Notes and Commentaries

Ocean Disposal of Waste: Theory and Practice in Papua New Guinea

Introduction

Marine pollution is a significant issue for Pacific Island countries (PICs), which are reliant on their marine resources as both a food source and as a source of foreign exchange revenue. In a region where land areas constitute only 2 per cent of the total area,[1] land-based activities that generate wastes for disposal may cause marine pollution directly or give rise to a need for those wastes to be disposed of by ocean dumping in order to avoid the alienation of land. Frequently these activities relate to natural resource development projects. At the same time, however, development of natural resources in many PICs is a cornerstone of the economy. In many cases, mineral resource exploration and mining are fundamental to the country's economic growth and development.

The largest of the PICs is Papua New Guinea (PNG), whose land mass constitutes 83 per cent of the total land area of the region.[2] PNG is rich in mineral reserves and derives a large proportion of its foreign exchange from mining and, in particular, from gold mining operations. Gold mining operations in PNG generate production wastes that necessitate consideration of the most appropriate means of their disposal.

In PNG, as in other PICs, while mineral wealth is great, the topography, tropical climate and severity of rainfall events, seismic characteristics and remoteness of ore bodies are factors that militate against straight-forward development and easy solutions to problems of how to properly deal with production wastes.

1 Ben Boer, Ross Ramsay and Donald R. Rothwell *International Environmental Law in the Asia Pacific* (Kluwer Law International, London: 1998) 244.
2 Ibid.

These factors also indicate the fragility of the environment and raise issues about the environmental impact of development activities.

This Note considers how the international environmental law regime for marine pollution from land-based sources and ocean dumping of waste has been adopted by Papua New Guinea. It reviews what PNG has done to implement the international obligations it has undertaken and looks at two instances of that application.

Background

International Law Regime for Marine Disposal of Waste

The international law regime applicable to marine disposal of waste is comprised of provisions of international agreements both of global application and of regional application.[3] The international agreements of global application are the 1972 Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Dumping Convention),[4] and the 1982 United Nations Convention on the Law of the Sea (UNCLOS).[5]

In 1996, the Parties to the London Dumping Convention also adopted a Protocol (1996 London Protocol) to the convention.[6] This was undertaken in recognition of the desirability, at a national or regional level, for more stringent measures to prevent and eliminate pollution of the marine environment from dumping at sea, and to take into account developments in international agreements, such as the implementation of UNCLOS, the 1992 Rio Declaration,[7] and Agenda 21.[8] The intention is that the protocol will supersede the convention as between Contracting Parties to the protocol that are also parties to the convention.[9]

The regional environmental agreements relevant to the marine disposal of mining waste arise out of the United Nations Environment Program (UNEP) Regional Seas Programme.[10] The agreements in this context are the 1986 Noumea

3 Phillippe Sands *Principles of International Environmental Law* I (Manchester University Press, Manchester: 1995), see ch 8 generally.
4 (1972) 11 ILM 1291.
5 (1982) 21 ILM 1261.
6 (1997) 36 ILM 7. For discussion, see Afshin A-Khavari "The 1996 Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter" (1997) 2 *APJEL* 201–208.
7 (1992) 31 ILM 874.
8 1996 London Protocol, Preamble.
9 1996 London Protocol, Art. 23.
10 Sands, note 3 at 300.

Convention for the Protection of the Natural Resources of the South Pacific Region (Noumea Convention),[11] and the 1986 Noumea Protocol for the Prevention of Pollution of the South Pacific Region by Dumping (Noumea Dumping Protocol).[12] This Note does not specifically review these international agreements as they are considered in other texts,[13] and reference is only made to them in the context of the relevant PNG legislation.

Applicability of the International Law Regime in the Context of PNG

PNG Commitment to International Legal Obligations

The London Dumping Convention was adopted on 29 December 1972[14] and entered force on 30 August 1975.[15] It entered into force for PNG on 9 April 1980.[16] Amendments to the London Dumping Convention were adopted in November 1993 and entered into force in February 1994 except for those parties entering declarations of non-acceptance. At the time of writing it has not been ascertained whether PNG submitted a declaration of non-acceptance with respect to these amendments. The amendments took effect on 1 January 1996.

The 1996 London Protocol was open for signature from 1 April 1997 until 31 March 1998.[17] The protocol will enter into force on the 30th day following the date on which 26 States have become Contracting Parties, of which at least 15 are also Contracting Parties to the convention.[18] As at 30 September 1998, Denmark was the only country to have ratified the protocol.[19] PNG is yet to ratify the protocol and it is yet to enter into force.

UNCLOS was adopted on 10 December 1982[20] and entered into force on 16 November 1994. PNG signed UNCLOS on 10 December 1982[21] and deposited its instrument of ratification with the Secretariat on 14 January 1997, thereby becoming the 111th party to UNCLOS.[22]

11 (1987) 26 ILM 38.
12 (1987) 26 ILM 65.
13 See notes 1 and 3.
14 See note 4.
15 IMO's web site, "Summary of Status of Conventions as at 1 October 1998", <www.imo.org/imo/convent/summary.htm> (29 October 1998).
16 Environmental Treaties and Resource Indicators (ENTRI) Home Page "Treaties in force for a given State" <www.sedac.ceisin.org/prod/charlotte> (14 September 1998).
17 1996 London Protocol, Art. 24.
18 1996 London Protocol, Art. 25.
19 IMO's web site, "Status of Conventions" <www.imo.org/imo/convent/status.htm> (29 October 1998).
20 Note 5.
21 ENTRI Home Page, note 16.
22 pngInLaw Home Page, "Legal News", <www.niumedia.com.au/pnginlaw/news.htm> (14 September 1998).

The Noumea Convention was adopted on 24 November 1986 and entered into force on 22 August 1990.[23] PNG signed the Noumea Convention on 5 November 1987[24] and it entered into force for PNG on 22 August 1990.[25] The Noumea Dumping Protocol was adopted on 25 November 1986 and entered into force on 22 August 1990.[26] PNG signed the Noumea Dumping Protocol on 3 November 1987 and it entered into force for PNG at the same time as the Noumea Convention.[27]

Implementation of Commitments by PNG

It can be seen that commitments arose for PNG under the London Dumping Convention as of April 1980, under the Noumea Convention and Noumea Dumping Protocol over ten years later, as of August 1990, and under UNCLOS in February 1997. Consideration is now given to domestic legislation put in place by PNG to give effect to these commitments.

Dumping of Wastes at Sea Act 1979

At the time the London Dumping Convention entered into force for PNG, legislation had been enacted giving effect to it. The Dumping of Wastes at Sea Act 1979 [28] was enacted, *inter alia*, to provide for the prevention of pollution of the sea by the dumping of waste and other matter, and: "to give effect in Papua New Guinea as far as may be, to the International Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972."[29]

The Dumping of Wastes at Sea Act came into force on 13 August 1981.[30] It commences by providing that subject to it and to any other law, the Wastes Convention shall have force of law.[31] The "Wastes Convention" is defined to mean the London Dumping Convention "as affected by any amendment other than an amendment not accepted by the State which has been made and come into force under Article XV of the Convention".[32]

23 Note 1 at 256.
24 ENTRI Home Page, note 15.
25 Ibid.
26 Ibid.
27 Ibid.
28 Revised Laws of Papua New Guinea, ch 369.
29 Dumping of Wastes at Sea Act 1979, long title (PNG).
30 "An Alphabetical List of Statutes in Force in PNG", published by UPNG Law Library (as at 1985 this is the most recent update able to be accessed at the time of writing).
31 Dumping of Wastes at Sea Act 1979 s. 2 (PNG).
32 Ibid s. 1.

In the Act "dumping" means any deliberate disposal at sea of substances or articles from, or of, vessels, aircraft, marine structures or other man-made structures at sea. This corresponds to the definition in the London Dumping Convention. The Act restricts dumping into the sea by providing that a person commits an offence if, except with the written permission of the prescribed officer and in accordance with the terms of that permission, they:

(a) dump substances or articles in the territorial sea;
(b) dump substances or articles in the sea outside the territorial sea from a PNG ship, aircraft or marine structure;
(c) load substances or articles onto a ship, aircraft or marine structure in PNG or in the territorial sea for dumping in the sea, whether the territorial sea of otherwise; or
(d) causes or permits any of the above.[33]

The Act defines "substances or articles" to include wastes and materials of any kind, form or description.[34] It defines "sea" to include any area submerged at mean high water.[35] This definition does not exclude internal waters, thus making it even broader than the definition in the London Dumping Convention. The Act allows for the prescribed officer to require an applicant for a permit to provide such information and allow such sampling, testing and other examination of the substances or articles as necessary to allow the prescribed officer to determine whether or not to issue a permit and the conditions that should apply.[36]

In determining whether to issue, transfer, vary, or revoke a permit, the prescribed officer:

> [S]hall have regard to the need to protect the marine environment and the living resources of the sea from any adverse consequences of the proposed dumping, and shall include in the permit such conditions as appear ... to be necessary for the protection of that environment and of those resources.[37]

There is also a regulation making power under the Act that includes the power to make regulations as to the manner in which permits may be issued, varied, revoked or transferred and their form and duration, as to the conditions of issue of a permit, and as to the nature and quantity of substances and articles to be dumped.[38] The Head of the government department administering this Act is obliged to keep a register of permits, which register is to be available for public inspection.[39]

33 Ibid s. 3(1).
34 Ibid s. 1.
35 Ibid.
36 Ibid s. 4(3).
37 Ibid s. 5(2).
38 Ibid s. 17(d), (e) and (g) respectively.
39 Ibid s. 8.

The Act itself is otherwise silent as to how the prescribed officer, as the determining authority for the purpose of the issuing of a permit, is to exercise that power. The Act makes no mention of those wastes that are prohibited from dumping (as under Annex I of the London Dumping Convention), and those (as listed in Annex II) for which a special permit should be required, as opposed to a general permit (which is required by that convention for dumping any other waste).

The matter appears to be left to the discretion of the prescribed officer. How that discretion might be exercised would be subject to any regulations that might be made under the Act[40] and any procedural material there might be providing guidance to prescribed officers. However, it might be concluded in view of section 2, that the intention of the PNG legislature in making this Act was for Annexes I, II and III of the London Dumping Convention to be applied in implementing this Act. By defining "Waste Convention" as it does, this Act also automatically (in the absence of a declaration of non-acceptance) implements the 1993 amendments as well.

Environmental Contaminants Act 1978

Two other relevant pieces of legislation had been enacted in PNG at the time the Dumping of Wastes at Sea Act was made. The first of these is the Environmental Contaminants Act 1978.[41] This Act relates to the prevention, abatement and control of environmental contamination and provides for administrative arrangements including an inspectorate[42] and Ministerial advisory council.[43]

The basic scheme of this Act is to provide for the licensing of the release of environmental contaminants into the environment. It does so by prohibiting the discharge, emission or deposit of an environmental contaminant into the environment without a licence. It is an offence to make such a discharge, emission or deposit while unlicensed or not subject to an exemption from licensing, or in breach of the conditions, limitations or restrictions attaching to a licence.[44]

This Act also provides for the establishment and maintenance of a register of hazardous contaminants[45] and prohibits their importation, sale, manufacture or distribution except in accordance with a permit issued under the Act.[46] The Act contains a general offence of causing or permitting pollution,[47] which is subject to

40 So far as can be ascertained at the time of writing, no regulations have been made under this Act
41 Revised Laws of Papua New Guinea, ch 368.
42 Environmental Contaminants Act 1978, Part II, ss. 4– 8 (PNG).
43 Ibid Part III, ss. 9–15.
44 Ibid s. 31.
45 Ibid s. 32.
46 Ibid s. 33.
47 Ibid s. 47.

an exclusion in the case of pollution caused by the discharge, emission or deposit of an environmental contaminant either in accordance with a licence or subject to an exemption under the Act.[48]

It is noteworthy also that the Minister administering the Act is obliged to grant a licence or a permit, as the case may be, under the Act *inter alia*, where a proposal to embark on a project has been approved under the Environmental Planning Act 1978 and the relevant environmental plan (as evaluated under that Act) contains details of the proposed discharge, emission or deposit.[49] The Environmental Contaminants Act commenced on 13 September 1979, except for section 52 which started on 24 April 1982. There are regulations made under this Act pertaining to pesticides and hazardous chemicals.[50]

Environmental Planning Act 1978

The Environmental Planning Act 1978[51] is the second relevant piece of legislation that had been enacted in PNG at the time the Dumping of Wastes at Sea Act was made. This Act provides for submission, assessment and approval of environmental plans in relation to proposals for projects or a class of projects in respect of which the Minister administering the Act has made guidelines.

Part II of the Act deals with Environmental Plans and section 4 provides for submission of a plan. Where a project is one of a class of projects in respect of which guidelines have been made under section 5, and the Minister is of the opinion that the proposal may have significant environmental implications, the Minister may require the proponent to submit an environmental plan.[52] The proponent of a proposal may submit an environmental plan at any time before such a requisition is made.[53]

The Minister may cause guidelines to be prepared and issued[54] which must recognise that environmental planning involves consideration of, inter alia, alternative proposals and alternative sites,[55] alternative methods,[56] the environmental changes that may result,[57] actions to prevent or mitigate adverse environmental

47 Ibid s. 47.
48 Ibid s. 48.
49 Ibid ss. 22(1)(a) and 38(1)(a) respectively.
50 Environmental Contaminants (Pesticides) Regulation 1988 (PNG), and the Environmental Contaminants (Hazardous Chemicals) Regulation (PNG).
51 Revised Laws of Papua New Guinea, ch 370.
52 Environmental Planning Act 1978 s. 4(1) (PNG).
53 Ibid s. 4(6).
54 Ibid s. 5(1) at the time of writing the author has not been able to ascertain whether any guidelines have been made by any Minister administering this Act under this provision.
55 Ibid s. 5(5)(b).
56 Ibid s. 5(5)(c).
57 Ibid s. 5(5)(e).

changes,[58] the projected use and discharge of environmental contaminants,[59] and any permanent change in the physical, biological, social or cultural characteristics of the affected environment or the possible future use of that environment.[60]

Part III of the Act sets out the process for the assessment of the environmental plan and Part IV deals with the decision, which is made by the National Executive Council.[61] The National Executive Council may approve, approve subject to such conditions as it sees fit, or refuse to approve a project. Where there is a refusal to approve, a project will be declared prohibited.[62] The Act makes it an offence to proceed with a prohibited proposal.[63] The Director of the Office of Environment and Conservation must maintain a register of all environmental plans, assessments, representations made in relation thereto and decisions in connection with every proposal.[64] The register is to be available for public inspection.[65] Nothing in the Environmental Planning Act 1978 relieves the proponent of a project from the need to comply with the Environmental Contaminants Act 1978.[66] This Act commenced on 8 May 1980.[67]

Water Resources Act 1982

A further relevant piece of legislation but one enacted subsequently to the Dumping of Wastes at Sea Act is the Water Resources Act 1982.[68] This Act provides for the right to use, the flow and control of water to vest in the State.[69]

Water is defined to include lakes, rivers, streams, swamps, surface and underground waters, water sources and coastal waters comprising the internal waters and territorial sea as those expressions are used in the National Seas Act 1977.[70]

A Water Resources Board is constituted[71] to whom applications may be made for water use permits.[72] In considering an application for a water use permit, the Board must consider any environmental plan lodged under the Environmental Planning Act[73] and take into account any recommendations made by the

58 Ibid s. 5(5)(f).
59 Ibid s. 5(5)(h).
60 Ibid s. 5(5)(j).
61 Ibid s. 18(1).
62 Ibid s. 18(2).
63 Ibid s. 19(1).
64 Ibid s. 26(1).
65 Ibid s. 26(2).
66 Ibid s. 28.
67 Note 29; so far as can be ascertained at the time of writing, no regulation has been made under this Act.
68 Waster Resources Act No 8 of 1982 (Papua New Guinea), replaced Revised Laws of Papua New Guinea ch 205.
69 Ibid s. 4.
70 Ibid s. 7(1).
71 Ibid s. 9.
72 Ibid Part V.
73 Ibid s. 29(2)(d).

Environmental Contaminants Advisory Council established under the Environmental Contaminants Act.[74] A water use permit is subject to such conditions as are prescribed and such as are endorsed on the permit.[75]

The Act sets out the rights conferred on the holder by a water use permit. These include "the right to discharge water or waste in accordance with prescribed conditions and standards".[76]

Conclusion as to Implementation of International Commitments

The clear intention of the Dumping of Wastes at Sea Act is to give effect in domestic law to the London Dumping Convention. As such, this Act also substantially satisfies the obligations in that respect set out in the Noumea Convention and the Noumea Dumping Protocol.

UNCLOS sets out a framework of obligations, rather than detailed specific rules for direct application. This framework of obligations includes the general obligation on parties to protect and preserve the marine environment, the obligation to take measures to prevent, reduce or control marine pollution by taking measures to minimise the release of toxic, harmful or noxious substances from land-based sources, to provide in domestic legislation for monitoring and environmental assessment and to adopt laws to control marine pollution from land-based sources, including pipelines and outfall structures.

Even though they pre-date PNG's obligations under the UNCLOS framework, the provisions of the Environmental Contaminants Act, the Environmental Planning Act and the Water Resources Act together substantially satisfy this framework of obligations. As such, these enactments also address those elements of the Noumea Convention that embody elements of UNCLOS, for example, those requiring parties to take appropriate measures to control land-based sources of marine pollution and requiring environmental assessment.

The Environmental Contaminants Act sets up a licensing scheme for the release of environmental contaminants to the environment and makes it an offence to pollute, while the Water Resources Act establishes a permit system to control discharges into any waters. Both of these Acts provide measures to prevent, reduce or control marine pollution by taking measures to minimise the release of toxic, harmful or noxious substances from land-based sources.

The Environmental Planning Act provides for assessment of environmental plans for project proposals that might have significant environmental implications.

74 Ibid s. 29(2)(o).
75 Ibid s. 40(8).
76 Ibid s. 42(f).

Based on these assessments, projects might be approved, approved conditionally or rejected and consequently prohibited. This Act provides scope for the PNG Government to assess the potential effects of activities where there are reasonable grounds to believe that substantial pollution or that significant and harmful changes to the environment may result. These provisions appear to address the obligations for environmental assessment in UNCLOS and the corresponding elements in the Noumea Convention.

At least in so far as principal legislation is concerned, it is concluded that the domestic laws of PNG substantially give effect to the obligations undertaken by PNG at international law with respect to marine disposal of waste. Further issues will be the extent to which the legislation is supported by necessary subordinate legislation and how it is implemented in any specific instance.

Experience to Date

The developments on Misima Island and Lihir Island provide a useful context within which to consider the applicability of the international environmental law regime to the disposal of mining waste at sea. They also provide an opportunity to consider the operation of the PNG enactments that implement the international regime in the domestic context.

The gold mine operated by Placer Pacific Limited on Misima Island uses "deep sea tailing placement" to deal with the issue of production tailing. This involves the use of an ocean outfall at a water depth of greater than 100 metres. Similarly the gold mine operated by Rio Tinto on Lihir Island barges waste rock for ocean disposal and also discharges fine material through a submerged pipeline.

Misima Island Mine

While gold has been mined on Misima Island since early this century, the current mine only began production in 1989[77] after a Special Mining Lease had been issued in December 1987.[78] It therefore began life after all four of the enactments referred to in the preceding section had been made.

An Environmental Plan was prepared in 1986 and submitted to the PNG Government in accordance with the Environmental Planning Act. This report

77 "The Natural Resources of PNG" <www.datec.com.au/png/natural_resource/misima.htm> (10 October 1998).

78 Personal Communication – NSR Environmental Consultants Pty Ltd, environmental consultants to Placer Pacific Limited on the mine development.

detailed the purpose and viability of the project, described the proposed development and timetable, described the existing environment, anticipated environmental impacts and safeguards proposed in the project, set out the energy balance for the project, proposed environmental management and monitoring.[79]

This Plan had been preceded by an Inception Report in 1984 and a supplement to the Inception Report in 1985.[80] These, in turn, had been preceded by two economic evaluations in February 1983 and August 1984.[81] These had been based on a waste disposal strategy that minimised the impact on marine resource utilisation by the local villagers that rendered the project non-viable. A more viable, but less environmentally conservative strategy was investigated at the suggestion of the PNG Government.[82]

The Environmental Plan identifies the requirements under the PNG legislation current at that time as:

- the Environmental Plan itself under the Environmental Planning Act, Water Use Permits to discharge water or wastes in accordance with the Water Resources Act;
- an application for a permit to dump wastes at sea in accordance with the Dumping of Wastes at Sea Act; and
- an application to discharge environmental contaminants in accordance with the Environmental Contaminants Act.[83]

The Environmental Plan includes consideration of the alternatives for tailings disposal, which would amount to 56 million tonnes over the life of the mine.[84] This did not favour land tailing disposal because of the limited suitable available land, the construction requirements imposed by the nature of the climate and prevailing weather patterns, and the long term risk that would be associated with the structures that would be required. The availability of deep water close to the shore "and the absence of any deep water subsistence or commercial fisheries resources utilisation" favoured ocean tailing disposal.[85]

The tailing was reported to contain "residual cyanide and other process chemicals and some dissolved and particulate-bound metals".[86] De-toxification of residual cyanide in the tailing would be achieved by dilution with seawater prior to

79 Natural Systems Research Pty Ltd *Misima Project Environmental Plan*, Vol B: Main Report, (prepared for Placer (P.N.G.) Pty Limited) (July 1986) Report No CR 206/5 (provided by NSR Environmental Consultants Pty Ltd).
80 Ibid at 1.6.
81 Ibid at 3.1.
82 Ibid.
83 Ibid at 1.5.
84 Ibid at 4.12.
85 Ibid.
86 Ibid.

discharge at a depth of 100 metres below the surface.[87] The discharge pipeline was to extend a distance of approximately 240 metres from the shoreline.[88]

While hard rock waste would be dumped on land near the mine, soft "incompetent" waste rock would be hauled to the coast of the island and dumped directly over the steep submarine slope that characterises the margins of the island.[89] This was the lowest cost option and the Environmental Plan recognised that it would have an environmental impact through sedimentation and turbidity.[90]

Lihir Island Mine

The Lihir Island gold deposit was discovered in 1982[91] and exploration of the deposit first commenced in 1983.[92] As in the case of the Misima project, an Environmental Plan was prepared and submitted to the PNG Government in accordance with the Environmental Planning Act. Similarly to the Misima plan, this plan addressed the purpose and viability of the project, described the proposed development and timetable, described the existing environment, anticipated environmental impacts and safeguards proposed in the project, set out the energy balance for the project, and proposed environmental management and monitoring.[93]

Again, as with the Misima development, the Environmental Plan identified the applicable requirements under the PNG legislative framework as being the Environmental Plan itself under the Environmental Planning Act, Water Use Permits to extract water or discharge water or wastes in accordance with the Water Resources Act, an application for a permit to dump wastes at sea in accordance with the Dumping of Wastes at Sea Act and an application to discharge environmental contaminants in accordance with the Environmental Contaminants Act.[94]

Ocean disposal by bottom dump barge was identified as the preferred option for waste rock disposal.[95] Taking advantage of the deep water trench adjacent to Lihir and the steep submarine slopes, the barges would dump their loads between one and three kilometres from the loading site, where the water is up to 800 metres deep. This would still, however, be at least partially within the confines of the

87 Ibid.
88 Ibid at 4.14.
89 Ibid at 4.17.
90 Ibid.
91 "Lihir Gold", Australian Stock Exchange Home Page, <www.asx.com.au/A1430.htm> (10 October 1998).
92 NSR Environmental Consultants Pty Ltd *Lihir Project Environmental Plan*, Vol B: Main Report (prepared for Kennecott-Nuigini Mining Joint Venture) (November 1989) Report No CR 235/17 (provided by NSR Environmental Consultants Pty Ltd).
93 Ibid.
94 Ibid at 2, 3.
95 Ibid at 22.

geographic feature described as Luise Harbour.[96] As in the case at Misima, the preferred method of tailing disposal was by discharge to the ocean through a submarine pipeline, in this instance, at a depth greater than 125 metres.

The Lihir Management Company holds 20 current Water Use Permits under the Water Resources Act. These include permits to discharge treated mill tailing into the sea at a depth of 125 metres as described in the Environmental Plan, and for the barge dumping of waste rock into Luise Harbour.

Applicability of International Law

The applicability of the international environmental law regime is primarily relevant to PNG itself, and not the mine operators. It is relevant to the mine operators in a direct legal sense only to the extent that PNG has undertaken the obligations and given effect to them in domestic law. This was the case in relation to the London Dumping Convention, the Noumea Convention and the Noumea Dumping Protocol at the time the mines commenced.

The broad definition of "sea" in the London Dumping Convention, that is, all marine waters other than internal waters, means that both the pipeline discharges and the dumping activities at Misima and Lihir could be construed as taking place "at sea". The possible exception to this would be that part of the dumping at Lihir that falls within Luise Harbour and therefore might be considered to occur in "internal waters".[97]

As the bottom dump barges used at Lihir might properly be considered to be "vessels", the London Dumping Convention is relevant to the waste rock disposal at Lihir that occurs "at sea" (that is, outside the Luise Harbour baseline). This is not the case on Misima where the dumping occurs from on land.

The pipelines at both Misima and Lihir might properly be considered to be "man-made structures". The discharges from the pipelines take place "at sea", however it is moot whether the man-made structures themselves should be considered to be "at sea" within the meaning of the convention. While they extend from and are connected to the land, equally they extend out into the "sea", as it is defined. Thus, it might be argued that the London Dumping Convention could be relevant to the tailing disposal at both locations.

This view, however, is not shared by the Secretariat of the Convention, the International Maritime Organisation (IMO). In correspondence to Environment Australia in 1997, the Chief of the Office for the London Convention in the

96 Ibid at 20.

97 Using the definition of "internal waters" from UNCLOS this would depend on a construction of where the baseline should appropriately be drawn as per UNCLOS, Art. 7.

Marine Environment Division at the IMO stated that "discharges into the sea of waste and other matter ... through pipelines from land are not covered by the London Convention 1972".[98] Nevertheless, this point raises a question about application of the convention to such situations. From an environmental perspective, it seems an arbitrary distinction since a vessel discharging the same material the same distance from the shore would come within its ambit.

At present, the only obligation on PNG to take measures to control pollution from pipelines and outfall structures comes from its comparatively recent ratification of UNCLOS. The London Dumping Convention is relevant only to that limited element of the barge dumping at Lihir that occurs outside the Luise Harbour baseline.

The Noumea Convention and the Noumea Dumping Protocol are not applicable to any of the activities. The London Dumping Convention applies to the deliberate disposal of wastes and other matter at sea, that is, in all marine waters other than internal waters. By contrast, the obligations under the Noumea Convention and Noumea Dumping Protocol apply in respect of the "Convention Area", which is defined to exclude internal waters and archipelagic waters.[99] The geographic location of the disposal activities at Misima and Lihir means that in both instances they would be occurring in PNG's archipelagic waters as defined in the National Seas Act 1977.[100] As such, the obligations undertaken by PNG under the Noumea Convention and the Noumea Dumping Protocol are not relevant to the activities on Misima and Lihir.

Application of Domestic PNG Laws

In the case of both Misima and Lihir, it appears that regulation of the activities has been through the Environmental Planning Act and the Water Resources Act and that, contrary to the expectations expressed in the respective Environmental Plans, the provisions of the Dumping of Waste at Sea Act and the Environmental Contaminants Act have not been applied.[101]

By applying just the Environmental Planning Act and Water Resources Act, however, it can be argued, PNG satisfies the applicable obligations it has undertaken at international law. This contention is supported by the various stages of

98 Manfred Nauke (IMO) to Louise Emmett (Environment Australia), communication of 9 January 1997 reproduced in NSR Environmental Consultants Pty Ltd "Update on the London Convention, 1972 & 1996 Protocol" (August 1998) unpublished report prepared for Placer Pacific Limited.

99 The archipelagic waters of a State comprised of a number of islands are essentially those marine areas enclosed by baselines drawn from the external sides of those islands to each other.

100 National Seas Act No 7 of 1977 (Papua New Guinea).

101 Personal Communication – Stuart Jones of NSR Environmental Consultants Pty Ltd, Melbourne and Geoff Day, Lihir Management Company, PNG.

environmental planning and evaluation carried out under the Environmental Planning Act in advance of the operations, and the on-going environmental monitoring and evaluation of environmental impact carried through in the Environmental Management and Monitoring Programs for the mines. The requirement for Water Use Permits under the Water Resources Act in relation to pipeline discharges and waste rock dumping appears to already pick up the general framework obligations under UNCLOS.

It is noted also that where a proposal has been approved under the Environmental Planning Act 1978 and the relevant environmental plan (as evaluated under that Act) contains details of the proposed discharge, emission or deposit, the Minister administering the Environmental Contaminants Act would be obliged to grant a licence or a permit, as the case may be, under that Act. Hence the issue of the licence under the Environmental Contaminants Act would be only a formality in the case of the Misima and Lihir mines (albeit one that has apparently not been performed).

Although the international obligations might be seen as largely satisfied by the operation of the Environmental Planning Act and the Water Resources Act, the non-application of the Dumping of Wastes at Sea Act is puzzling. In particular, in view of its broad definition of "sea", all waste rock disposal activities undertaken at Lihir (not just those outside the Luise Harbour baseline, as would be the case under the London Dumping Convention definition) should be the subject of written permission from the prescribed officer under this Act.

The following observations are made in relation to the non-application of the Dumping of Wastes at Sea Act. First, it appears that no regulation has been made under this Act to prescribe a person as the "prescribed officer".[102] If this is the case, then there is nobody to whom an application might be made and by whom a permit might be issued.

Secondly, the intent of requiring a permit in order to undertake dumping under the Dumping of Wastes at Sea Act applies the intent of the London Dumping Convention that aims to ensure appropriate environmental impact assessment takes place in relation to such activities. This objective is satisfied, to a degree, by the Water Use Permits obtained under the Water Resources Act. Since in issuing Water Use Permits the Water Use Board established under that Act must consider the Environmental Plan lodged under the Environmental Planning Act, a procedure for environmental impact assessment is built into the process. So while the letter of the Dumping of Wastes at Sea Act may not be applied, it seems its intent in this respect is applied.

Thirdly, even though the London Dumping Convention and consequently the PNG Dumping of Wastes at Sea Act may be interpreted not to apply to

102 Dumping of Wastes at Sea Act 1979 s. 17(a) (Papua New Guinea).

pipelines such as those at Misima and Lihir, it is noted that PNG has applied regulatory controls to the discharges from these structures through the Water Resources Act even prior to ratification of UNCLOS.

Future Trends

Changes in PNG Domestic Law – Draft Environment Bill 1998

While not specifically directed to its commitments under international environmental law, PNG is currently acting to update and consolidate its domestic legislative environmental law framework.[103] The PNG Government is presently drafting a Bill for a new Environment Act, *inter alia*:

> (b) to regulate the environmental impacts of development activities in order to promote sustainable development of the environment and the economic, social and physical well-being of people by safeguarding the life-supporting capacity of air, water, soil and ecosystems for present and future generation (sic) and avoiding, remedying and mitigating any adverse effects of activities on the environment; and
>
> (c) to provide for the protection of the environment from environmental harm; and
>
> (d) to provide for the management of national water resources and the responsibility for their management.[104]

The Bill sets out a general environmental duty that requires a person not to carry out an activity that causes or is likely to cause environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise that harm.[105] The Bill provides for the making by the government of Environment Policies[106] in relation to matters including environmental contaminants, an industry or activity, waste management and minimisation, land, air or water quality and the management of surface or underground water.[107] The Bill defines "water" to mean "all water in the Country", and including, *inter alia*, "coastal waters comprising the internal waters and territorial sea".[108]

103 See the discussion in Eric L. Kwa "Papua New Guinea" (1998) 3 *APJEL* 333 at 339.
104 PNG Draft Environment Act 1998 (Environment Bill 1998), draft of 26/6/98 incorporating suggested changes 18/8/98, long title (PNG).
105 Ibid cl 7(1).
106 Ibid cl 30(1).
107 Ibid cl 31(2).
108 Ibid Sch A – Definitions.

Part V of the Bill provides for Environment Permits to be held in relation to the carrying out of certain activities. An activity includes, *inter alia*, construction of works, land clearance, excavation, installation, operation or maintenance of plant and equipment, and activities for the purpose of extracting natural resources.[109] It will thus include the activity of, and activities related to, mining operations.

Activities will be divided into three prescribed classes.[110] Level three activities are defined as activities that involve matters of national importance or may result in serious environmental harm.[111] For Level two and Level three activities, the person carrying out the activity must have a permit.[112] In relation to Level three activities, the proponent can be directed to undertake environmental impact assessment.[113]

The Bill repeals the Environmental Planning Act, the Environmental Contaminants Act and the Water Resources Act.[114] Approvals, licences and permits granted or issued under these Acts continue to have full force and effect and are deemed to be permits for the purpose of the new Act.[115] Overall, it appears that the Bill will not significantly alter the status quo that has existed under these three Acts.

The Bill presently does not attempt to incorporate the provisions of the Dumping of Wastes at Sea Act. This appears to be an opportunity missed. The enactment of this Bill would seem to be a good chance to consolidate the permit and assessment requirements under the London Dumping Convention into a single regulatory scheme with the provisions from the other Acts. This would, at the very least, afford greater regulatory simplicity for proponents of developments and avoid duplication. It would facilitate the review and evaluation of all the relevant environmental considerations in the one process.

It may be, however, that PNG authorities are waiting to see whether the 1996 London Protocol comes into force. If its provisions were to become applicable in PNG, while waste rock disposal may be unaffected, future ocean disposal of tailing material from vessels at sea could well be precluded. This could throw into sharp relief the use of submerged pipelines for this purpose. At the very least, application of protocol provisions would necessitate a closer analysis of options for dealing with mine waste.

109 Ibid cl 42(1).
110 Ibid cl 44(1).
111 Ibid cl 44(2).
112 Ibid cl 45(1).
113 Ibid cl 51(1).
114 Ibid cl 139(1).
115 Ibid cl 140(1).

Conclusion

Gold and other mineral exploration continues in the island chains of which Misima and Lihir form part and throughout the PICs. As exploration activities evolve into mining project developments, the question of the most appropriate means for production waste disposal will recur again and again as each mine develops.

With the benefit of experience over a number of years and developments, PNG appears to be well placed in terms of a legislative framework with which to address these issues. Ultimately, however, how well PICs like PNG deal with these issues in practice in any particular situation will be a question of standards and of degree, dependent just as much on capacity, resources and economic and developmental imperatives as on environmental policy and legislation.

JUSTIN MACINANTE
Master of Environmental Law Candidate, University of Sydney, Sydney, Australia