

Supplemental Biodiversity Review of Weda Bay Nickel Project

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SUMMARY

This document is a review of the biological aspects of the publicly available documents on assessments and plans of the Weda Bay Nickel mine and processing plant. Weda Bay Nickel is a project of mining companies Eramet, Mitsubishi, and PT Antam. The project is under consideration for a guarantee by the Multilateral Investment Guarantee Agency (MIGA). This review is intended to complement hydrogeological, social, and other independent reviews of the mine project documents and probable impacts. The project documents include MIGA's Environmental and Social Review Summary (ESRS), an Exploration and Development Environmental and Social Impact Assessment (ESIA), and the Indonesian Environmental Impact Statement (ANDAL).

The project documents represent an inadequate assessment of existing biodiversity in the project area and an unacceptable documentation of probable environmental impacts of the proposed mine. The project documents fail to:

- consider all phases of the project;
- present adequate baseline biodiversity and forest cover data;
- acknowledge the area's status as a proposed National Park and subsequently a buffer zone for the National Park and that the Protection Forests in the area represent most of the Protection Forest between the sections of the National Park
- adequately consider impacts on protected areas, forest cover and connectivity, and important habitats and species;
- adequately evaluate secondary impacts;
- present accurate reclamation and restoration assessment;
- consider all relevant cumulative impacts; and
- consider alternatives that avoid and minimize biodiversity impacts

The project would have a number of significant negative impacts on biodiversity, including the following:

- long-term habitat loss for a number of species endemic to Halmahera and North Moluku, species protected under international and Indonesian law, and Endangered and Vulnerable species;
- destruction of at least 4000-11,000 ha of moist tropical forest;
- destruction of at least 2,000-6,000 ha of Protection Forest, or up to 30% of the Protection Forest in the mine project area;
- destruction of the Protection Forest corridor between sections of a National Park; and
- destruction of habitat with important ecosystem services or functions, including moist tropical forest, karst, and coral reefs.

Forest clearing impacts will occur during the exploration phase, not just during construction and operation.

The project fails to abide by the Multilateral Investment Guarantee Agency (MIGA) Performance Standards 1 and 6 amongst others.

The Weda Bay Nickel project has failed to provide assessments and plans that are complete and that adequately and accurately evaluate baseline conditions and project impacts on biodiversity. The assessment does not satisfy the requirements of the MIGA Performance Standard 1, and the project assessment, plans, and probable impacts violate Performance Standard 6. The project is likely to harm aquatic biodiversity in the streams, rivers and the ocean for extended periods of time. The project is likely to destroy large areas of protected tropical forest that represents a forest corridor between sections of a National Park and represents habitat for Endangered species. Projections suggest that additional social and water quality impacts would also be severe. The risks of proceeding with such a project are extremely high and a precautionary approach dictates that the project not proceed.

I. Inadequacies in project documents

Incomplete consideration of project plan phases

The ANDAL presents some plans for the whole project but the ESIA and ESRS focus on the exploration and feasibility stages. The phases cannot be considered separately, in part because impacts of exploration and feasibility must be considered in light of other planned activities to assess cumulative impact.

Incomplete baseline biodiversity and forest cover data

Baseline biodiversity information is inadequate and insufficient information is provided to evaluate its accuracy. Survey and sampling effort (e.g. species accumulation curves) information is absent and faunal surveys remain incomplete (VI-2). Without a standard indication of survey effort, species lists and diversity indices cannot be compared or considered complete. The limited information on faunal survey methods (ESIA Appendix A p. 98) suggests that pitfall traps with drift fences were not used even though those are standard components of surveys for vertebrates. Call detection and harp traps are also essential for bat surveys and there is no indication that they were used. The low detection rate of bats in the few caves surveyed is a clear indication that surveys were inadequate. The terrestrial biodiversity studies that did occur ignored much of the Protection Forest in the project area, with at most five survey sites occurring within those forests (map 1 in Appendix). The documents fail to acknowledge this survey bias in evaluating species in forests of different elevations as well (ESIA VI-12, VI-13). Baseline forest cover and degradation status are not presented. In addition, test pit digging and forest clearing, including 14km of new road into forest (ESIA I-6), has already occurred so “baseline” conditions now reflect extensive degradation from exploration drilling, clearing for test pit, and road construction.

Inadequate consideration of protected area impacts

The Aketajawe section of the Aketajawe-Lolobata National Park is within 4km of the project area yet the ESIA does not discuss buffer zone management plans of the National Park or impacts the project might have on the Park. The mining area was originally proposed by the FAO to be part of the National Park and has since been proposed as a buffer zone for the Park.² Failure to mention that status as planned buffer zone and former proposed National Park is extremely inadequate. The documents also fail to note that the Lolobata section is not far on the eastern side of the project and that the project sits in the middle of the forest corridor between those sections of the Park (see Connectivity below). The ESRS fails to mention that Park boundaries were changed to accommodate economic projects as indicated in the 1999 BirdLife study and the Global Environment Facility documents: “considerable changes that have already taken place to the proposed boundaries to accommodate regional development needs”³. In addition, project documents do not mention the apparent influence the project has placed on Park interests to support mine approval (“Weda Bay Minerals has already made a commitment to long-term support for the park, a commitment that is conditional on starting full mining operations.”⁴)

² Poulsen, M.K., Lambert, F.R., and Cahyadin, Y. 1999. Evaluation of the proposed Lalobata and Ake Tajawe National Park in the context of biodiversity priorities on Halmahera. BirdLife International.

³ Poulsen, M.K., Lambert, F.R., and Cahyadin, Y. 1999. Evaluation of the proposed Lalobata and Ake Tajawe National Park in the context of biodiversity priorities on Halmahera. BirdLife International. Global Environment Facility. 2007. MSP Project Executive Summary. “Partnerships for Conservation Management of the Aketajawe-Lolobata National Park, North Maluka Province.”)

⁴ Global Environment Facility. 2007. MSP Project Executive Summary. “Partnerships for Conservation Management of the Aketajawe-Lolobata National Park, North Maluka Province.”)

MAP 2. HALMAHERA: PROTECTED AREAS PROPOSED BY FAO (MACKINNON & ARTHA 1981)



MAP 3. PROPOSED HALMAHERA NATIONAL PARK AND BUFFER ZONE BOUNDARIES AND FOREST LAND USE STATUS



Map showing mining area's status as a proposed National Park (1981) and as buffer zone for the Aketajawe-Lalobata National Park (1999). From Poulsen, M.K., Lambert, F.R., and Cahyadin, Y. 1999. Evaluation of the proposed Lalobata and Ake Tajawe National Park in the context of biodiversity priorities on Halmahera. BirdLife International.

Documents also fail to acknowledge that the Protection Forests are protected areas as well. The ESIA inaccurately describes Protection Forests as forest areas “designated to serve a life support role, as seen in its role and impact on hydrological system maintenance, flood prevention, erosion control, seawater intrusion avoidance, and soil fertility” (ESIA VI-4). According to the Forestry Law No. 41 of 1999, however, Protection Forest is forest “having the main function of protecting life-supporting systems for hydrology, preventing floods, controlling erosion, preventing sea water intrusion and maintaining soil fertility.” The protection function is left out of the ESIA description. Protection Forests are, thus, protected areas and in most cases are off-limits to mining.

The project documents do not identify the surface area that would be destroyed for mining (for test pit, roads, or mine pits or other facilities) that is in the Protection Forests. From digitizing and overlaying maps in the ESIA and ANDAL it appears that 48 % of the area to become mining pits is in Protection Forests (approximately 2500 ha; see map 2 in Appendix). The ESRS fails to include a map, which would allow for a more informed judgment of forest cover impacts.

The limestone karst area is a potential important area for water conservation and often for endemic species and for congregatory species (bats). The ANDAL mentions concern for “karst terrain, which is usually considered conservation area” (ANDAL II-74) but this is not discussed in the rest of the project documents.

Map and surface area inadequacies and inaccuracies

Maps in project documents fail to include projection and datum used. This makes verification of information difficult. Documents fail to overlay risk areas with project plans (see some overlays for this review in Appendix), rendering impact assessment difficult. Inconsistencies occur between maps on Contract of Work boundaries (see map 3 in Appendix). The land clearing map (ANDAL II-19) describes mining area clearing as 1228 ha. This is inaccurate or a disingenuous characterization of only part of the mine plan. Later in the ANDAL, land cleared for mining is described as 4200 ha (ANDAL V-36). Measurements in GIS from project maps of clearing for mining indicate that over 5000 ha are currently planned, and extraction at other inferred ore bodies could add an additional 7000 ha (map 2 in Appendix). The clearing required for the Residue Storage Facility is listed as 130 ha (ANDAL II-19), but analysis of the maps indicates the clearing may be at least twice that.

Inadequate assessment of exploration impacts on forest cover

ESRS claims impacts on forests will be small during exploration even though roads could be quite extensive and lead to encroachment of other activities as suggested in the ESRS because of loss of agricultural land (16) and influx of people seeking jobs and other opportunities (17). Exploration has already occurred throughout the main ore deposits (see map 3 in Appendix) but the surface area cleared at each drill site and for transportation between sites and overall forest impacts are not documented (ESIA Appendix A). The potential areas of new exploration are vast and not described but shown on one map (ESIA Appendix A p.4). Much of those additional potential areas are in Protection Forest (map 2 in Appendix). These are impacts that will occur under the Exploration and Feasibility phase as well but are not quantified. In addition, the impacts on forest cover are trivialized even though the exploration drilling has occurred throughout the Protection Forests in the Contract of Work (see map 4 in Appendix). The ESIA claims that the 13 ha forest destruction for the test pit is “very small” relative to remaining lower montane forest on Halmahera but fails to quantify the extent of that remaining forest and fails to account for cumulative impacts of other deforestation activities and of the other planned clearing for mine sites.

Forest connectivity ignored

The documents fail to consider the impact of exploration activities and mining activities on the connectivity between the National Park section to the west (Aketajawe) of the study area and the forests and National Park section to the north east (Lolobata) of the study area. The highest quality forest between those areas is the Protection Forest. Not only will a large part of that forest suffer clearing for exploration drilling and for mining (up to 10% of the Protection Forest in the area of study cleared just based on a conservative assessment of forest cover over inferred ore bodies

without counting roads and influx of other activities), but also the arrangement of those areas to be cleared is such that no large extents of forest will remain as continuous viable habitat corridors (see map 2 in Appendix). The project will remove some of the only Protection Forest on the island that is between the sections of the National Park.⁵

Species of conservation concern improperly evaluated

Species of conservation concern are given inadequate consideration in the project documents. Endemism on Halmahera is portrayed as lower than it is, as endemism to Indonesia (rather than island-specific endemism) is used in the comparison in the ESIA (VI-3). Comments that “biologically, Maluku can be considered poor in terms of its biodiversity” is inaccurate given high species-level endemism on Halmahera.⁶ The project did find the presence of many such species, including endemics and species protected under Indonesian law and CITES. These also included an Endangered plant (*Hopea gregaria*) and a few species probably new to science, but the studies failed to describe the presence of critical habitat for that or the other justifications. The documents also failed to note that the White Cockatoo (*Cacatua alba*) has been recommended for Endangered status as well based on a projected decline of over 65% over three generations.⁷ The ESIA makes assumptions about species distribution that are not based on data. One species of pitcher plant, “*Nepenthes* sp.” (ESIA I-24; name for the genus but no species name) is described as protected but that undescribed “larger surveys of lower montane forests” indicate that they occur elsewhere on Halmahera and Indonesia. Given that the studies have not identified the plant to the species level, it is unjustified to assume they have found that species elsewhere.

Important habitats given inadequate consideration

The forests, mangroves, rivers, and coral reefs provide key ecosystem services and represent biodiversity of key economic and other significance to local communities but are not given adequate consideration. Ecosystem services are not considered in the project documents. Mangroves (according to land cover map in ESIA) and rivers are present adjacent to the limestone quarrying area (see map 5 in Appendix) and barge conveyor but those mangroves are not described the risks of those activities are not accounted for in the project documents.

Secondary impacts evaluation inconsistent

The ESRS admits that the project and mining roads will facilitate an influx of people in the area and that could lead to increased forest clearing for cultivation and for logging, and that mining roads will facilitate that. But the ESRS claims this will only occur in Conversion Production Forest or Production Forest (19). The evidence for that claim is lacking.

Sediment risk and control assessment incomplete

The ESRS neglects to note the changes in hydrology that could accompany run-off and sedimentation. Changes in flow and channel morphology could have more long-lasting effects on stream ecosystems than the effects from sediment that the ESRS claims will end when mining ceases (18).

Effluent risks poorly estimated

The ESRS claims that marine organisms could be negatively affected only near the outfall (at 15m of depth), but the ESRS provides no evidence that this effluent will not spread widely.

⁵ Poulsen, M.K., Lambert, F.R., and Cahyadin, Y. 1999. Evaluation of the proposed Lalobata and Ake Tajawe National Park in the context of biodiversity priorities on Halmahera. BirdLife International.

⁶ Setiadi, M.I., Hamidy, A., Abidin, Z., Susanto, D., Brown, R., Peterson, A.T., Li, X., & Evans, B. 2009. Genetic structure of herpetofauna on Halmahera Island, Indonesia: implications for Aketajawe-Lolobata National Park. Conservation Biology 24:553-562.

⁷ Vetter, J. 2009. Impacts of deforestation on the conservation status of endemic birds in the North Maluku Endemic Bird Area from 1990-2003. Master's thesis. Duke University.

Inaccurate and inconsistent reclamation claims

The ESRS claims that “[p]ast test sites are reportedly showing rapid re-establishment of ground cover” (16) and that the test pit clearing is deemed “to be reversible through rehabilitation” (16) and that “Eramet has had a successful experience in rehabilitating and reforesting mining areas in its New Caledonia mining project” (19). The ESIA also claims that “[i]mpacts on the forest as terrestrial habitat are reversible and full recovery is expected in about 20 years” (ESIA I-24) and that “complete recovery of terrestrial fauna in restored areas is expected after about 10 years”(ESIA I-25).

This recovery potential is highly over-estimated in the best of restoration circumstances and ignores other cumulative impacts that would prevent successful recovery. The ESIA admits that the project has struggled to grow legumes on the disturbed soils, much less forest trees, and that they had only had success with grasses (ESIA I-25). As the ESRS itself admits, “the complete restoration of rainforest ecosystems is known to be difficult, if not impossible.” (ESRS 19) . The assessment that reclamation will have a significant positive impact on fauna (ANDAL V-57) assumes that habitat restoration (not just site reclamation) is successful, which is unlikely. In addition, positive significant effects of reclamation on flora and fauna are listed twice and thus double-counted under ore mining and then under operations stage then under post-operation reclamation (ANDAL VI).

Cumulative impacts inadequately assessed

In evaluating biodiversity impacts, the project documents did thoroughly account for cumulative impacts from a variety of factors including future mining activity, mining at adjacent concessions, logging, and climate change and ocean acidification. The documents fail to document the proportion of forest left on the island, and the proportion of Protection Forest left on the island, that is included in the project. The project contains a large proportion of the Protection Forest left on the island and most of the Protection Forest left between the two sections of the National Park.

Biodiversity expertise

The inadequacies in baseline surveys and reporting on biodiversity suggest a lack of expertise on biodiversity.

Incomplete consideration of alternatives

The consideration of alternative project plans to avoid and minimize impacts on biodiversity is incomplete in project documents. The documents do not provide clear documentation of the rationale for selection of alternatives, including for the exploration and feasibility stages. The project has explored and plans to explore and mine mainly in Protection Forest and is not making plans to avoid those areas. The past and planned exploration and mining also do not seek to avoid hydrogeological risks (steep slopes, erosion-prone and groundwater-connected areas for residue storage) that will contribute to more challenging reclamation and to erosion and sedimentation impacts on aquatic biota. The discussion of alternatives in the ANDAL for site selection for mining areas, for processing plant, for residue placement, and for port sites does not mention biodiversity considerations such as forest cover or coral reef presence at different sites and the summary of alternatives does not mention site selection at all (ANDAL II-72).

II. Summary of probable biodiversity impacts

The project would have a number of significant negative impacts on biodiversity, including the following:

- long-term habitat loss for a number of species endemic to Halmahera and North Moluku, species protected under international and Indonesian law, and Endangered and Vulnerable species;
- destruction of at least 4000-11,000 ha of moist tropical forest;
- destruction of at least 2,000-6,000 ha of Protection Forest, or up to 30% of the Protection Forest in the mine project area;
- destruction of the Protection Forest corridor between sections of a National Park; and

- destruction of habitat with important ecosystem services or functions, including moist tropical forest, karst, and coral reefs.

Forest clearing impacts will occur during the exploration phase, not just during construction and operation.

III. Failure to abide by Performance Standards 1 and 6

The project has failed to abide by the Performance Standards used by the Multilateral Investment Guarantee Agency (MIGA) for a number of reasons, including the following related to biodiversity:

Performance Standard 1- Social and Environmental Assessment and Management Systems:

- The assessment was incomplete (see above)
- The assessment was inadequate (see above)
- The assessment included inaccuracies (see above)
- The assessment did not include a thorough discussion and rationale for alternatives selection (see above)

Performance Standard 6- Biodiversity Conservation and Sustainable Natural Resource Management:

- Baseline biodiversity information is inadequate and insufficient (see above).
- Ecosystem services are not evaluated (see above).
- Surveys and reporting indicate that qualified and experienced external experts have not been adequately involved in spite of the presence of protected areas and critical habitat (see above).
- Critical habitat is present but not identified as such. Almost half of the Contract of Work area is identified as Protection Forest which, according to the Forestry Law No. 41 of 1999, is forest "having the main function of protecting life-supporting systems for hydrology, preventing floods, controlling erosion, preventing sea water intrusion and maintaining soil fertility." Protection Forests are, thus, protected areas and in most cases are off-limits to mining. The Protection Forests in the area are part of National Park proposed buffer zone and represent most of the remaining Protection Forest areas between the sections of the National Park. Moreover, endangered species and a number of endemic species occur in the area. The forests, mangroves, and coral reefs also represent biodiversity of key economic and other significance to local communities including through ecosystem services. These all indicate the presence of critical habitat, which the project cannot implement activities on unless it can guarantee no measurable adverse impacts on the critical habitat (species or functions). The project documents do not provide such guarantees. In addition, natural forest harvesting (the clearing that is planned) cannot cause the conversion or degradation of critical habitat according to the Performance Standard. This appears to be likely to occur. Claims of rehabilitation and recovery potential of forest habitat are unsubstantiated (see above).
- Timber for clearing is to be sold (I-23) and this represents a commercial logging operation. The forest has been "relatively untouched by human activity apart from selective logging" and "likely to be in pristine conditions;" parts would seem to qualify as "primary tropical moist forest." This clearing would therefore go against the IFC/MIGA exclusion on support of commercial logging operations in tropical moist forest.

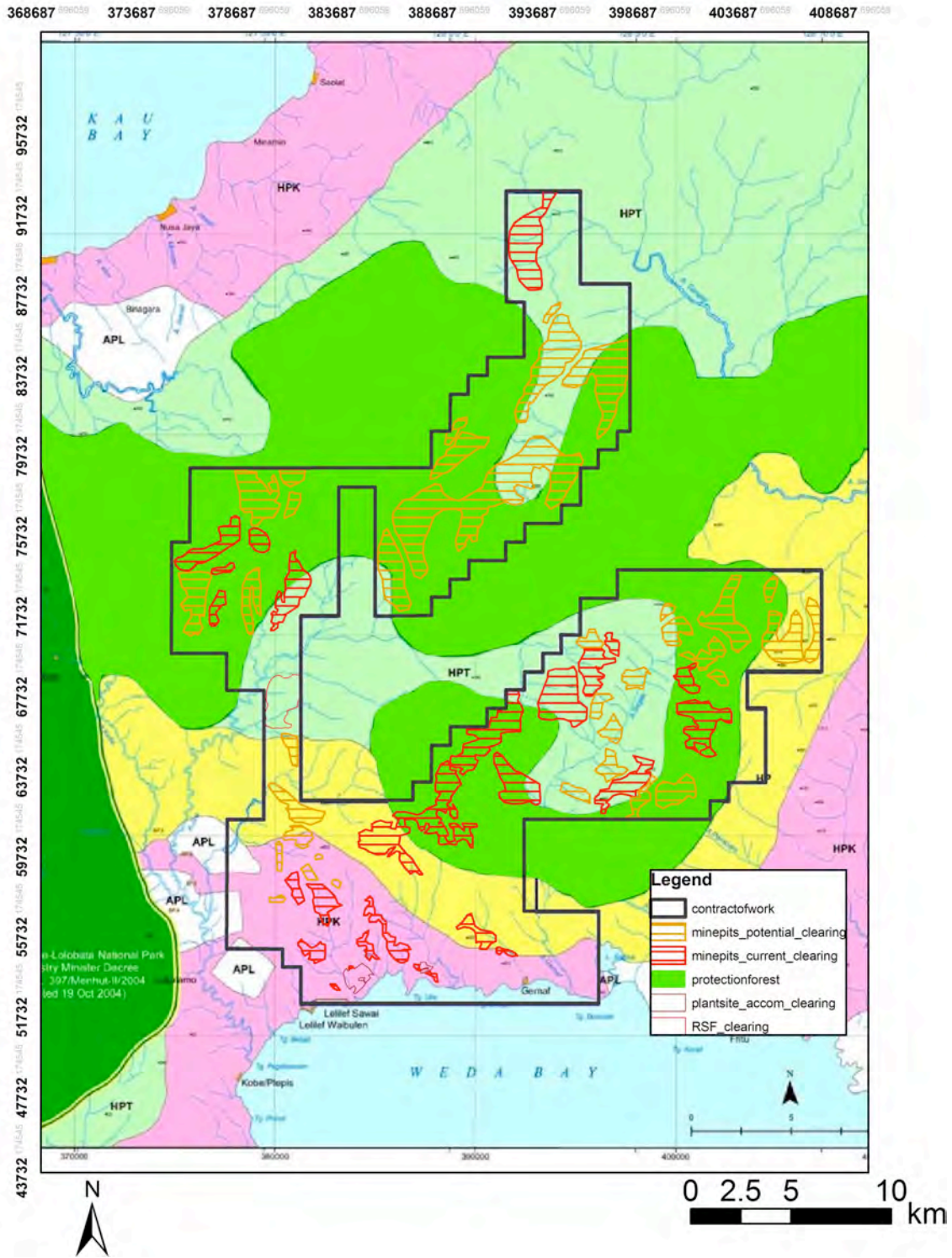
IV. Conclusions

The Weda Bay Nickel project has failed to provide assessments and plans that are complete and that adequately and accurately evaluate baseline conditions and project impacts on biodiversity. The assessment does not satisfy the requirements of the MIGA Performance Standard 1, and the project assessment, plans, and probable impacts violate Performance Standard 6. The project is likely to

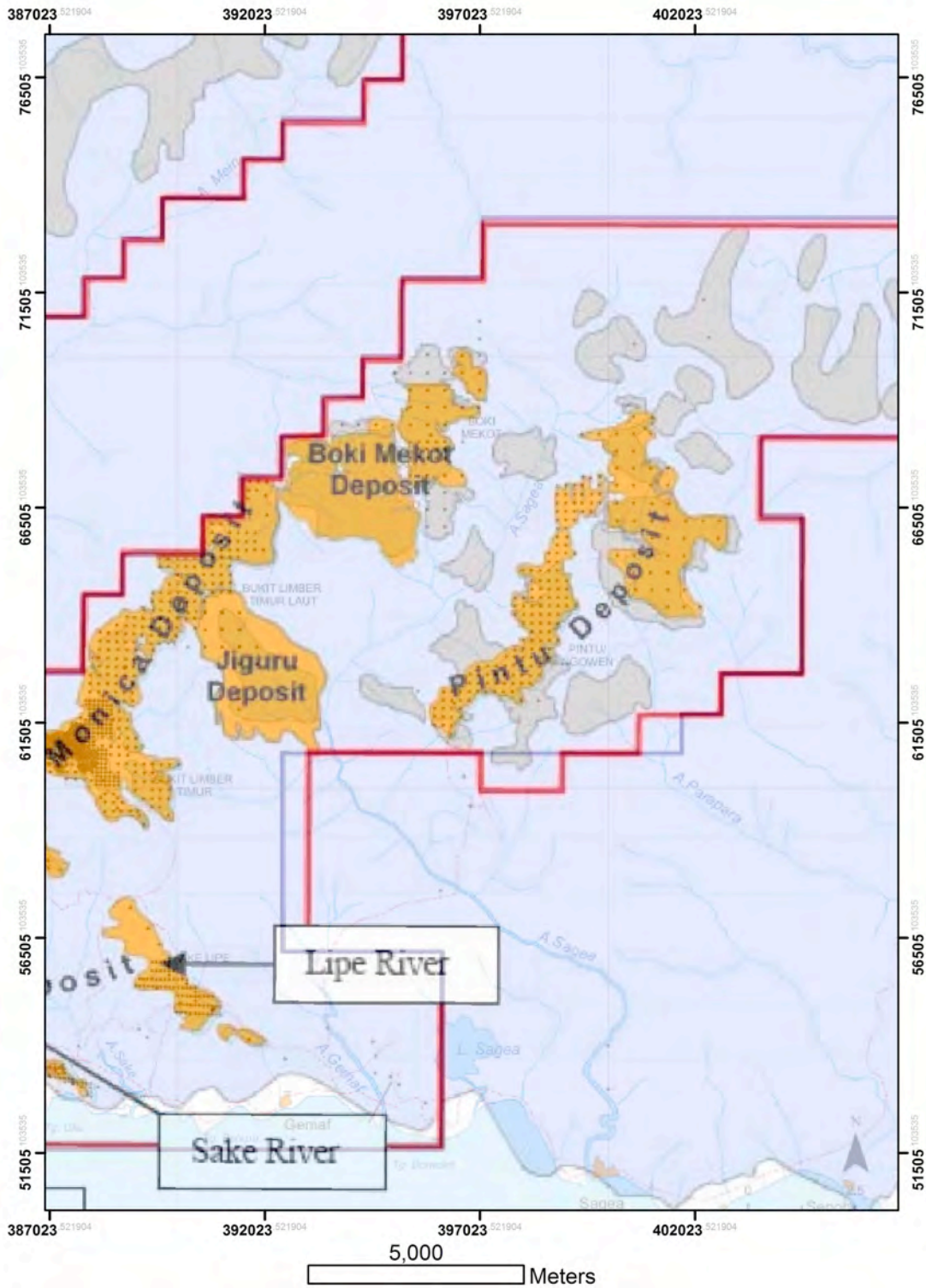
harm aquatic biodiversity in the streams, rivers and the ocean for extended periods of time. The project is likely to destroy large areas of protected tropical forest that represents a forest corridor between sections of a National Park and represents habitat for Endangered species. Projections suggest that additional social and water quality impacts would also be severe. Approaching such projects with the precautionary principle represent international best practice.⁸ The risks of proceeding with such a project are extremely high and a precautionary approach dictates that the project not proceed.

⁸ Sixth Conference of the Parties to the Convention on Biological Diversity. 2002. Decision VI/7 and Guidelines for Incorporating Biodiversity-related Issues into Environmental Impact Assessment Legislation and/or Process and its Strategic Environmental Assessment.
International Association for Impact Assessment. 2005. Biodiversity in Impact Assessment. Special Publication Series No. 3. www.iaia.org/modx/assets/files/SP3.pdf
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Ramsar Convention Secretariat. 2007. Impact assessment. Ramsar handbooks for the wise use of wetlands. 3rd Edition, vol. 13. Ramsar Convention Secretariat, Gland, Switzerland. 2007.
Canadian Environmental Assessment Agency. 1996. A Guide on Biodiversity and Environmental Assessment. Biodiversity Convention Office, Hull, Québec.

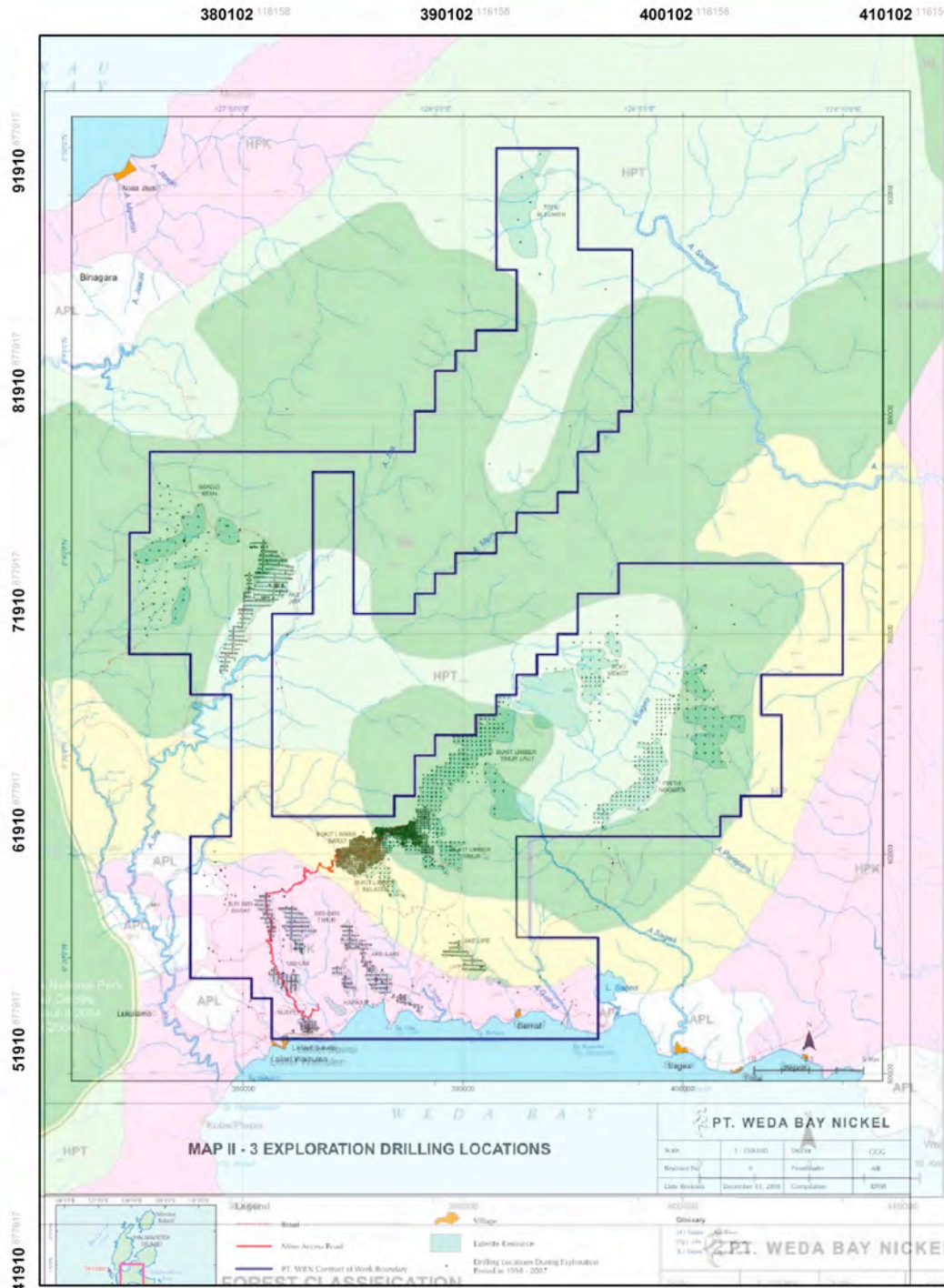
Map 2. Areas to be cleared (based on 2007 forest cover map) for mining or potentially for exploration and mining relative to Protection Forest (from overlay of ESIA pp. 122 and 227 and others)



Map 3. Discrepancy in project documents on Contract of Work boundary (based on ANDAL p. 34 and ESIA p. 122). Discrepancy is between red and purple lines south of the Pintu Deposit.



Map 4. Exploration drilling sites relative to Protection Forest (based on ANDAL p. 34 and ESIA p. 227). Drilling sites extend throughout areas to be mined and through large portions of the Protection Forest (light green).



10,000 Meters

Map 5. Location of limestone karst to be quarried relative to river and mangroves (pink; based on ANDAL p. 31 and ESIA p. 175)

