

Towards a City in Nature: Bolstering Environmental Impact Assessments in Singapore

Introduction

In land-scarce Singapore, it has long been thought that environmental degradation was an inevitable consequence of necessary urban development.¹ However, the appetite for rapid development of our green spaces has been tempered by increasing public interest in conserving these spaces. As recently as 2021, scrubland that had not been approved for clearance was erroneously cleared in Kranji by a contractor for Jurong Town Corporation (JTC), highlighting the need to review Singapore's current policies and processes surrounding development works.²

A mechanism that is widely used to account for environmental considerations in the development process is the Environmental Impact Assessment (EIA). According to the United Nations Environmental Programme (UNEP), an EIA is a tool that assembles and analyses information on the potential impacts of a specific development, and identifies ways to prevent or mitigate those impacts.³ Its overarching aim is to ensure that environmental issues are systematically considered as part of decision-making.⁴ While EIAs are a common requirement in urban development processes worldwide, the specific requirements for conducting an EIA vary depending on the economic and structural realities of each country.

EIAs are especially important in Singapore's context as they help to guide the sensitive development of our limited land.⁵ Their relevance is underscored by the threat of climate change, which the Ministry of Sustainability and the Environment (MSE) has described as an "existential challenge for Singapore".⁶ Additionally, owing to Singapore's interest in aligning itself with international norms in relation to environmental governance and upholding its reputation as a "City in Nature"⁷, there have been calls for greater considerations of environmental issues in the urban planning process.

This case study aims to chart an overview of the current framework for EIAs in Singapore. This case study will first situate the EIA regime in Singapore within the broader global context; second, introduce the various components and stages of the EIA process in Singapore; third, identify gaps in

¹ Parliament of Singapore, "Parks and Trees Bill", Singapore Parliamentary Reports, Vol. 79, January 25, 2005.

² Qing, Ang. "Kranji woodland cleared by mistake: How it happened." *The Straits Times*, February 21, 2021. <https://www.straitstimes.com/singapore/how-the-unauthorised-clearing-of-kranji-woodland-happened>

³ Abaza, Hussein, Ron Bisset and Barry Sadler. *Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach*. Geneva: United Nations Environmental Programme, 2004.

⁴ Ibid.

⁵ Hicks, Robin. "A city in nature — or a city without nature? The uncertain fate of Singapore's last forests". *Eco-Business*, July 3, 2021. <https://www.eco-business.com/news/a-city-in-nature-or-a-city-without-nature-the-uncertain-fate-of-singapores-last-forests/>

⁶ Ministry of Sustainability and the Environment. "Our Climate Policy in a Nutshell". Accessed January 19, 2023. <https://www.mse.gov.sg/policies/climate-change>

⁷ Hicks, A City in Nature.

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Singapore's current EIA practices, including those prior to, during and after the EIA; fourth, examine the existing solutions implemented by the government to address these challenges; and finally, using Hong Kong as a comparative model, offer policy options and discuss their merits and drawbacks when applied to the EIA regime in Singapore. As part of the discussion, the case study covers the possible reasons for why Singapore refrains from legislating mandatory EIAs and discuss the feasibility of dedicated legislation to govern the administration of EIAs.

Situating Singapore's EIA regime in the global context

What EIA obligations are there under international law?

The use of EIAs in domestic urban development has been normalised by international law, but has not been made legally mandatory. Various international law instruments, such as the 1982 World Charter for Nature (WCN) by the United Nations General Assembly⁸, recommended the assessment and mitigation of environmental impact, where this impact is likely to be substantial.⁹ The WCN also recommended that such practices be reflected in domestic legislation.¹⁰ This was also embodied in the 1992 Rio Declaration¹¹, which, as soft law, was not legally binding on Member States and did not entail legal ramifications.

Where transboundary environmental harm is expected, international law legally necessitates EIAs. The 1982 UN Convention on the Law of the Sea (UNCLOS)¹² and 1992 Convention on Biological Diversity¹³ are legally binding on Member States, and require EIAs to be carried out for transboundary harm. This duty to carry out EIAs under customary international law has also been affirmed by international tribunals.

The decisions of international tribunals is another major source of international environmental law, in addition to Multilateral Environmental Agreements (MEAs) and principles of environmental law. For example, the International Court of Justice in *Pulp Mills on River Uruguay (Argentina v Uruguay)*¹⁴ held that such a duty arose "where there is a risk that the proposed industrial activity may have significant adverse impact in a transboundary context, in particular, on a shared resource". In 2014, then-Senior Minister of State for Foreign Affairs Masagos Zulkifli acknowledged this

⁸ UN General Assembly, *World Charter for Nature*, 28 October 1982.

⁹ Principle 11(c) of the WCN states "Activities which may disturb nature shall be preceded by assessment of their consequences, and environmental impact studies of development projects shall be conducted sufficiently in advance, and if they are to be undertaken, such activities shall be planned and carried out so as to minimise potential adverse effects."

¹⁰ Principle 14 of the WCN states that "The principles set forth in the present Charter shall be reflected in the law and practice of each State, as well as at the international level."

¹¹ United Nations. *Rio Declaration on Environment and Development*, 16 June 1992.

Principle 17 of 1992 Rio Declaration provides that: "Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority."

¹² UN General Assembly, *Convention on the Law of the Sea*, 10 December 1982.

Article 206 of UNCLOS states that: "When States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments in the manner provided in article 205."

¹³ United Nations. *Convention on Biological Diversity*, 5 June 1992.

¹⁴ [2006] ICJ Rep 113 (at [204]).

international obligation in Parliament in the context of land reclamation works by Malaysia in the Johor Straits, which highlights the importance of EIAs in the context of transboundary harm.¹⁵

Singapore was previously involved in a dispute regarding transboundary environmental harm in *Case Concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v Singapore), Provisional Measures*.¹⁶ There, Malaysia alleged that reclamation works by Singapore were causing environmental harm to the coastal and marine environment in and around the Straits of Johor, and sought provisional measures from the International Tribunal for the Law of the Sea (ITLOS) to direct Singapore to suspend its land reclamation activities.¹⁷ The ITLOS found that Singapore had not conducted an EIA on the impact of the project on Malaysia's jurisdiction and that there was reasonable expectation of adverse impacts on Malaysia's marine environment.¹⁸ The Tribunal directed Malaysia and Singapore to cooperate on assessing and mitigating the environmental damage of the reclamation works.¹⁹

Does Singapore's EIA regime align with international law best practices?

While Singapore meets its obligations under international laws in relation to EIAs, Singapore falls short of international best practices. As international law does not mandate that states must have a domestic EIA legal regime, the lack of EIA laws locally does not contravene international law. Notwithstanding, 179 out of 193 Member States of the United Nations have EIA laws, which establishes that it is international best practice to have EIA laws. As one of only 14 Member States without any EIA-specific legislation, Singapore is an outlier in this regard.²⁰

Singapore is a party to several MEAs.²¹ As a dualist jurisdiction, international agreements are imbued with legal effect in Singapore through domestic legislation.²² Singapore commonly relies on existing laws and new policies to meet its international law obligations, especially in the context of international environmental law.²³ In 2021, Minister for National Development Desmond Lee pledged to "continue strengthen[ing] the EIA framework".²⁴ However, when asked if an umbrella EIA law was required, Minister Lee indicated that Singapore already has several statutes (legislative gateways) containing provisions which sufficiently cover various aspects of the EIA process.²⁵ Thus, the government's stance is that dedicated EIA legislation is not necessary to strengthen Singapore's EIA framework, since legislative gateways and internal administrative guidelines are sufficient.

For example, sections 26 and 36 of the Environmental Protection and Management Act (EPMA)²⁶ provide the Director-General of Environmental Protection with the power to conduct "impact

¹⁵ Parliament of Singapore, "Singapore's Response to Land Reclamation Works in Johor Straits", Singapore Parliamentary Reports, Vol. 92, July 9, 2014.

¹⁶ *Land Reclamation in and around the Straits of Johor (Malaysia v. Singapore), Provisional Measures*, Order of 8 October 2003, ITLOS Reports 2003, p. 10.

¹⁷ Ibid.

¹⁸ Ibid. [95]-[96].

¹⁹ Ibid. [106].

²⁰ Chun, Joseph and Lye Lin-Heng. "Environmental Governance". In *Environmental Law in Singapore*, 52. Singapore: Academic Publishing, 2019.

²¹ Lee, Seokwoo. *Encyclopaedia of Public International Law in Asia (3 vols)*. The Netherlands: Brill, 2021.

²² Ibid. 119.

²³ Ibid. 117-118.

²⁴ Tan, Audrey. "Environmental Impact Assessments In S'pore To Be Further Strengthened: Desmond Lee". *The Straits Times*, February 22, 2021. <https://www.straitstimes.com/singapore/environment/environmental-impact-assessments-to-be-further-strengthened-desmond-lee>

²⁵ Ibid.

²⁶ Environmental Protection and Management Act 1999 (2002 Rev Ed).

analysis studies” or a “study on environmental pollution control” and correspondingly implement measures to prevent, reduce or control pollution. The case study examines possible reasons for why Singapore favours legislative gateways over dedicated legislation, and their effects on EIA practices in Singapore.

Overview of the EIA framework in Singapore

Before development work commences on areas located near “sensitive” natural areas, planners at the Urban Redevelopment Authority work with “technical agencies”²⁷ to conduct a preliminary assessment on the expected environmental impact, in order to determine if the impact is expected to be so substantial that further, more thorough EIAs and mitigation measures are needed.²⁸ A “sensitive area” is defined as including nature reserves, nature areas, marine and coastal areas, other areas of significant biodiversity or with the potential for trans-boundary impact.²⁹ Accordingly, not all development projects on greenfield sites require an EIA.



Figure 1: Outline of the EIA Process in Singapore from the 2022 Bayshore EIA report³⁰

If an EIA is required, the relevant agencies will commence the EIA process (Figure 1). The EIA process encompasses the following key activities:³¹

1. Pre-report technical assessments of the designated area by government agencies: here, the technical agencies help to screen the area’s environmental particularities and delineate the scope of the EIA.³²
2. Preparation of an EIA report by a consultancy firm: The report typically includes a baseline survey of the area’s biodiversity, an evaluation of the project’s expected environmental impact, and recommendations for mitigation measures, in the form of engineering modifications and an Environmental Management and Monitoring Plan (EMMP).

²⁷ Urban Redevelopment Authority (URA). "Environmental Impact Assessment". Accessed January 19, 2023. <https://www.ura.gov.sg/Corporate/Planning/Our-Planning-Process/Bringing-plans-to-Reality/Environmental-Impact-Assessment>

Technical agencies include the National Parks Board (NParks), National Environment Agency, Maritime and Port Authority of Singapore, and Singapore Food Agency.

²⁸ Ibid.

²⁹ Ibid.

³⁰ DHI. *Environmental Study for Bayshore Development and Road Construction Draft Final Report*. Singapore: DHI, 2022.

³¹ Chun, *Environmental Law in Singapore*, 52.

³² When approached for comment, a representative from URA shared that “The scope could cover areas such as biodiversity, hydrology, water quality, air and noise pollution, etc. Where necessary, technical agencies may seek stakeholders’ inputs when developing the scope and specifications of the studies” (URA Officer (name redacted), email to authors, January 18, 2023).

3. Obtaining planning approval: Typically, planning approvals are granted if the environmental harm from the project is sufficiently mitigated to bring the project in line with various regulations.³³

It is important to note that the specific components and scope of the EIA can vary depending on the project.³⁴ If there is a possibility of adverse impact, the developer is then required to conduct a more detailed EIA and implement more mitigation measures as recommended.³⁵

Problems of EIA: Before, During and After the Process

Challenges prior to the EIA process

Identification of development projects which require an EIA report

Currently, EIAs are not required for all urban development projects. While certain “sensitive” areas, are subject to closer scrutiny³⁶, conducting an EIA for developments is not mandatory. Instead, technical agencies review each development proposal to determine if an EIA should be commissioned, and if so, to determine the appropriate type of EIA.³⁷ However, the guidelines and framework for making this decision are not widely available to the public, leading to lack of transparency.

The decision to commission an EIA being solely within the purview of technical agencies can result in a failure to fully consider and address potential environmental risks associated with a development project. This can lead to inadequate mitigation measures or a lack of action being taken to address potential negative impacts. Furthermore, the lack of mandatory EIAs and transparent decision-making processes can impede the ability to hold developers and government agencies accountable for any negative impacts that may arise, making it challenging to effectively address and mitigate such impacts in the future.

Challenges during the EIA process

Lack of standardised EIA methodology

Another significant challenge in the EIA process is the lack of a standardised method to evaluate potential environmental impacts. Generally, two key tests are carried out in the EIA process: the baseline study and the impact assessment test.³⁸ The baseline study is used to determine the current environmental conditions of the land, while the impact assessment test estimates the change in environmental conditions resulting from the proposed development and determines the degree of impact on the land.

The Biodiversity Impact Assessment Guidelines of Singapore (BIA Guidelines), published in 2020 by

³³ Regulatory standards include those in the Environmental Protection and Management Act, the Environmental Public Health Act, the Public Utilities Board's Sewerage and Drainage Act pertaining to noise, water, and air pollution, and the National Parks Board's Wildlife Act with regard to measures related to wildlife protection.

³⁴ Chun, *Environmental Law in Singapore*, 51-52.

³⁵ URA, “Environmental Impact Assessment”.

³⁶ Ibid.

³⁷ Ibid.

³⁸ National Parks Board (NParks). “Biodiversity Impact Assessment (BIA) Guidelines”. Accessed January 15, 2023. <https://www.nparks.gov.sg/biodiversity/urban-biodiversity/biodiversity-impact-assessment-guidelines>

the National Parks Board (NParks), propose a number of survey methods to be carried out as baseline studies for both terrestrial and marine sites.³⁹ However, these guidelines do not impose a legal requirement for the use of these methods, and consultants are only encouraged, but not obligated, to follow the recommended methodologies. The same guidelines also provide recommendations for assessing and summarising the overall significance of impacts on biodiversity. Three approved methods are listed: The Rapid Impact Assessment Matrix (RIAM), Risk-based Impact Assessment Matrix, and the Leopold Matrix. According to the guidelines, the RIAM method is “more comprehensive and recommended for EIAs”⁴⁰, yet it also allows consultants to use other methods not listed as long as they are compatible with the development, giving consultants significant discretion in conducting an EIA.

An analysis of the EIAs conducted in Singapore reveals the lack of standardisation in the EIA report methodology. Out of the 15 reports available on the Urban Redevelopment Authority's (URA) website which were published after the BIA Guidelines were issued in 2020, 40% of the studies did not use the recommended RIAM methodology.⁴¹ Instead, they used general metrics such as magnitude, sensitivity, vulnerability, importance of resource, and receptor as their impact assessment criteria.⁴²

Two consequences emerge from the lack of standardisation. Firstly, there is inconsistency in the quality and rigour of EIAs due to the significant discretion given to consultants in deciding the methodologies used to determine environmental impact in an EIA report. With regulators able to accept any methodology it sees fit, this may lead to potential misidentification or even the failure to identify significant impacts on the environment. Secondly, the failure to properly identify significant impacts results in proposed mitigation measures being insufficient and inaccurate, undermining the entire purpose of conducting an EIA.

Non-adherence to impact scoring criteria

Another issue during the EIA process is consultants' non-adherence to the scoring criteria established by NParks. This may occur even if the consultants adhere to the recommended RIAM framework. Specifically, NParks assigns an environmental score range of -116 to -180 a "D" rating, which is indicative of "Major Negative Change/Impact" (Figure 2). However, not all EIA reports adhere to this framework. For instance, as evidenced in the table below, consultants for Tengah South, an area zoned for residential development, deemed scores as low as -216 "Moderate Negative Impact" in their EIA (Figure 3). This discrepancy illustrates the lack of consistency when applying NParks' recommended methodology, and demonstrates the broad discretion often exercised in the scoring of impact even though the consultant adhered to the proposed RIAM framework in name.

While the difference between major and moderate impact may not always be clearly defined, and the classifications may at times be subjective, the fact that such deviations are able to occur remains a matter of concern as it perpetuates further inconsistencies.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ URA, “Environmental Impact Assessment”.

⁴² URA, “Environmental Impact Assessment”. Reference can be made to the following reports on the URA website: Mandai Park, Alignment Options for CRL (Central Catchment Nature Reserve), Report on Worksites outside Central Catchment Nature Reserve (CCNR) near Windsor and Eng Neo Avenue, Report on Stations in the vicinity of Turf City and Holland Plain, Report on Station in the vicinity of Clementi and Maju, Mount Pleasant, Woodlands North, Bukit Batok Hillside Park, Proposed Water Pipelines from Bukit Kalang to Upper Thomson Road.

Range	Impact Indicators	Description of Range Band
116 to 180	D	Major positive change/impact
81 to 115	C	Moderate positive change/impact
37 to 80	B	Minor positive change/impact
7 to 36	A	Slight positive impact
-6 to +6	N	No Impact/Status quo/Not Applicable
-7 to -36	-A	Slight negative change/impact
-37 to -80	-B	Minor negative change/impact
-81 to -115	-C	Moderate negative change/impact
-116 to -180	-D	Major negative change/impact

Figure 2: RIAM Environmental Score Chart by NParks⁴³

Potential Ecological Impact	Habitat Receiver	Environmental Score (Pre-mitigation)	Impact Significance
Habitat degradation	Abandoned-land Forest with Native Regeneration	N.A. (cleared during construction phase)	
	Abandoned-land Forest	-234	Major Negative Impact
	Waste Woodland	-104	Moderate Negative Impact
	Scrubland and Herbaceous Vegetation	-104	Moderate Negative Impact
	Closed-canopy Stream (ED2)	-216	Moderate Negative Impact
	Closed-canopy Stream (ED7)	-216	Moderate Negative Impact
	Open-country Streams (Spring, ED1, ED6 and ED8_01)	-156	Moderate Negative Impact
	Closed-canopy & Semi Open-Country Ponds (Pond6, Pond3, Pond4, Pond5 and ED8_02)	-156	Moderate Negative Impact
	Open-country Ponds (Pond1 and Pond2)	N.A. (cleared during construction phase)	
	Main Canal	N.A. (transformed into Forest Stream)	

Figure 3: RIAM Environmental Score chart used in Tengah South EIA⁴⁴

Inherent weaknesses in testing

Even if consultants were to adhere strictly to the BIA guidelines, there are inherent weaknesses in current testing methodologies that reduce the effectiveness of EIAs themselves. For example, baseline studies in EIAs assume that ecosystems are static and do not sufficiently account for the ever-changing nature of ecosystems.⁴⁵ According to Dr Joseph Chun, an environmental lawyer based in Singapore, EIAs contain incorrect assumptions about how the ecosystem would react if no urban

⁴³ NParks, "BIA Guidelines".

⁴⁴ CH2M Hill Singapore Pte Ltd. *Specialist Consultancy Services for Environmental Impact Study at Tengah Town: Environmental Impact Study (EIS) Report*. Singapore: CH2M Hill Singapore Pte Ltd, 2021.

⁴⁵ Wilson, Jeff, Shawn Hinz, Jennifer Coston-Guarini, Camille Mazé, Jean-Marc Guarini, and Laurent Chauvaud. 2017. "System-Based Assessments—Improving the Confidence in the EIA Process" *Environments* 4, no. 4: 95. <https://doi.org/10.3390/environments4040095>

development was carried out.⁴⁶ The problem is compounded by climate change, which is changing ecosystems in ways not previously experienced. Some examples include urban sprawl, increasingly severe weather conditions and increasing insect damages to crops. This makes historical data much less accurate.

Limited public engagement and participation

While the existing EIA framework incorporates some level of public participation, two issues arise: (1) it is not mandatory for such engagement to take place, and (2) the degree and timing of public participation varies across different projects, indicating a lack of consistency.

Public participation represents a critical component of the EIA process, as it serves to enhance the rigour and credibility of these assessments. This in turn supports the government in making informed decisions about the potential environmental impacts of proposed projects. Effective environmental governance entails sound decision-making, which requires all available information to be thoroughly evaluated and considered.⁴⁷

More broadly, incorporating public participation in the EIA process can deepen public trust in the government.

[We] have to take a much more open approach to government and to governance ... we need to welcome different views, reach out to diverse groups, including critics, hear them, exchange with them, pick up ideas from them, persuade them. We will share more information with the public.

—Prime Minister Lee Hsien Loong at the opening of Parliament in 2011.⁴⁸

In the context of EIAs, involving the public can help achieve this goal by fostering public accountability within the planning and decision-making process. While it is acknowledged that information may never be fully complete or certain, the input and perspectives of stakeholders, such as environmental organisations and the scientific community, provide a more comprehensive understanding of the potential impacts of a proposed project. Furthermore, their participation allows for the evaluation and critique of existing mitigation measures, which can improve the overall effectiveness of these measures.⁴⁹

EIA reports in Singapore are typically made publicly available for roughly one month, during which time nature groups, members of the scientific community, and other stakeholders are able to provide feedback and express concerns about the report's findings.⁵⁰ The URA website states that "views and feedback from nature and community stakeholders" are sought on environmental study findings, suggesting that such engagement is limited to the later stages of the EIA process, after

⁴⁶ Joseph Chun, email to authors, January 7, 2023.

⁴⁷ Chun, "Environmental Law in Singapore", 51.

⁴⁸ Prime Minister's Office. "Speech by Prime Minister Lee Hsien Loong at the Debate on The President's Address, 20 October 2011 at Parliament". Accessed January 19, 2023. <https://www.pmo.gov.sg/Newsroom/speech-prime-minister-lee-hsien-loong-debate-presidents-address-20-october-2011>

⁴⁹ Chan, Jasper Hayden. "Towards a Clean, Green and Sustainable Environment: Lessons in the Use of Environmental Impact Assessments in Singapore". Singapore Law Blog (blog), May 20, 2019. <https://singaporelawblog.sg/blog/article/234>

⁵⁰ Land Transport Authority. "Environmental Impact Assessment (Phase 2) Report". Accessed January 19, 2023. <https://www.lta.gov.sg/content/ltagov/en/newsroom/2019/9/2/environmental-impact-assessment-phase-2-report.html>

studies have been conducted.⁵¹ However, various EIAs available on the URA website also indicate that engagement can also take place "at various stages of the study," suggesting that public participation may also occur during the screening and scoping phases.⁵² This inconsistency indicates that it is still largely unclear *when* exactly in the EIA process the consultation takes place.

The current framework for EIAs in Singapore suggests that the decision to involve the public in any given assessment is largely discretionary, and the extent and timing of public participation can vary widely across different projects. For example, some projects may feature substantial involvement of the public, such as the Keppel Club Site⁵³ which was zoned for residential housing, and Cross-Island Line (CRL)⁵⁴ project for the new MRT line, where the public was involved at multiple stages of the projects. Others, such as Mount Pleasant,⁵⁵ a residential project, and Sentosa Deep Gravity Sewer,⁵⁶ a project to replace the aging sewer network in Sentosa, have barely any mention of public consultation. A possible reason is to allow respective agencies the flexibility to decide when to involve the public. However, as Professor Lye Lin Heng pointed out in 2008, Singapore lacks a system to properly facilitate and define the roles of various parties in the EIA process.⁵⁷ The aforementioned examples serve as evidence that this remains a significant concern, and that there remains a lack of a coherent and comprehensive system to guide and structure public participation in the EIA process.

Challenges after the EIA process

Enforcement of the EMMP/conducting EIA follow-ups

Another concern is the absence of a mandatory EIA follow-up process in Singapore. An EIA follow-up is an essential component of the EIA process, as it allows for the verification of predictions and ensures that sufficient environmental safeguards are in place during the actual project implementation. While most projects incorporate an EMMP at the end of the report, detailing the mitigation measures and their subsequent implementation, Singapore lacks a comprehensive follow-up process that ensures that these mitigation measures are effectively implemented following EIA recommendations.

The enforcement of EMMPs are agency-dependent. For instance, the Land Transport Authority (LTA) relies on the professional judgement and capabilities of its internal environmental engineers to oversee the implementation of EMMPs in accordance with the Safety, Health, and Environmental (SHE) framework.⁵⁸ Additionally, professional third-parties are engaged both at the planning and

⁵¹ URA, "Environmental Impact Assessment".

⁵² DHI, "Environmental Study for Bayshore Development".

⁵³ AECOM Environment Team. *Environmental Impact Study for Keppel Club, PSA Club, Bukit Chermin, Berlayer Creek and Former BP Oil Refinery Site*. Singapore: AECOM Singapore Pte Ltd, 2022.

⁵⁴ AECOM Singapore Pte Ltd. *Environmental Impact Study (Windsor & Eng Neo Avenue Forest) Final Report*. Singapore: AECOM Singapore Pte Ltd, 2022.

⁵⁵ AECOM Singapore Pte Ltd. *Environmental Impact Study at Mount Pleasant Final Report*. Singapore: AECOM Singapore Pte Ltd, 2021.

⁵⁶ AECOM Singapore Pte Ltd. *Provision of Multi-Disciplinary Consultancy Services for the Proposed Deep Gravity Sewer Project at Sentosa Environmental Study Final Report Part II (Main Report)*. Singapore: AECOM Singapore Pte Ltd, 2022.

⁵⁷ Lin, Heng Lye. "A Fine City in a Garden-Environmental Law and Governance in Singapore". *Singapore Journal of Legal Studies* (2008): 68-117.

⁵⁸ Land Transport Authority. "Construction Safety & Environment". Accessed January 19, 2023. https://www.lta.gov.sg/content/ltagov/en/industry_innovations/industry_matters/safety_health_environment/construction_safety_environment.html

operational levels of EMMPs to ensure good environmental performance throughout the construction phase.⁵⁹

These guidelines are limited to a specific set of projects and not applied to all projects across the board. This undermines the integrity of the EIA process and the ability to ensure that environmental protections are in place during the actual project implementation.

Recent improvements in Singapore's EIA process

This section covers the steps taken by the government to address some of the problems raised above and highlights remaining gaps.

Greater public involvement in EIA process

It is important to acknowledge that there has been a notable improvement in the level of public engagement in Singapore's EIA processes in recent years. Historically, EIA reports were not made publicly available and decisions were primarily made internally. However, following significant incidents, such as the partial exhumation of Bukit Brown cemetery for the expansion of a highway in 2013, which generated significant criticism for the lack of public consultation, public engagement has been given greater consideration in environmental decision making.⁶⁰

The government has increasingly adopted a collaborative approach with the public, exemplified by initiatives such as the 2015 Green Corridor Project and the 2011 Community in Nature (CIN) programme. The former involved public feedback on how to utilise the decommissioned Singapore-Malaysia railway, and the latter is an ongoing programme by NParks to engage communities in conserving Singapore's natural heritage. These initiatives are part of a broader vision to "transform Singapore into a City in Nature with the support of the Community".⁶¹ The Green Corridor Project also highlights the growing desire of the public to be involved in decisions concerning Singapore's development, as evidenced by the positive response to the Nature Society's proposal on social media.⁶²

In an effort to promote increased transparency, EIA reports have become publicly available online, unless there are specific reasons to maintain confidentiality, such as security considerations.⁶³ The CRL and Clementi Forest developments serve as notable examples of successful public participation. In 2019, nature conservation groups have described their interactions with the authorities on the CRL project as a "constructive" process, not a "perfunctory exercise" and "conducted in the spirit of mutual respect".⁶⁴ The next question is whether further measures can be implemented to strengthen this collaborative partnership and ensure effective public participation in the EIA process.

⁵⁹ Ibid.

⁶⁰ Han, Kirsten. "Singapore: The Fight to Save Bukit Brown". *The Diplomat*, October 30, 2013.

<https://thediplomat.com/2013/10/singapore-the-fight-to-save-bukit-brown/>

⁶¹ National Parks. "NParks to work with the community to transform Singapore into a City in Nature". Accessed January 19, 2023. <https://www.nparks.gov.sg/news/2020/3/nparks-to-work-with-the-community-to-transform-singapore-into-a-city-in-nature>

⁶² We support The Green Corridor in Singapore. "We support The Green Corridor in Singapore Facebook Page". Facebook, January 19, 2023. <https://www.facebook.com/thegreencorridor/>

⁶³ URA, "Environmental Impact Assessment".

⁶⁴ Nature Society Singapore. "Nature Group Response to CRL EIA Phase II". Accessed January 19, 2023. <https://www.nss.org.sg/banner.aspx?id=qC1x3mtUEjQ=&type=1>

Nature groups have highlighted the need for earlier participation in EIA processes - for example, at the scoping stage. The inclusion of interested groups at an early stage has several benefits. Namely, this is where the most crucial issues to be studied are to be determined. This may then minimise the need to search for mitigation measures later in the EIA process.⁶⁵ Dr Joseph Chun notes that such involvement did in fact occur in the CRL EIA process, where the public was brought in during the (1) scoping phase, (2) to consider alternatives to the initially proposed alignment of the development, and (3) to give comment after the EIA was posted online.⁶⁶ This helped to improve the overall decision-making outcome by improving transparency and the quality of information available.

However, without clear legislation requiring such participation, there is no guarantee that such deep involvement will occur for subsequent projects or be initiated by subsequent government administrations. As a result, the aforementioned problems of inconsistent and uncertain public participation across projects remain.

Centralising EIA consultants under NParks

Previously, various development agencies put up standalone tenders for consultants to conduct EIAs. This arrangement led to various consultancies carrying out their EIAs according to varying standards and development agencies could favour consultancies with more lax or favourable EIA frameworks. In an effort to raise the rigour of the EIA framework and address the varying standards across projects, the government made a move to centralise EIA consultants under the purview of NParks.

Minister Desmond Lee explained that NParks would be able to manage the EIA consultants directly on behalf of development agencies, and work more closely with the consultants to standardise survey methodologies and develop industry best practice guidelines.⁶⁷ Notably, this move is a non-legal mechanism, as it aims to “raise standards across industry” by allowing data to be collectively managed by NParks and survey methodologies to be standardised.⁶⁸

Notwithstanding, it is worth noting that the discrepancies identified earlier existed despite the publishing of BIA guidelines by NParks. Moving forward, it will be necessary for NParks to ensure greater compliance with the guidelines it sets. Industry best practice guidelines, while effective to some extent, do not have the same weight as legislation when it comes to ensuring compliance.

Enforcement of EMMPs

Current provisions in several statutes provide avenues for the government to ensure the enforcement of mitigation measures.⁶⁹ Nonetheless, in 2020, the Singapore government recognised an enforcement gap in the EIA process. They therefore included a new section 10 in the Wildlife Act (WA) that would give the Director-General the power to issue directives to developers to undertake

⁶⁵ Ibid.

⁶⁶ Chun, “Environmental Law in Singapore”, 74.

⁶⁷ National Parks Board. “Management Of Environmental Impact Assessment (EIA) Consultancy Services To Be Centralised Under Nparks To Strengthen Conservation Of Singapore’s Natural Heritage”. Accessed January 19, 2023. [https://www.nparks.gov.sg/news/2022/8/management-of-environmental-impact-assessment-\(eia\)](https://www.nparks.gov.sg/news/2022/8/management-of-environmental-impact-assessment-(eia)).

⁶⁸ Ibid.

⁶⁹ As aforementioned, these statutes include the Wildlife Act 1965 (2020 Rev Ed), Environmental Protection & Management Act 1999 (2020 Rev Ed), Environmental Public Health Act 1987 (2020 Rev Ed), and the Sewerage and Drainage Act 1999 (2020 Rev Ed).

measures to protect wildlife, public health, safety, or the ecosystem.⁷⁰ This aims to provide the EIA process with additional enforcement power and incentives for developers to comply with EIA conditions, thus reinforcing the effectiveness of the EIA framework.

However, section 10 of the WA⁷¹ has not been subject to judicial interpretation. A thorough examination of the provision reveals two issues. Firstly, the phrasing "may direct a person to implement" in section 10(1) of the WA implies that the powers of the Director-General are prescriptive rather than prohibitive, limited to only being able to instruct developers to commence mitigation measures proposed under the EMMP, but not correct or prohibit their actions if the measures are carried out incorrectly. Secondly, the scope of section 10 of the WA only covers three broad areas: 1) the health, welfare or safety of any wildlife or class of wildlife; 2) public health or safety in relation to wildlife; or 3) the health of the ecosystem.⁷² Based on a plain reading of the statute, it is unclear whether all mitigation measures are enforceable due to the narrow definitions of 'wildlife' and 'ecosystem' in the statute. This uncertainty may require more time and resources to be spent by enforcement agencies heading to court to interpret the provision, slowing down the urban development process, raising the question of whether the legislative provision ensures the implementation of mitigation measures on a practical basis.

Policy Options

No.	Option	Before an EIA is conducted	During the EIA	After an EIA is conducted
1	Enact EIA Legislation	○	○	○
2	Mandate clearly defined public participation opportunities	○	○	○
3	Create a body of non-government experts to vet each EIA		○	
4	More stringent post-approval procedures and checks			○
5	Strengthen EIA testing methodologies	○	○	
6	Instituting the Public Trust Doctrine	○	○	○

Table 1: Overview of Policy Options and their corresponding EIA phases

Option 1 - Enactment of EIA legislation

Enacting a dedicated, umbrella EIA legislation presents a comprehensive approach to addressing issues that arise within the EIA process that have not been adequately dealt with by current legislative gateways. It would aid in conceptual clarity by clearly defining the roles, responsibilities, and penalties for non-compliance for all parties involved, including the government, consultants, developers, and members of the public. The legislation should also establish a framework for the EIA process, including the scope, methodology, and timing of assessments, as well as the procedures for

⁷⁰ Parliament of Singapore, "Wild Animals and Birds (Amendment) Bill", Singapore Parliamentary Reports, Vol. 94, March 25, 2020.

⁷¹ Wildlife Act 1965 (2020 Rev Ed) section 10.

⁷² Wildlife Act 1965 (2020 Rev Ed) sections 10(1)(a)-(c).

public participation and decision-making. Academics such as Dr Joseph Chun and Professor Tommy Koh have highlighted that placing environmental assessments on a legal footing would ultimately foster public trust in the decision-making process by promoting accountability and need not result in inordinate delay.⁷³

However, there are several factors that may militate against enacting EIA legislation in Singapore. First, owing to Singapore's land scarcity, the government highly prioritises urban development needs in land planning and might not wish to impose on this priority rigid limits in the form of environmental conservation.⁷⁴ As Law Professor Kevin Tan points out, since the state owns approximately 90% of the land in Singapore, instituting EIA legislation would constrain the government's ability to carry out development projects.⁷⁵ Regulating EIAs through internal guidelines set by government agencies, as opposed to legislation, offers these agencies more flexibility and expediency in following and amending EIA guidelines. The government might not wish to be beholden to rigid EIA laws, and to be allowed the flexibility of making exceptions or bending the EIA guidelines where development needs to be prioritised over conservation. The government might wish not to close the door on itself in future instances of development. To this end, the government might wish to avoid opening itself up to judicial review and litigation initiated by members of the public for non-compliance with EIA laws. This is because EIA laws provide a powerful mechanism for the public to hold the government accountable in their environmental management, and scrutinise and interfere with the government's decisions. This may be viewed by the government as a potential hindrance to urban and economic development.

Second, internal administrative guidelines are easier and faster to amend than legislation, which has to undergo the scrutiny and bureaucracy of Parliament. Legislative amendments to EIA laws can be a slow and tedious process, which may not align with the government's desire for nimble urban and economic development, particularly given Singapore's land scarcity. However, this very land scarcity may in fact justify having stricter and more comprehensive EIA legislation to govern how Singapore uses its remaining natural land.

Third, unlike other jurisdictions, Singapore's constitution lacks explicit environmental rights and protections.⁷⁶ Despite Article 9(1) of the Singapore Constitution⁷⁷ providing for the right to life and personal liberty, it is unlikely that it would be interpreted to include protection from life-threatening environmental degradation.⁷⁸ The lack of constitutional protection of the environment may decrease the impetus for the government to legislate EIA laws.

Option 2 - Mandate clearly defined public participation opportunities

Meaningful public participation necessitates a multi-pronged approach. The UNEP recommends an integrated approach to public participation in environmental decision-making to ensure that public participation is not a tokenistic process.⁷⁹ This includes (1) easy access to EIA reports, (2) having multiple feedback channels available to the public, (3) carrying out focus groups, (4) providing a

⁷³ Chun, "Environmental Law in Singapore", 89.

⁷⁴ URA Officer (name redacted), email message to authors, January 18, 2023.

⁷⁵ Kevin Tan, email message to authors, December 22, 2022.

⁷⁶ Chun, Joseph and Lye Lin-Heng. "Constitutional Environmental Rights and Judicial Review of Environmental Decisions". In *Environmental Law in Singapore*, 160. Singapore: Academic Publishing, 2019.

⁷⁷ Constitution of the Republic of Singapore (2020 Rev Ed).

⁷⁸ Chun, "Environmental Law in Singapore", 165.

⁷⁹ United Nations Environmental Programme. "Putting Rio Principle 10 into Action: An Implementation Guide for The UNEP Bali Guidelines". Accessed January 19, 2023.

<https://wedocs.unep.org/bitstream/handle/20.500.11822/11201/UNEP%20MGSB-SGBS%20BALI%20GUIDELINES-Interactive.pdf?sequence=1&isAllowed=y>

detailed report that summarises the feedback received and the actions taken by relevant parties in response.⁸⁰ Crucially, if feedback is not taken up, the rationale behind the decision should be shared to maintain transparency and accountability. A positive example that such accountability is feasible is the Choa Chu Kang N1 project, a residential project where authorities provided responses to feedback online and clearly addressed why certain feedback was, or was not, adopted.⁸¹

In addition, nature groups could be included in clearly specified stages of the development process. This requirement is mandated in other jurisdictions such as Hong Kong. Hong Kong offers a useful case study for Singapore, as both countries face similar challenges of land scarcity and housing concerns. In Hong Kong, public participation plays a more significant and clearly defined role in EIA processes, and is governed by the EIA Ordinance.⁸² The public is involved in a two-stage consultation process where they can provide comments before an EIA is conducted and again after the EIA is completed. In the earlier stage, the public has 14 days to submit their comments on a project profile application by the developer. In the later stage, the public has 30 days to send in feedback.

Increased public engagement enables a more balanced assessment, especially when significant subjectivity is involved in the applicable EIA tests. The importance of public consultation has been acknowledged in the BIA Guidelines, which states that “consultation with agencies and the public” aids in making impact assessments more reliable.⁸³ Given the limitations of enacting a new piece of EIA legislation from scratch, the requirement of comprehensive public participation could be added to existing legislation such as the EPMA.

Option 3 - Create a body of non-government experts to vet each EIA

Another option for ensuring the integrity of the EIA process is to have an independent, non-government body assess and approve EIAs as part of the process. This approach has been implemented in jurisdictions such as Hong Kong, where an independent Advisory Council on the Environment (ACE) composed of non-officials from different sectors of the community is statutorily required to be consulted on and decide whether to approve EIAs.⁸⁴

The benefit of this approach is that it allows for checks and balances on the government, as ACE comprises scientific experts and members of the nature community. The downside of such an approach is that it may cause excessive delays in the decision-making process. For example, in Hong Kong, ACE was recently unable to reach a determination on whether to accept an EIA conducted on a golf course, as the committee did not have sufficient information on potential impacts to bird and moth species. This caused delays of “at least seven months” in developing the golf course into residential housing as planned.⁸⁵ In the context of Singapore, while the government has shown an appetite for potential delays, as seen from the Dover forest consultation where public consultations were extended by four weeks, an independent body conducting checks on the government may not

⁸⁰ Chan, Jasper Hayden. “Towards a Clean, Green and Sustainable Environment: Lessons in the Use of Environmental Impact Assessments in Singapore”. *Singapore Law Blog* (blog), May 20, 2019. <https://singaporelawblog.sg/blog/article/234>

⁸¹ Housing Development Board. “Summary of Response to Feedback on Environmental Baseline Study for Choa Chu Kang N1 site”. Accessed January 19, 2023. <https://www.hdb.gov.sg/cs/infoweb/-/media/doc/RPG/Choa-Chu-Kang-N1-Summary-of-Response-to-Feedback-on-Environmental-Baseline-Study.ashx>.

⁸² (Cap 499).

⁸³ NParks, “BIA Guidelines”.

⁸⁴ Mehra, Nidhi. “Environmental Impact Assessment Laws of Malaysia and Hong Kong: Lessons for Singapore”. Masters diss., National University of Singapore, 2013.

⁸⁵ Li, Almond. “Green body defends delayed decision on public housing project at Hong Kong golf course”. *Hong Kong Free Press*, August 23, 2022. <https://hongkongfp.com/2022/08/23/green-body-defends-delay-to-decision-on-public-housing-project-at-hong-kong-golf-course/>

be the most feasible as it would impose undue constraints on the government's ability to make swift decisions on the environment.

Despite this, such delays may be deemed necessary in order to conduct comprehensive baseline studies and have a thorough understanding of impacts before works can commence. In Parliament, Member of Parliament Chen Show Mao highlighted the need to prevent "potentially damaging or losing vital components of our natural and other heritage"⁸⁶ and that these needs must be balanced against the additional time and cost of conducting EIAs.

Option 4 - More stringent post-approval procedures and checks

A potential solution to address the issue of non-adherence to mitigation measures in Singapore's EIA framework is the implementation of mandatory post-approval procedures and follow-ups for all types of development projects. This could include the establishment of regular monitoring and reporting requirements to ensure that mitigation measures are effectively implemented during the construction phase, and increased transparency on the outcome of the EIA processes. By making follow-ups a standard practice, the need for an over-reliance on the Director-General to enforce compliance, pursuant to s 10 of the WA, would be diminished.

As a concrete example, this approach could include the conduct of flora and fauna surveys to monitor the impacts and quantify the effectiveness of mitigation measures.⁸⁷ Furthermore, involving representatives from the nature community in the auditing process of worksites could ensure full compliance with the EMMP outlined in the EIA.⁸⁸ Such an approach would enable a more comprehensive evaluation of the effectiveness of mitigation measures and provide a greater level of accountability for the impacts of development projects on the environment.

Option 5 - Strengthening EIA testing methodologies

Some ways to make EIA testing itself more rigorous include: (1) infusing adaptive management into the EIA planning process, (2) listing the EIA's limitations and assumptions in the EIA report. The former, while difficult to accurately define, aims to account for predictive trends such as climate change impacts on local terrain and incorporate them into the EIA process. The latter has been carried out in Hong Kong, where EIAs contain a table detailing their limitations and key assumptions.⁸⁹

Option 6 - Adopting the Public Trust Doctrine

One potential solution to ensure that the government is held accountable for their environmental governance is by incorporating the public trust doctrine into Singapore's legal framework. This common law principle holds that the government holds land in trust for the people, and is thus

⁸⁶ The Workers' Party. "COS 2015 Debate: MND – Environmental Impact Assessment (MP Chen Show Mao)". Accessed January 15, 2023. <https://www.wp.sg/cos-2015-debate-mnd-environmental-impact-assessment-mp-chen-show-mao/>

⁸⁷ Nature Society Singapore. "Nature Group Response to CRL EIA Phase II". Accessed January 15, 2023. <https://www.nss.org.sg/banner.aspx?id=qC1x3mtUEjQ=&type=1>

⁸⁸ Ibid.

⁸⁹ AECOM Singapore Pte Ltd. "Hung Shui Kiu New Development Area Environmental Impact Assessment Report: Appendix 15.1". AECOM Singapore Pte Ltd, June, 2016. https://www.epd.gov.hk/eia/register/report/eiareport/eia_2482016/EIA/Appendices/15%20-%20Conclusion/Appendix%2015.1.pdf

obliged to use it in the best interests of present and future generations of citizens.⁹⁰ This would require the government to involve the public in the decision-making process for land use, and take into account ecological concerns. Such a principle would provide citizens with a legal avenue to hold the government accountable for their environmental governance.

However, it is worth noting that the public trust doctrine may be difficult to implement in Singapore, as it is not currently entrenched or implied in the country's constitution. Additionally, the doctrine is not a commonly adopted principle in many jurisdictions.⁹¹ Thus, while the public trust doctrine may present a viable solution to enhance public participation in environmental governance, its practical application in Singapore may face significant legal and constitutional challenges.

Epilogue

This case study has reviewed the current state of EIA processes in Singapore and discussed options to bolster Singapore's EIA practice. While the government has made steps in the right direction in terms of public engagement, mitigation measures and standardisation across EIA consultancies, there remains much more to be improved, especially in comparison to other jurisdictions such as Hong Kong.

Ultimately, this discussion on EIAs is part of a larger conversation about the growing tension between conservation and development. As public awareness and concern for the limited natural spaces in Singapore increases, calls for the government to take on more affirmative rights and obligations for environmental conservation are likely to rise in tandem. In discussing where to strike the balance between conservation and development, societal values, economic considerations and the need for climate change adaptation could be considered. This could involve stakeholders in the consultation process, developing a national conservation strategy, and creating institutions that ensure effective implementation of conservation policies.⁹²

Discussion Questions

1. Singapore is one of only 14 member states of the United Nations to lack an EIA law. Why does Singapore choose to subject its EIA regime to regulation by legislative gateways and internal administrative guidelines, instead of dedicated EIA legislation? Is this satisfactory?
2. At which stages should the public be involved in EIA processes to ensure meaningful public participation in government decision-making? What are some challenges which may be anticipated?

⁹⁰ Chun, Joseph. "Reclaiming the Public Trust in Singapore". *Singapore Academy of Law Journal* 17(2), (2005): 717-746.

⁹¹ Blumm, Michael C. "Internationalizing the public trust doctrine: natural law and constitutional and statutory approaches to fulfilling the Saxion vision". *U.C. Davis law review* 45(3), (2012): 741.
https://lawreview.law.ucdavis.edu/issues/45/3/topic/45-3_blumm.pdf

⁹² Chun, "Reclaiming the Public Trust in Singapore".