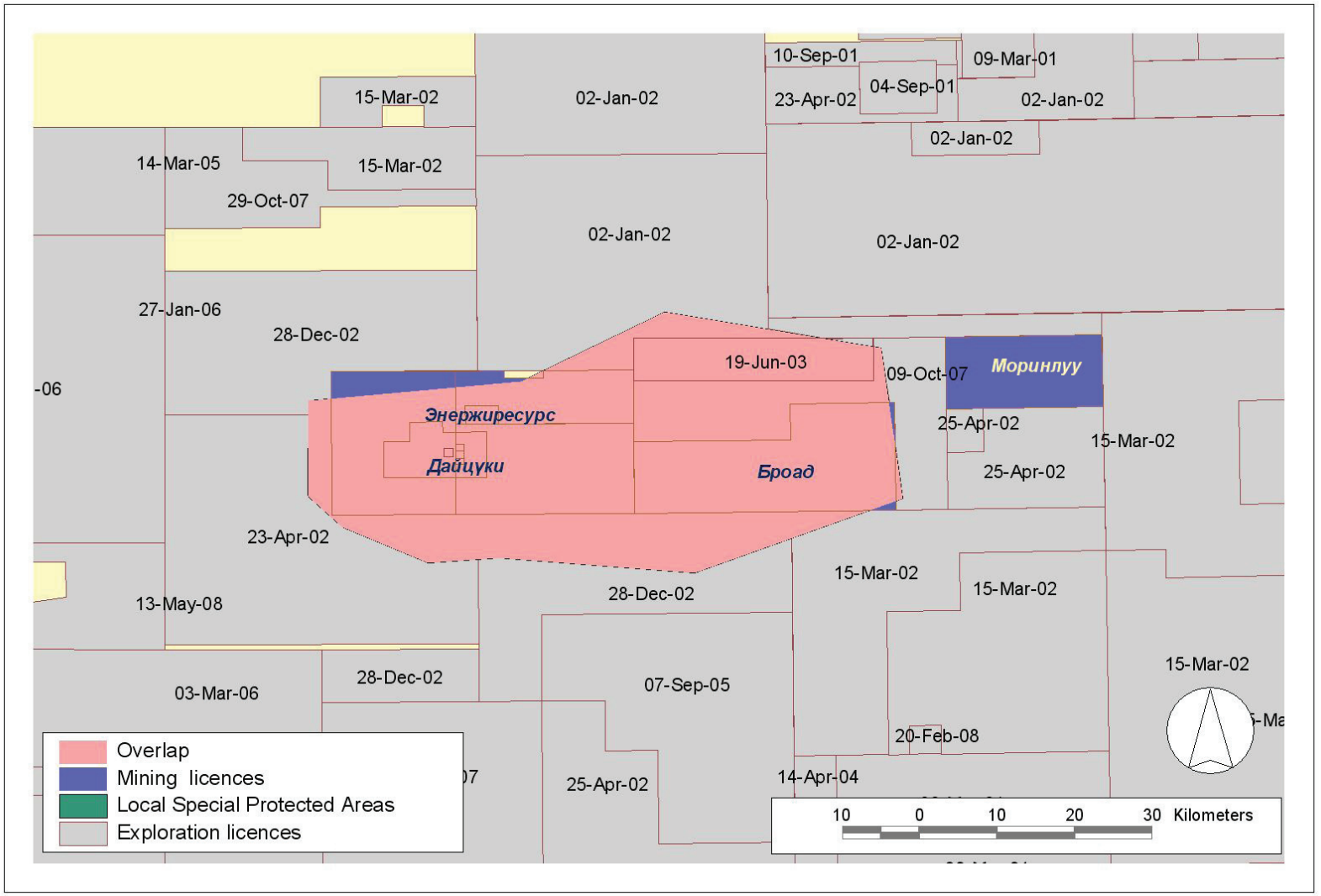
Map 16. Overlap between Nagalkhan Nature Reserve and exploration and mining licences



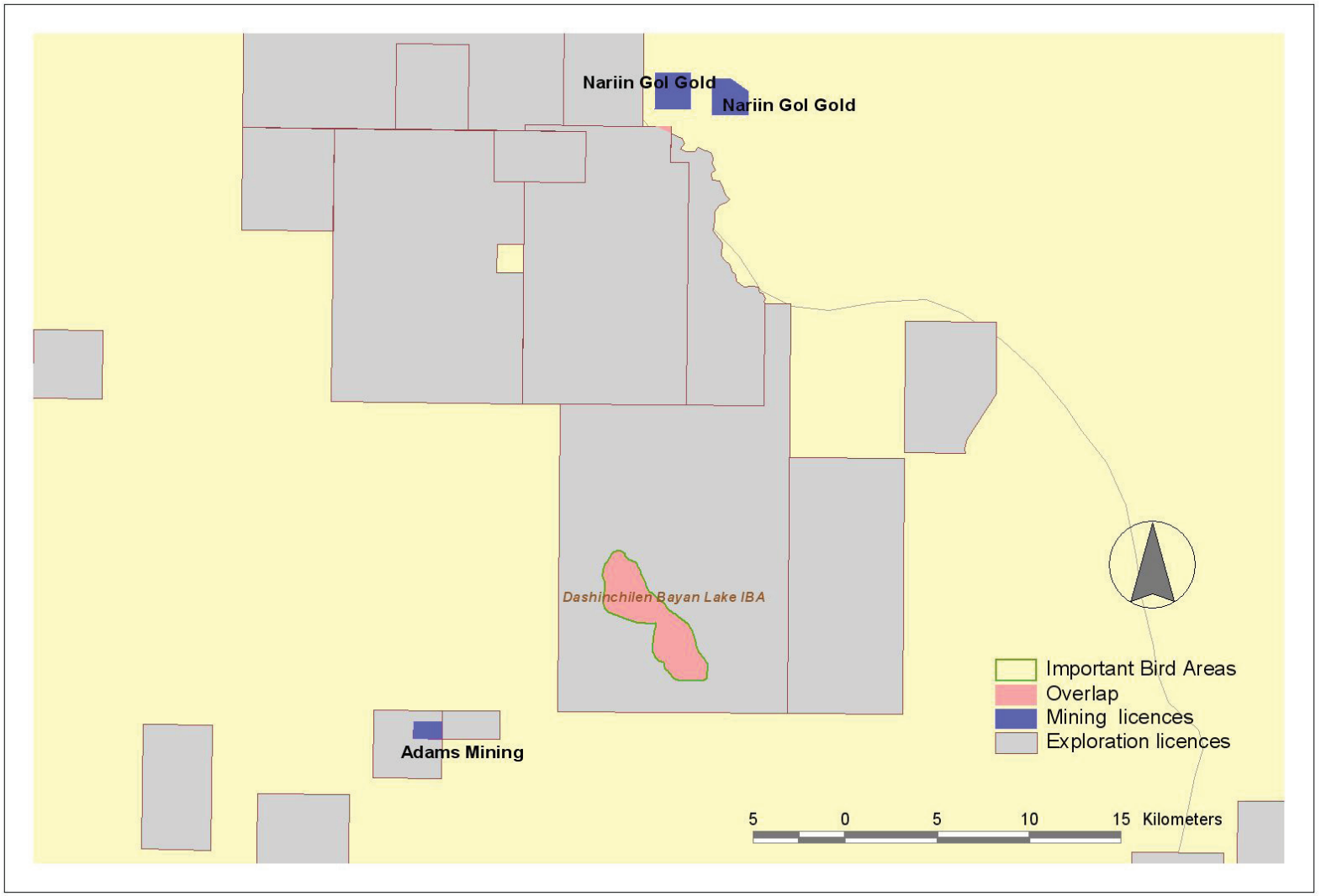
Map 17. Overlap between Suikhent Uul Monument and exploration and mining licences



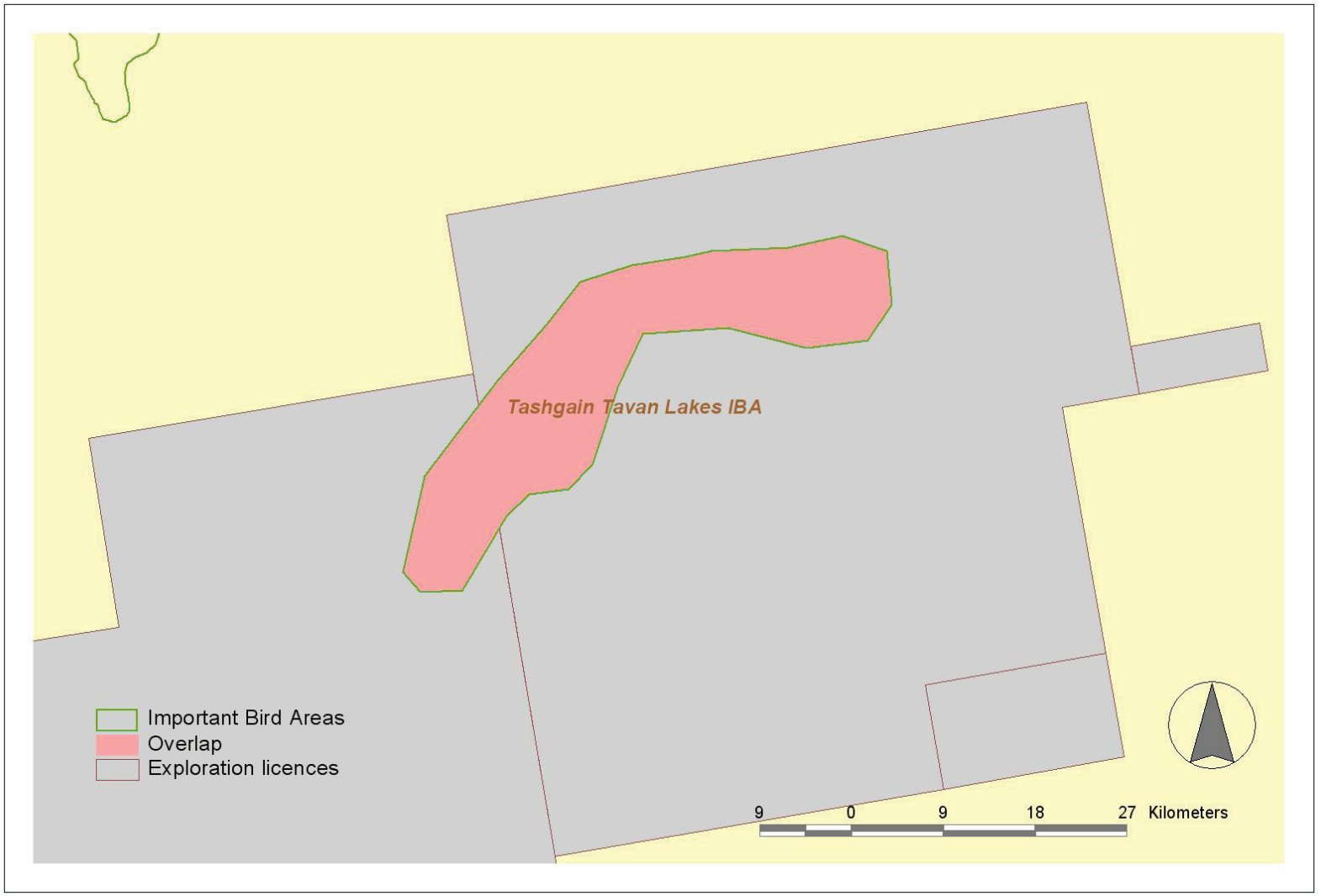
Map 18. Overlap between Tavan Tolgoi Local SPA and exploration and mining licences



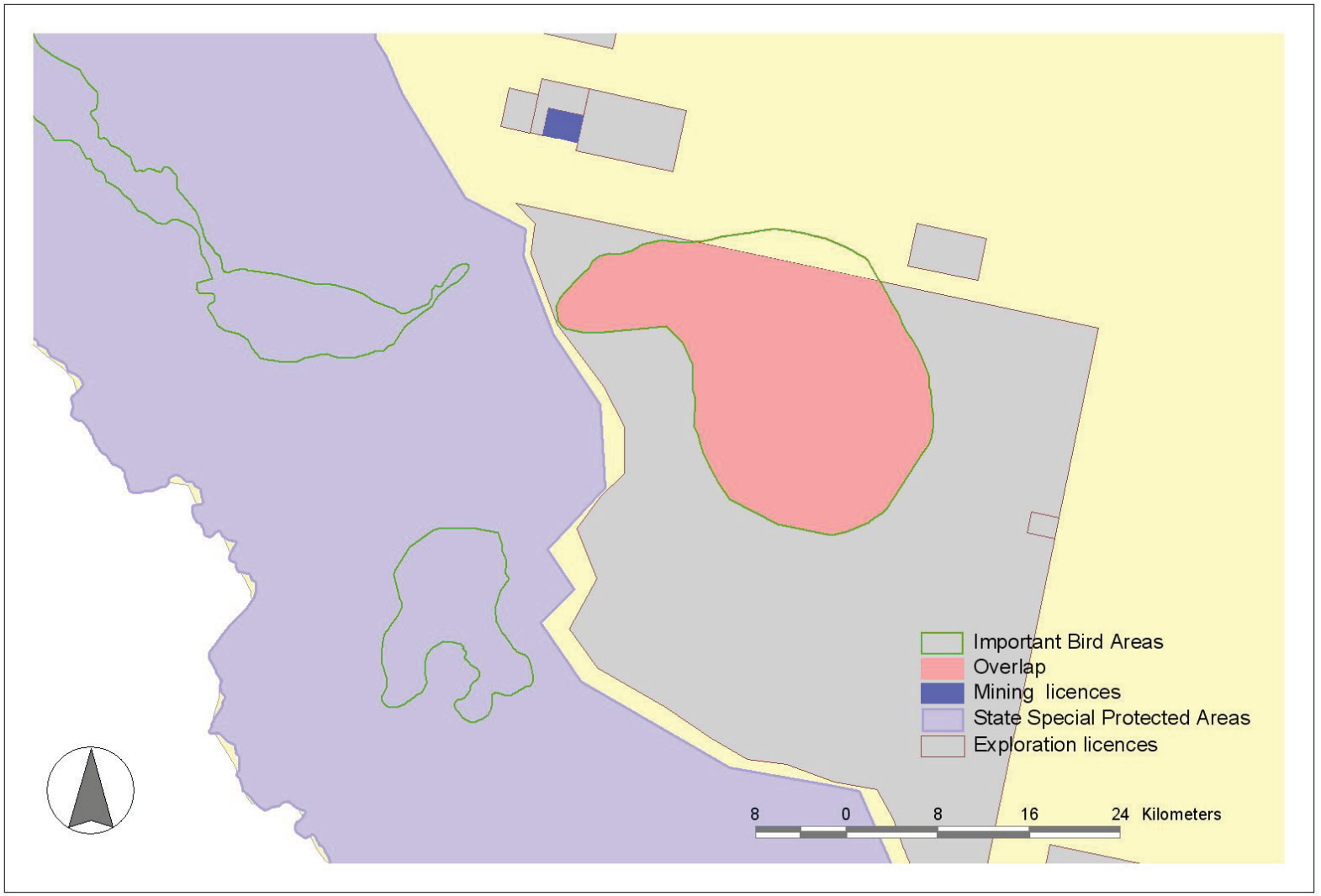
Map 19. Overlap between Dashinchilen Bayan Lake IBA and exploration and mining licences



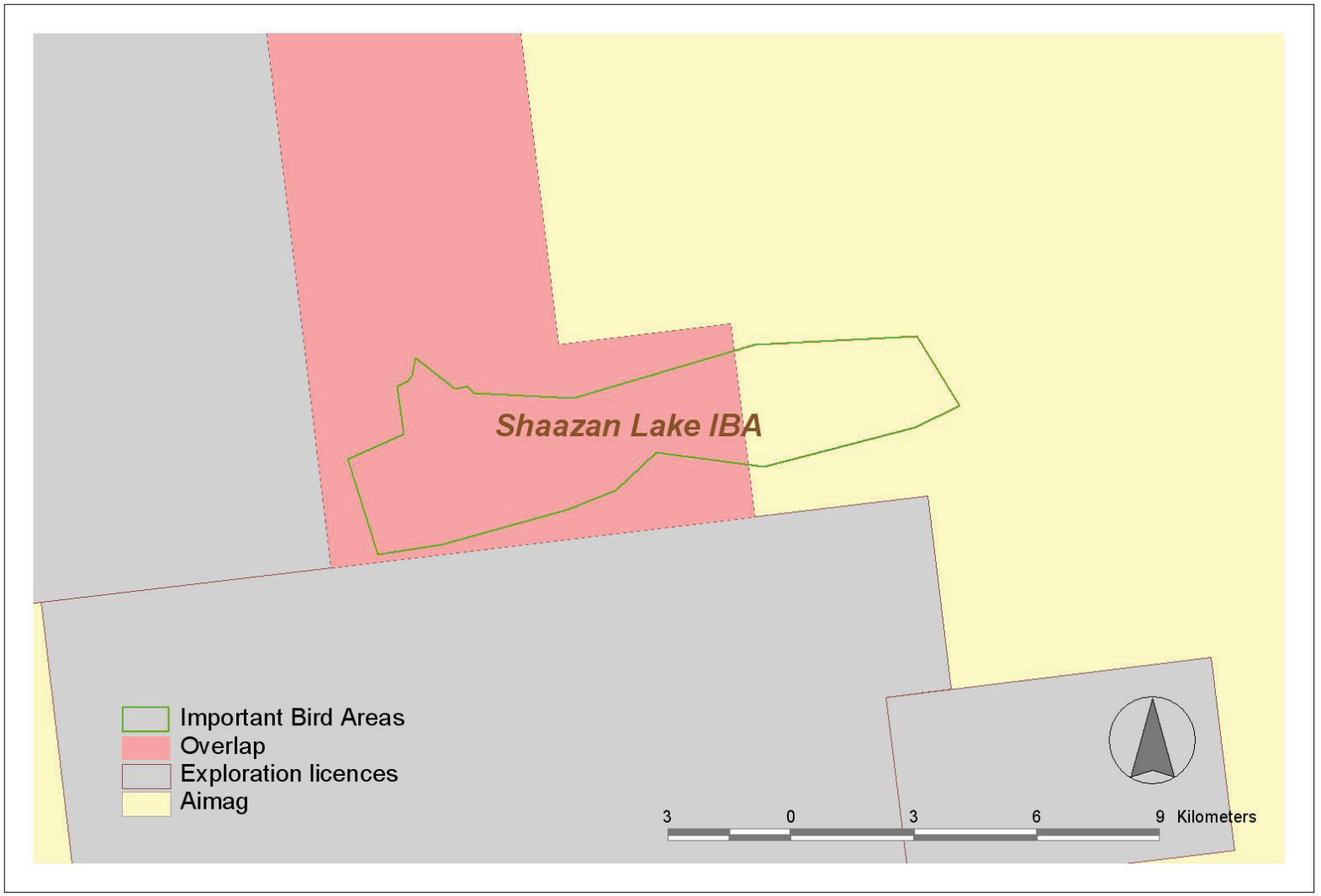
Map 20. Overlap between Tashgain Tavan Lakes IBA and exploration and mining licences



Map 21. Overlap between Tsengel Khairkhan Mountain IBA and exploration and mining licences



Map 22. Overlap between Shaazan Lake IBA and exploration and mining licences



Map 23. Overlap between Galba Gobi IBA and exploration and mining licences