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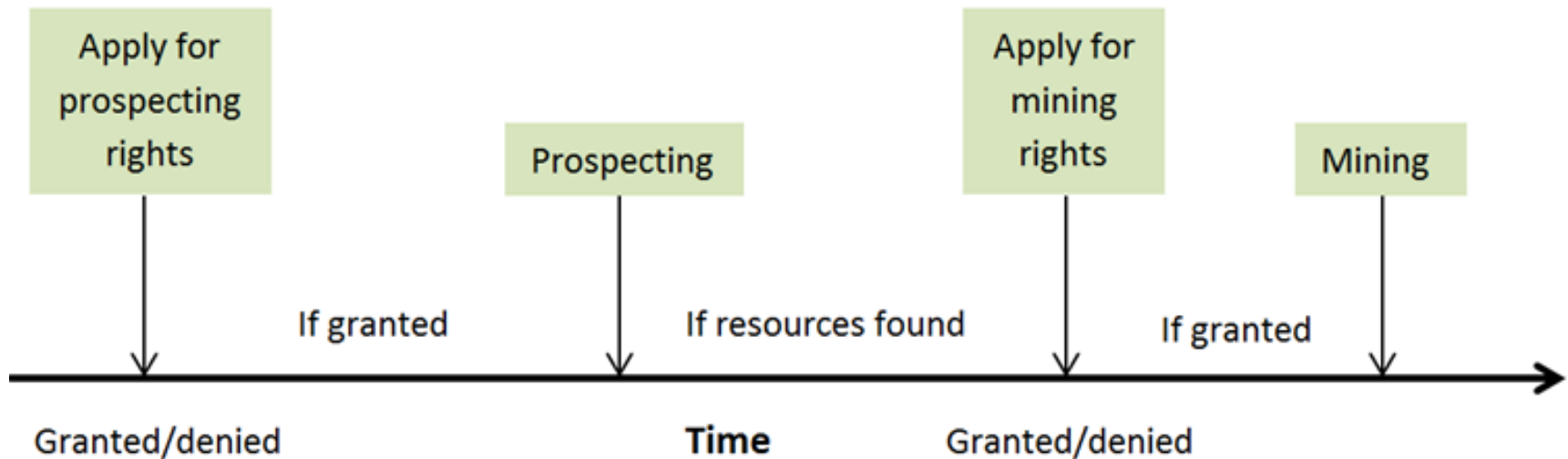
The rate and projected impact of development, with emphasis on mining, on the biodiversity in the Mpumalanga province, South Africa

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Aims

- Quantify the extent of development applications in Mpumalanga
- Predict the potential impact of future mining practices on Biodiversity and Water

Prospecting and mining



Land use/development data

- Data on Development Applications from 2005 to 2010
- Development applications categorized
 - Agriculture
 - Residential
 - Environmental
 - Infrastructure
 - Mining
 - Prospecting

Mining and prospecting

- Further divided

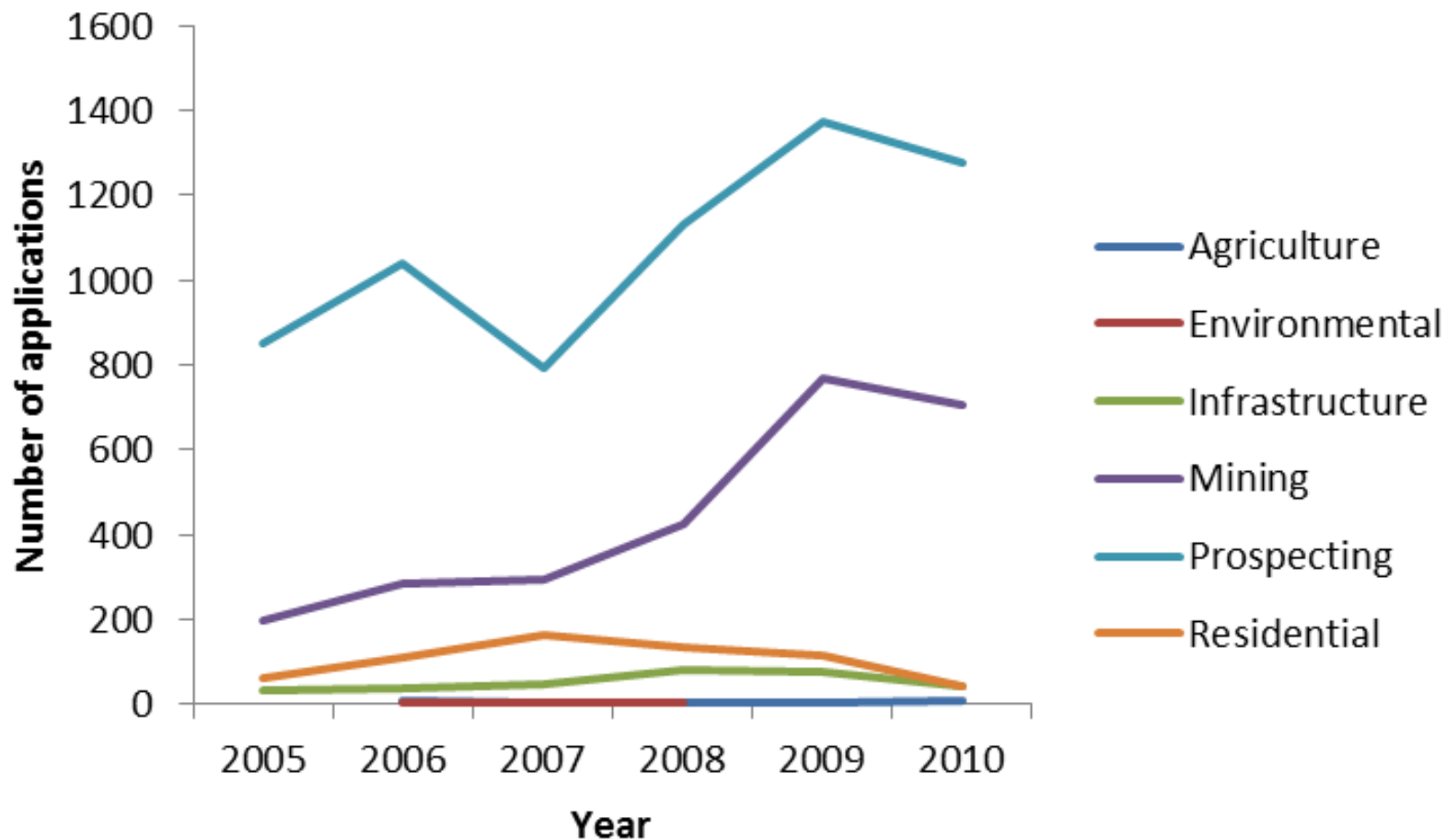
Base metals	Iron, nickel, lead, zinc, copper, tin, vanadium, cobalt, chromium, manganese, chrome, beryllium, molybdenum, niobium, titanium
Precious metals	Gold, platinum, silver, Platinum Group Metals, rhodium
Aggregates	Sand, gravel, concrete, dolerite, diorite, rock, stone, silica, shale, borrow pit, building materials, granite, gabbro, quartz, quartzite, road building materials, limestone, calcite, felsite, slate, clay
Coal	Coal
Coal and related	Coal, torbanite/oil shale, petrol, petroleum, anthracite
Minerals	Diamond, uranium, andalusite, pyrite, chalcopyrite, kaolin, titaniferous minerals, lithium, verdite

Biodiversity & Ecosystem Service data

- Mpumalanga Biodiversity Conservation Plan
- National Freshwater Ecosystem Priority Areas (NFEPAs)
 - Groundwater Recharge
 - Mean annual run-off

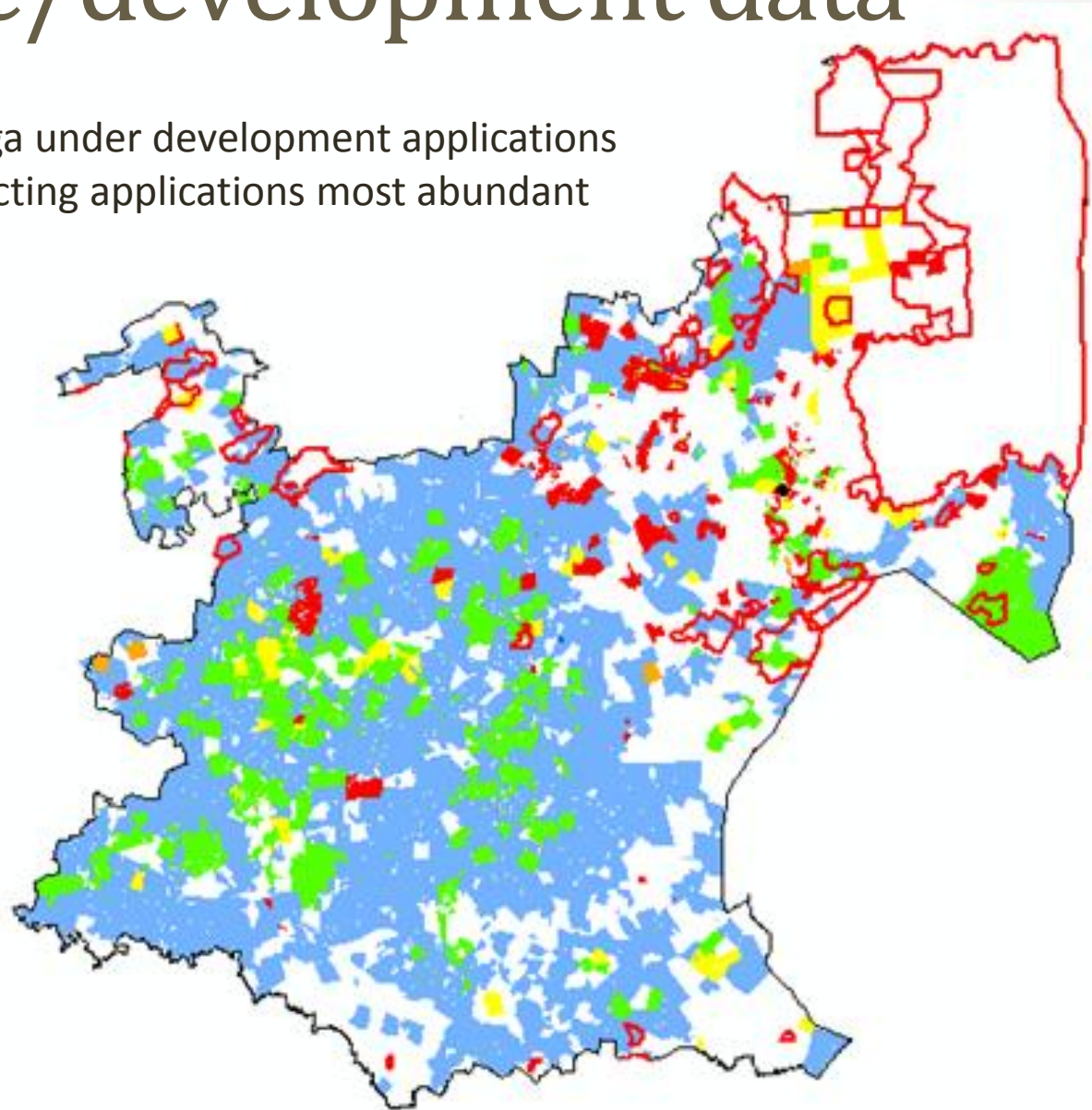
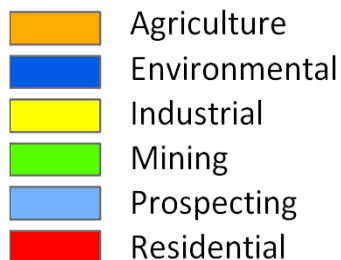
Development applications

- 10 099 applications during 2005 – 2010

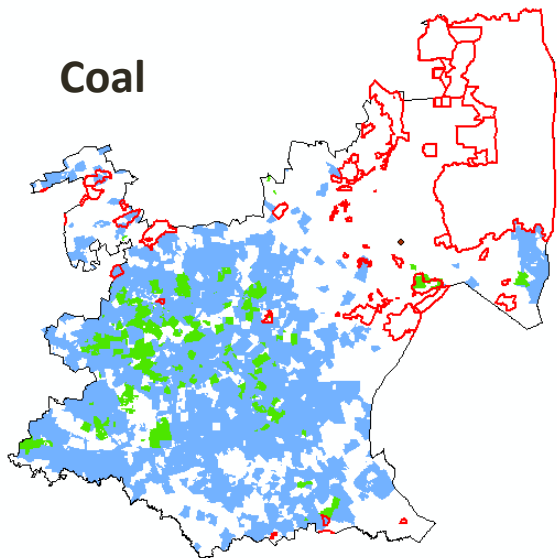


Land use/development data

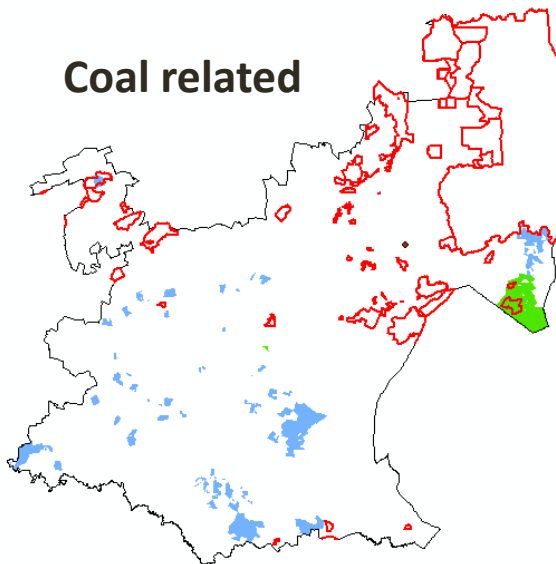
- 72% of Mpumalanga under development applications
- Mining and prospecting applications most abundant



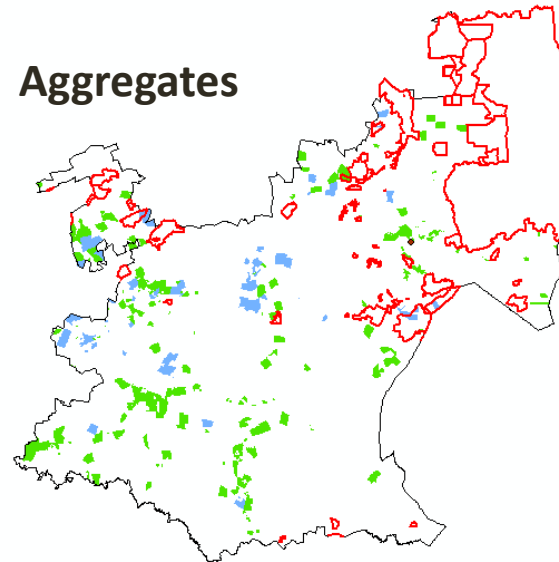
Coal



Coal related



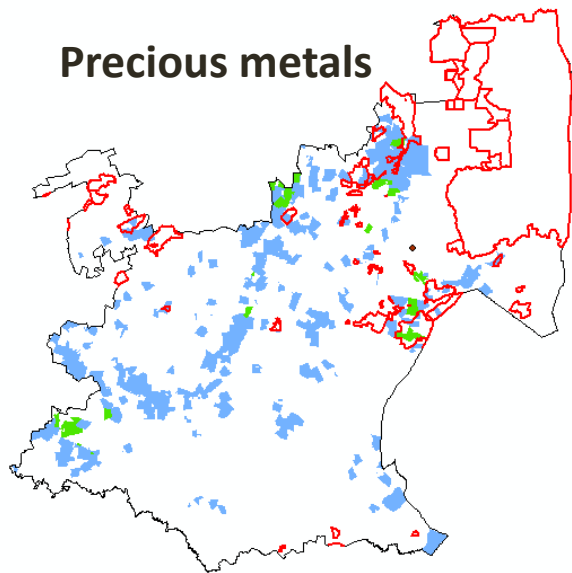
Aggregates



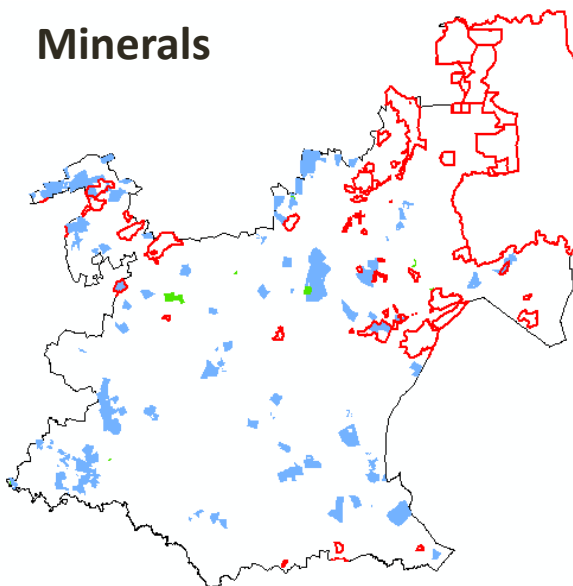
Prospecting: > 3.5 million ha
Mining: > 600 000 ha

OVER 90% OF ALL APPLICATIONS (MINING AND PROSPECTING) ARE FOR COAL

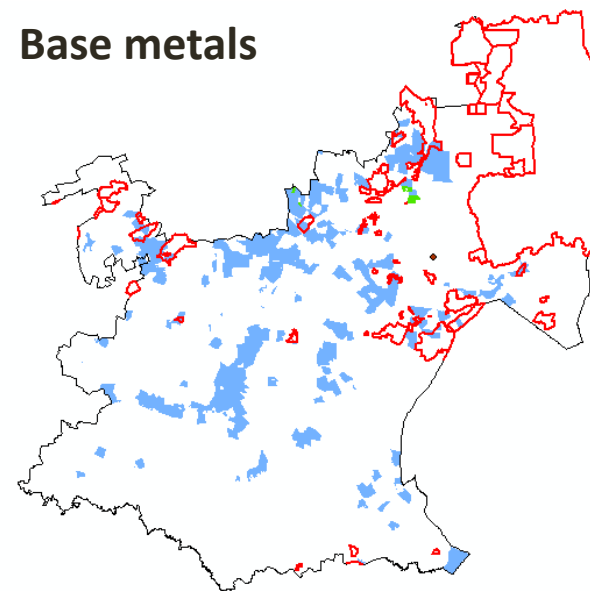
Precious metals



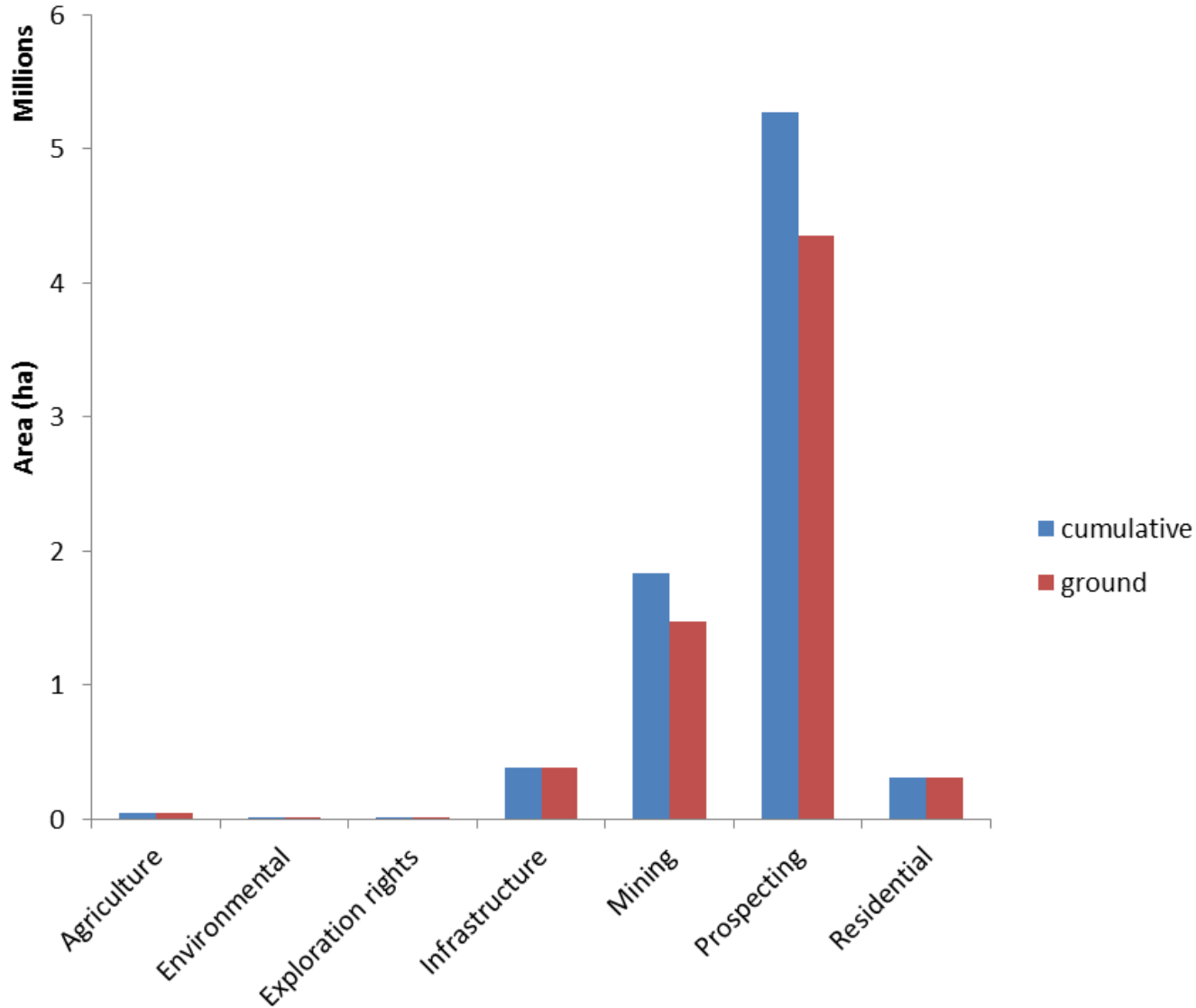
Minerals



Base metals



Development Applications



MPUMALANGA BIODIVERSITY CONSERVATION PLAN MAP

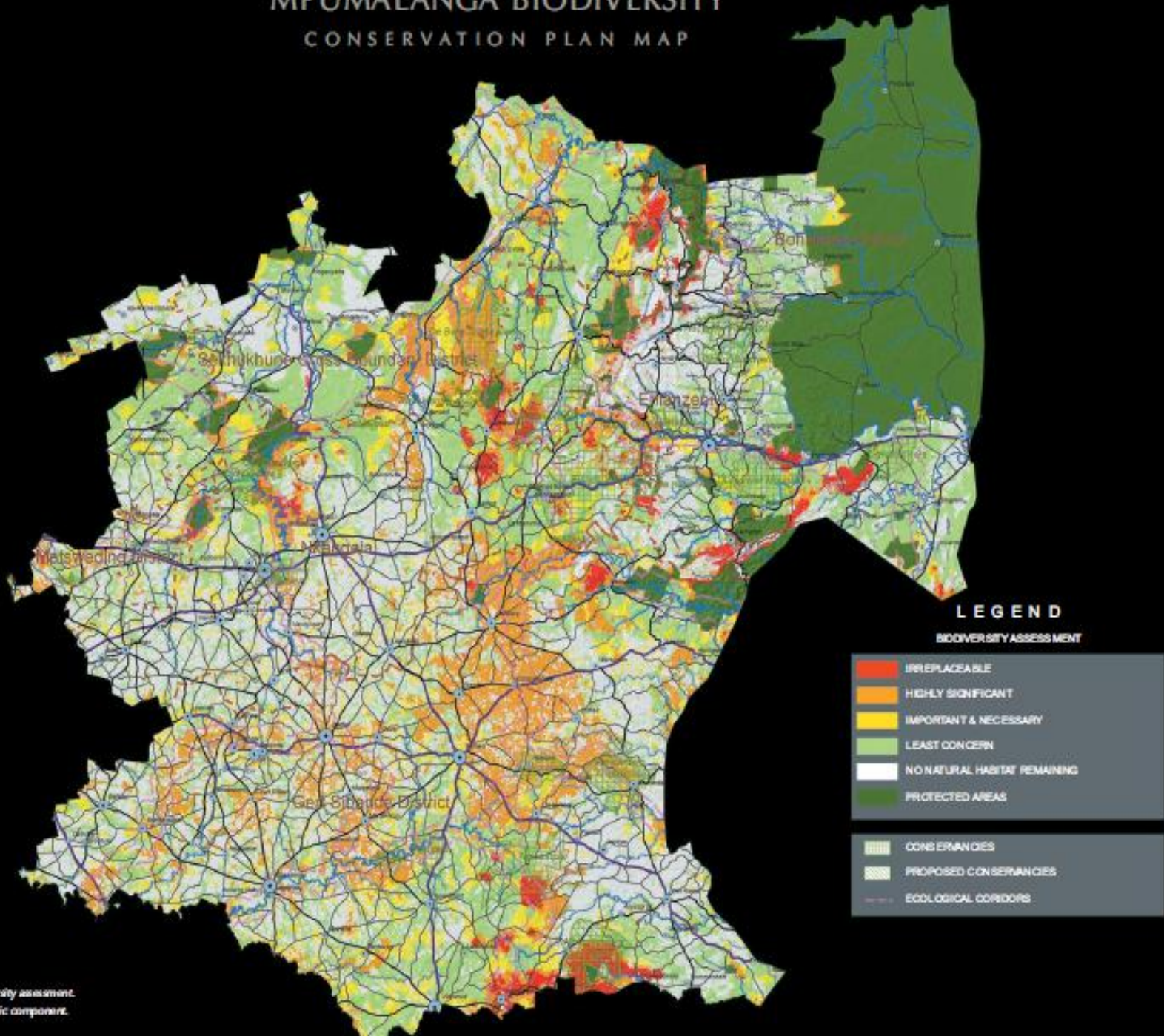
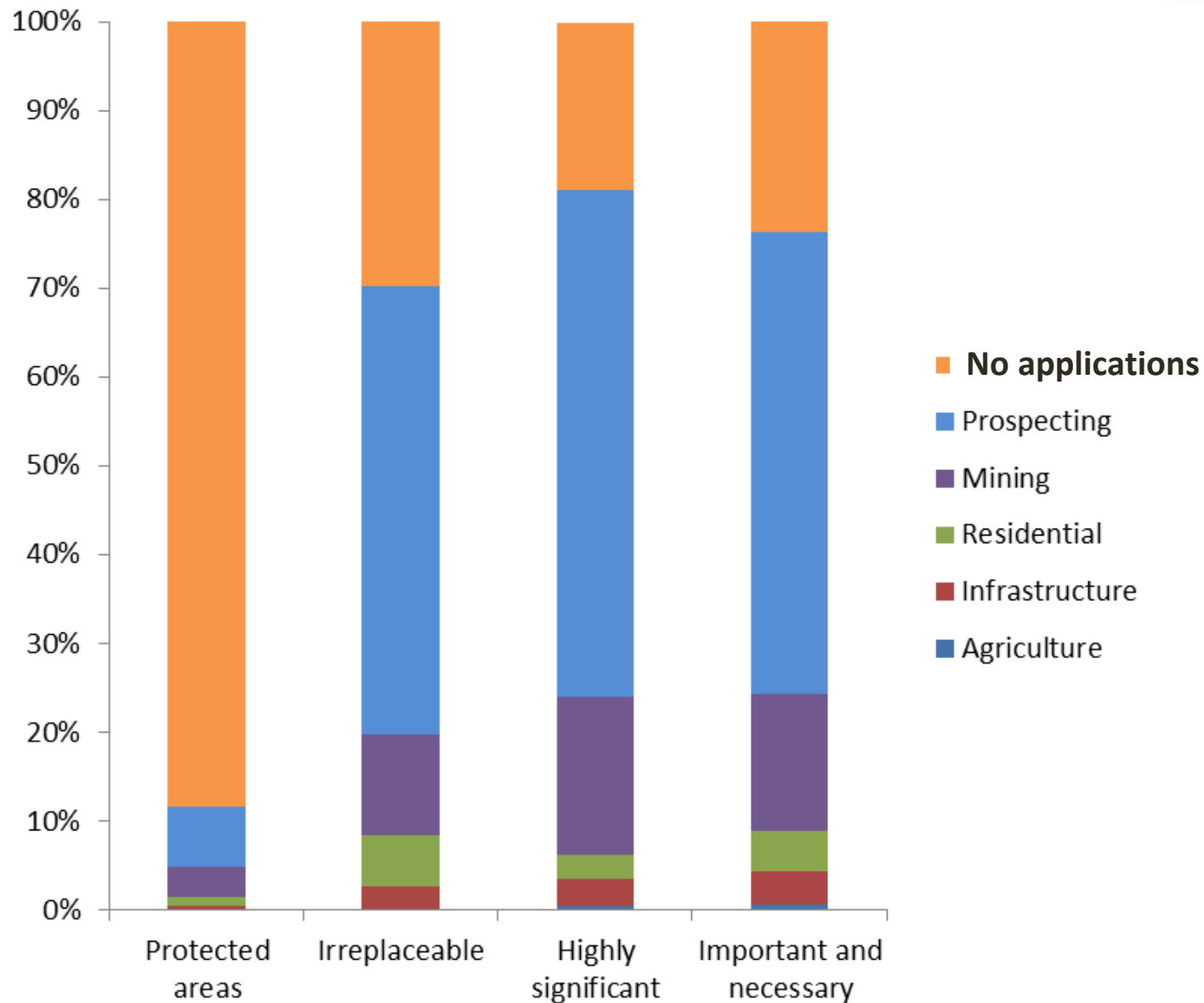


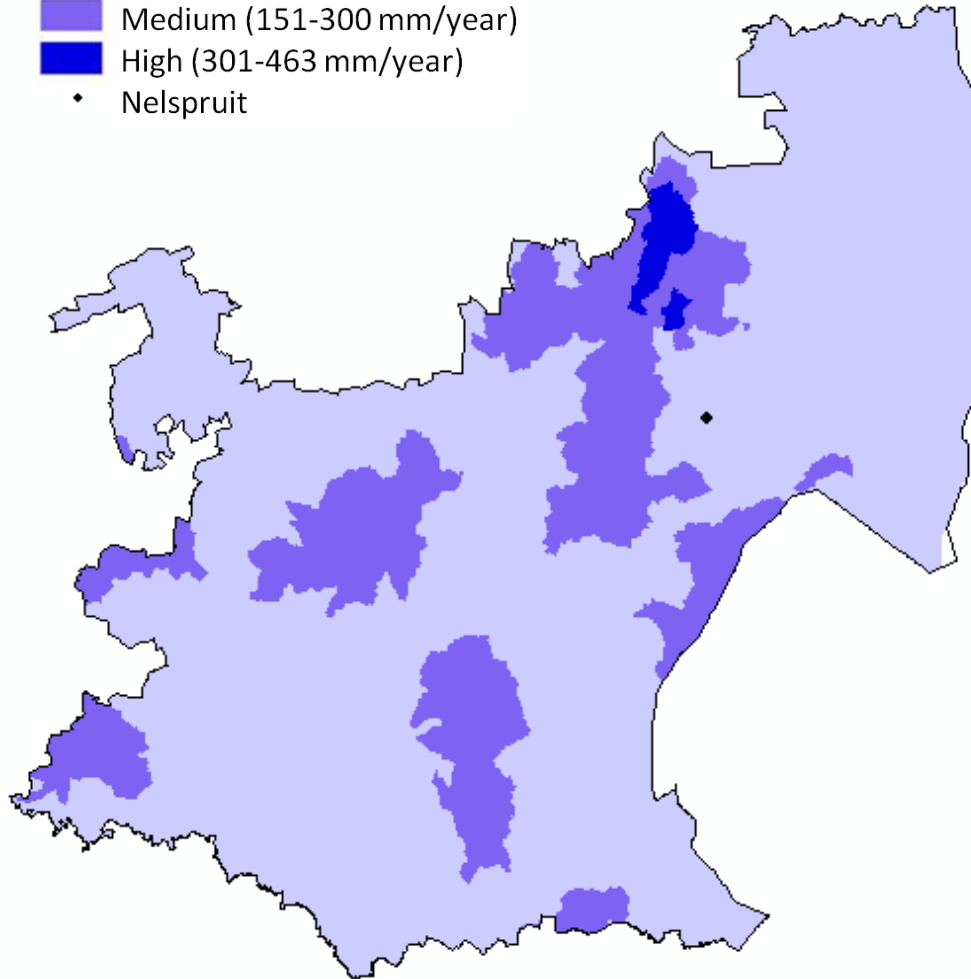
FIGURE 4.6: Results of the terrestrial biodiversity assessment. Refer to the MBCP primary map for the aquatic component.

- Too many development applications in areas important for biodiversity
- Mining and prospecting most abundant

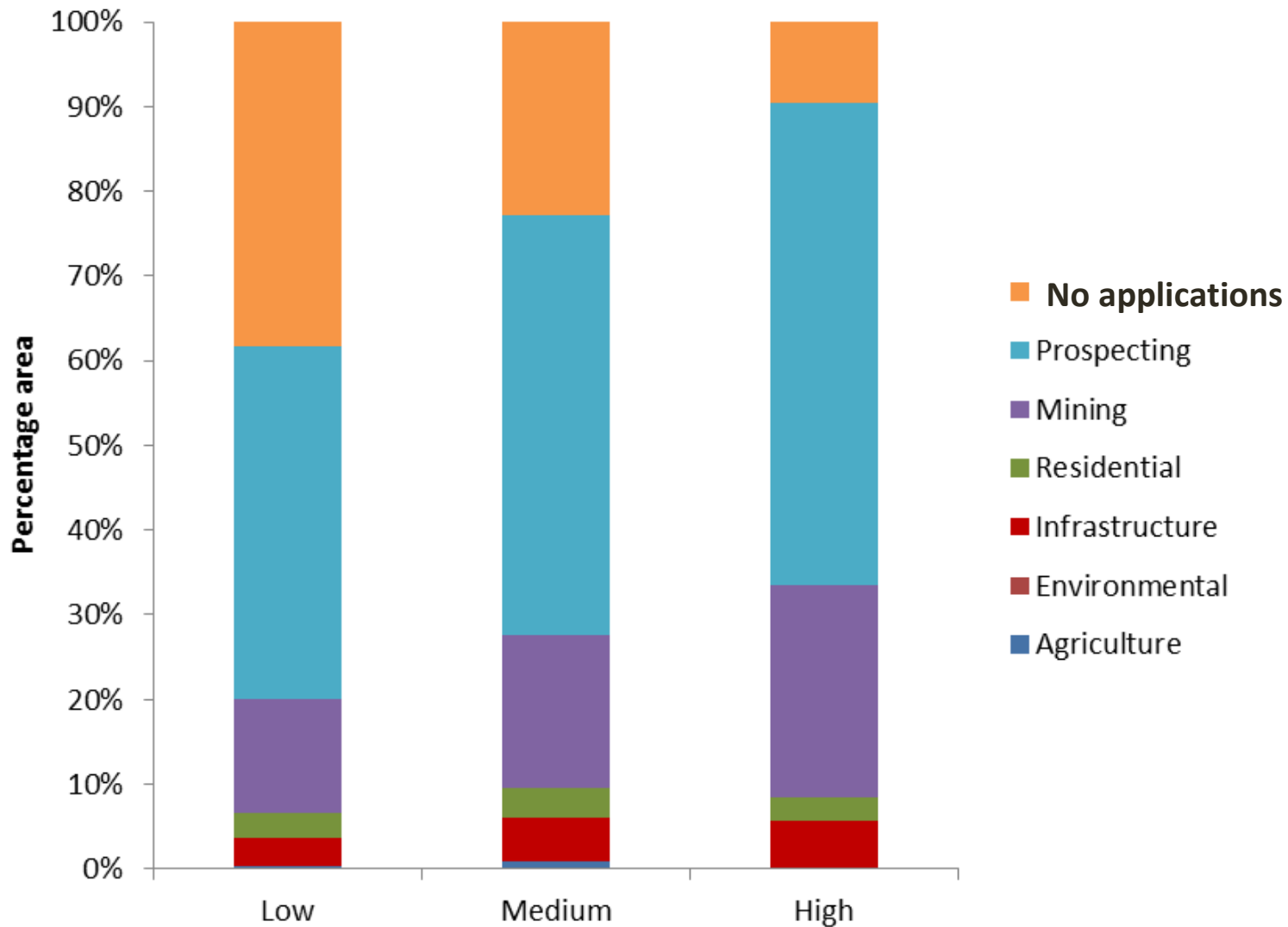


Groundwater recharge

- Low (0-150 mm/year)
- Medium (151-300 mm/year)
- High (301-463 mm/year)
- Nelspruit

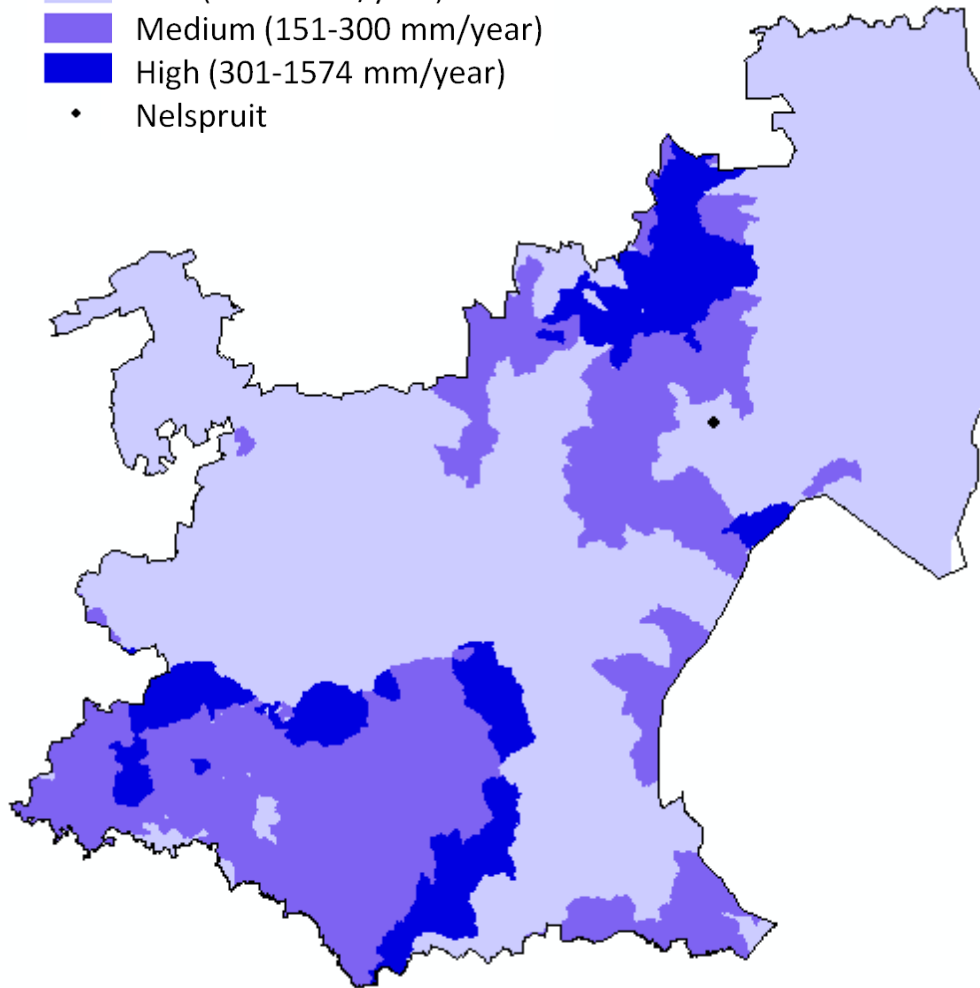


Groundwater recharge

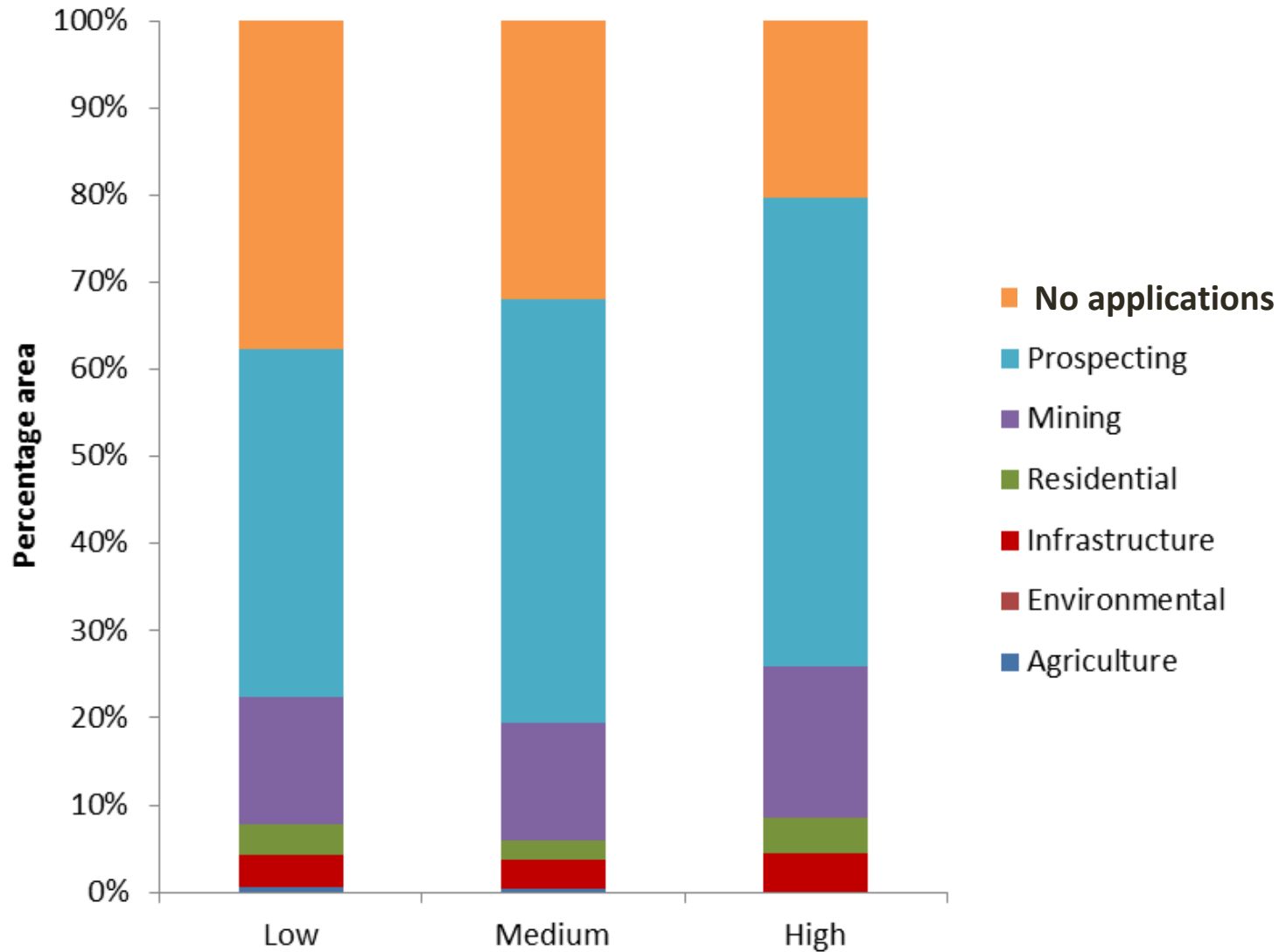


Mean annual run-off (MAR)

- Low (0-150 mm/year)
- Medium (151-300 mm/year)
- High (301-1574 mm/year)
- Nelspruit



Mean annual run-off



Combined impact

LOW

Low biodiversity importance AND Low water importance

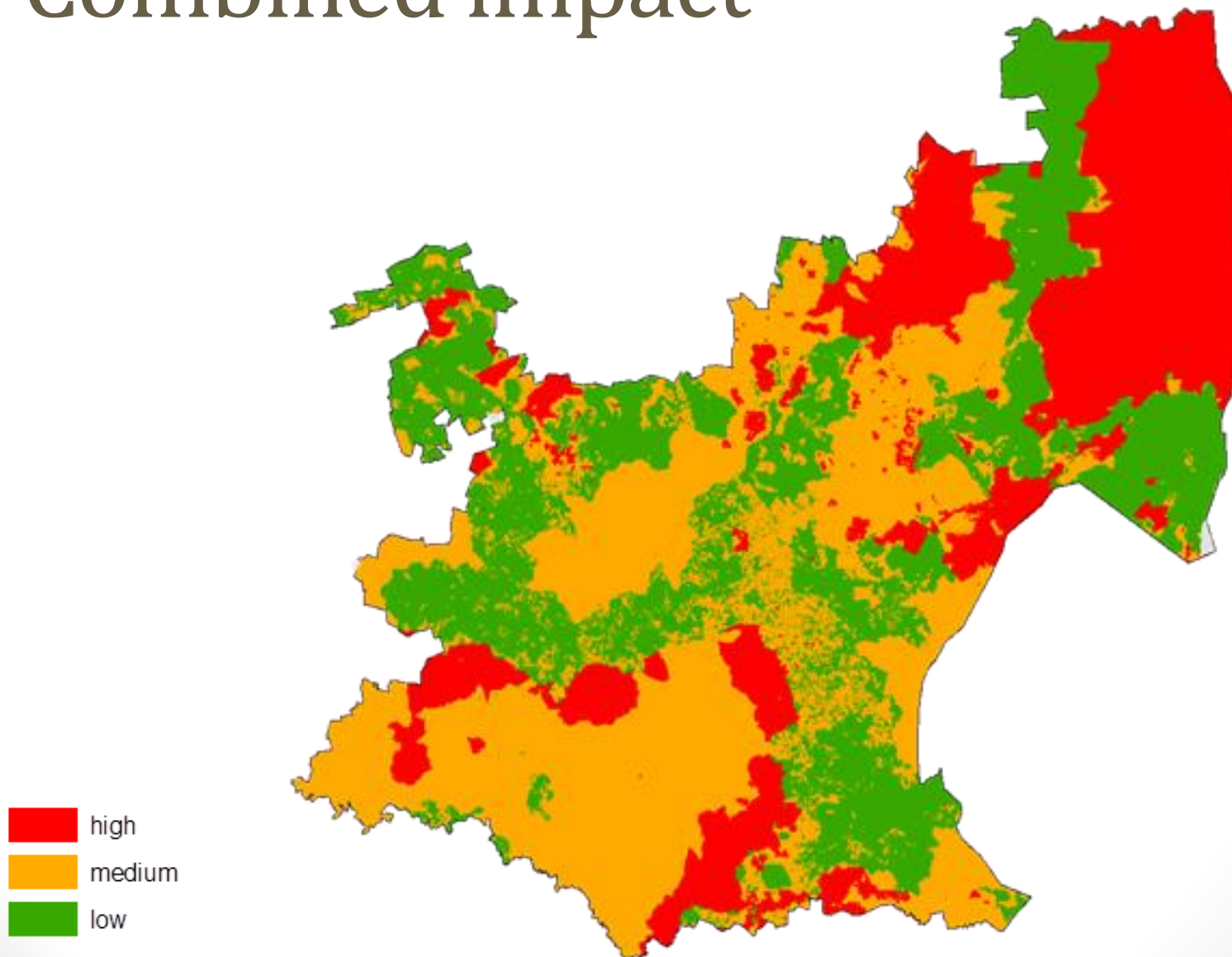
HIGH

High biodiversity importance OR high water importance

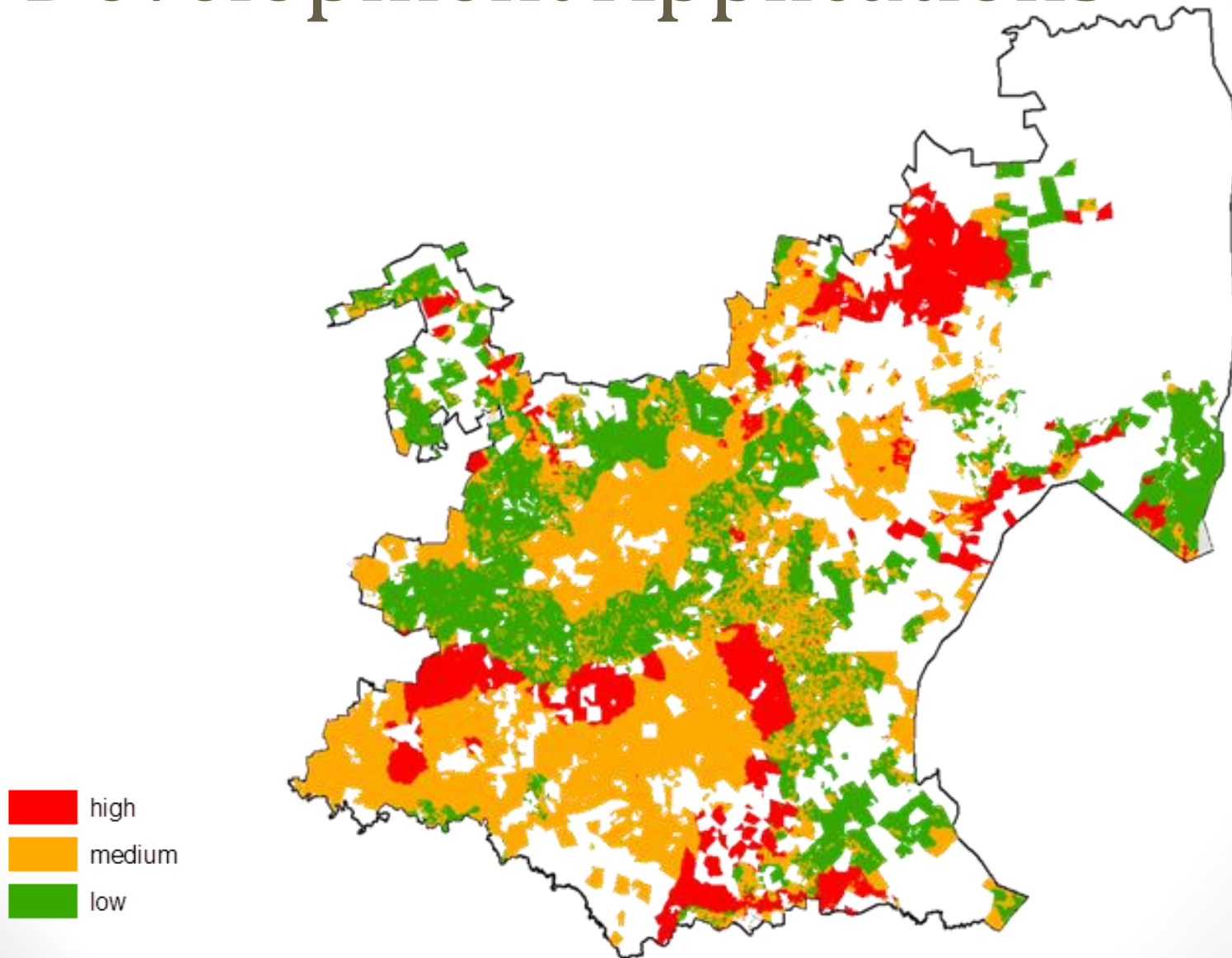
MEDIUM

All remaining areas

Combined impact



Development Applications



Conclusion

- Prospecting and mining are the most abundant land uses in Mpumalanga and are increasing rapidly
- Mining is regarded as having the greatest impact on biodiversity
- Mining and prospecting applications occurring in areas vital for biodiversity and water recharge and run-off
- May have disproportionately large adverse effects
- Tools for improved decision-making are urgently needed.