



BANGKOK EXPRESSWAY AND METRO PLC. SUSTAINABLE FINANCING FRAMEWORK

SECOND PARTY OPINION



Document title: Second Party Opinion on Bangkok Expressway and Metro PLC Sustainable Financing Framework

Prepared by: DNV (Thailand) Co., Ltd.

Location: Bangkok, Thailand

Date: 18 June 2024

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Disclaimer

Our assessment relies on the premise that the data and information provided by the client to us as part of our review procedures have been provided in good faith. Because of the selected nature (sampling) and other inherent limitation of both procedures and systems of internal control, there remains the unavoidable risk that errors or irregularities, possibly significant, may not have been detected. Limited depth of evidence gathering including inquiry and analytical procedures and limited sampling at lower levels in the organization were applied as per scope of work. DNV expressly disclaims any liability or co-responsibility for any decision a person or an entity may make based on this Statement.

Statement of Competence and Independence

DNV applies its own management standards and compliance policies for quality control, in accordance with ISO/IEC 17029:2019 - Conformity Assessment -General principles and requirements for validationandverification bodies, and accordingly maintains a comprehensive system of quality control, including documentedpoliciesandprocedures regardingcompliance with ethical requirements, professional standards and applicable legal and regulatory requirements. We have complied with the DNV Code of Conduct¹ during the assessment and maintain independence where required by relevant ethical requirements. This engagement work was carried out by an independent team of sustainability assurance professionals. DNV was not involved in the preparation of statements or data included in the Framework except for this Statement. DNV maintains complete impartiality toward stakeholders interviewed during the assessment process.

¹ DNV Code of Conduct is available from DNV website (www.dnv.com)

DNV'S INDEPENDENT ASSESSMENT

Scope and Objectives

Bangkok Expressway and Metro Public Company Limited ("BEM" or "Issuer"), is a public transportation company in Thailand. It operates two metro lines and expressways in Bangkok and its vicinity. BEM is committed to establishing and maintaining transport infrastructure and operations in its service area of Bangkok, Thailand and its vicinity.

BEM has developed a Sustainable Financing Framework and is considering the issuance of Sustainability Finance Instruments ("SFIs") as defined within the following (collectively the "Principles"):

- Green Bond Principles ("GBP"), International Capital Market Association ("ICMA"), June 2021
- Green Loan Principles 2023 ("GLP"), Loan Market Association ("LMA"), February 2023
- Social Bond Principles ("SBP"), ICMA, June 2023
- Social Loan Principles ("SLP"), LMA, February 2023
- Sustainability Bond Guidelines ("SBG"), ICMA, June 2021
- ASEAN Green Bond Standards ("GBS"), ASEAN Capital Markets Forum ("ACMF"), October 2018
- ASEAN Social Bond Standards ("SBS"), ACMF, October 2018
- ASEAN Sustainability Bond Standards ("SUS"), ACMF, October 2018
- ASEAN Taxonomy for Sustainable Finance Version 3 ("ATV3"), ASEAN Taxonomy Board, 25 April 2024
- Thailand Taxonomy Phase 1, Thailand Taxonomy Board, June 2023

This SPO incorporates all funding including bonds and loans under this Sustainable Financing Framework, and supersedes the DNV SPO of January 2024.

BEM intends to use the proceeds of the SFIs to finance and/or refinance projects within the categories of :

- Clean Transportation;
- Energy Efficiency;
- Renewable Energy;
- Water Management;
- Affordable Basic Infrastructure;
- Employment Generation and Training; and
- Quality Education.

DNV (Thailand) Co., Ltd. ("DNV") has been commissioned by BEM to provide a Sustainability Bond or Loan eligibility assessment of the SFIs. Our methodology to achieve this is described under 'Work Undertaken' below. We were not commissioned to provide independent assurance or other audit activities.

No assurance is provided regarding the financial performance of the SFIs, the value of any investments in the SFIs, or the long-term environmental benefits of the transaction. Our objective has been to provide an assessment that the SFIs have met the criteria established on the basis set out below.

The scope of this DNV opinion is limited to the Principles listed above.

Responsibilities of the Management of BEM and DNV

The management of BEM has provided the information and data used by DNV during the delivery of this review. Our statement represents an independent opinion and is intended to inform BEM management and other interested stakeholders in the SFIs as to whether the established criteria have been met, based on the information provided to us. In our work we have relied on the information and the facts presented to us by BEM. DNV is not responsible for any aspect of the nominated assets referred to in this opinion and cannot be held liable if estimates, findings, opinions, or conclusions are incorrect. Thus, DNV shall not be held liable if any of the information or data provided by BEM's management and used as a basis for this assessment were not correct or complete.

Basis of DNV's opinion

We have adapted assessment methodology described by the Principles, to create a BEM-specific SFIs Eligibility Assessment Protocol (henceforth referred to as "Protocol"). Our Protocol includes a set of suitable criteria that can be used to underpin DNV's opinion. The overarching principle behind the criteria is that a SFIs should "enable capital-raising and investment for new and existing projects with environmental and/or social benefits". As per our Protocol, the criteria against which the SFIs has been reviewed are grouped under the Principles:

- **Principle One: Use of Proceeds.** The Use of Proceeds criteria are guided by the requirement that an issuer of SFIs must use the funds raised to finance and/or refinance eligible activities. The eligible activities should produce clear environmental and social benefits.
- **Principle Two: Process for Project Evaluation and Selection.** The Project Evaluation and Selection criteria are guided by the requirements that an issuer of SFIs should outline the process it follows when determining eligibility of an investment using SFIs proceeds, and outline any impact objectives it will consider.
- **Principle Three: Management of Proceeds.** The Management of Proceeds criteria are guided by the requirements that SFIs should be tracked within the issuing/borrowing organization, that separate portfolios should be created when necessary and that a declaration of how unallocated funds will be handled should be made.
- **Principle Four: Reporting.** The Reporting criteria are guided by the recommendation that at least Sustainability Reporting to the SFIs investors/lenders should be made of the use of SFIs proceeds and that quantitative and/or qualitative performance indicators should be used, where feasible.

Work Undertaken

Our work constituted a high-level review of the available information, based on the understanding that this information was provided to us by BEM in good faith. We have not performed an audit or other tests to check the veracity of the information provided to us. The work undertaken to form our opinion included:

- Creation of an BEM-specific Protocol, adapted to the purpose of the SFIs, as described above and in Schedule 2 and 3 to this Assessment;
- Assessment of documentary evidence provided by BEM on the SFIs and supplemented by a highlevel desktop research. These checks refer to current assessment best practices and standards methodology;
- Assessment of compliance with the Principles;
- Discussions with BEM management, and review of relevant documentation;

- Documentation of findings against each element of the criteria. Our opinion as detailed below is a summary of these findings.

Findings and DNV's Opinion

DNV's findings are listed below:

1. Use of Proceeds

BEM intends to use the proceeds of the SFIs to finance and/or refinance projects and assets within the categories of: Clean Transportation; Energy Efficiency; Renewable Energy; Water Management; Affordable Basic Infrastructure; Employment Generation and Training; and Quality Education.

DNV undertook an analysis of the associated project types including type and location and scale of the assets to determine eligibility of these projects as "Green" and "Socially Beneficial" in line with the Principles. DNV evaluates and concludes that BEM's nominated projects and assets are aligned with one of eligible Green and Social project categories specified in the Principles. Refer to Schedule 1 for further information.

With respect to the alignment with relevant taxonomies, the Framework:

- Meets the requirements for alignment with the 'Green' classification under Thailand Taxonomy Phase 1.
- Meets the eligibility criteria for 'Green' use of proceeds under the ATV3.

2. Process for Project Evaluation and Selection

The SFI's proceeds will be allocated to finance and/or refinance the assets as defined in Schedule 1. DNV has reviewed evidence that demonstrates that BEM regularly assesses opportunities for improvement and devises action plans and initiatives to mitigate negative environmental and social impacts from its operations.

3. Management of Proceeds

DNV has reviewed evidence showing how BEM plans to trace the proceeds from the SFIs, from the time of issuance to the time of disbursement. BEM will monitor the allocation of an amount equal to the proceeds via internal information systems. A record will be created to facilitate the monitoring and reporting of the issued SFIs and the deployment of an amount equal to the net proceeds. As stated above, DNV provides no assurance regarding the financial performance of the SFIs, the value of any investments in the SFIs, or the effects of the transaction.

4. Reporting

BEM has confirmed that it will, where feasible, report on its website the following:

- i. The amount of net proceeds allocated per Eligible Projects/Assets;
- ii. The percentage of financing/refinancing of projects/assets ;
- iii. The amount of unallocated proceeds, if any, at the date of reporting;
- iv. Location and status of the projects/assets;
- v. Impacts Reporting associated with the SFIs;

On the basis of the information provided by BEM and the work undertaken, it is DNV's opinion that the BEM Sustainable Financing Framework and proposed SFIs meet the criteria established in the Protocol and are aligned with the stated definition of green and social bonds/loans. Based on the External Review procedures conducted, nothing has come to our attention that causes us to believe that the BEM Sustainable Financing Framework and SFIs are not, in all material respects, in accordance with the Principles.

for DNV (Thailand) Co., Ltd.

Bangkok, Thailand, 18 June 2024

Kobrat C.

Thomas Leonard

Kobrat Chotruangprasert
Lead Verifier
Supply Chain and Product
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Technical Reviewer
Supply Chain and Product Assurance (SCPA)

Schedule 1. Description of Categories to be financed or refinanced through BEM's SFIs

Project	Type	Category	Use of Proceeds	Location
MRT rail networks	Green	Clean Transportation	<ul style="list-style-type: none"> • Electric vehicle / train, metro networks, related systems, stations, facilities, utilities and other infrastructure 	Bangkok, Thailand
		Energy Efficiency	<ul style="list-style-type: none"> • Systems, products, technologies to reduce energy consumption or improve efficiency or mitigate GHG emissions • New and energy-efficient trains or light rail vehicles • Energy efficient heating, air-conditioning, cooling, lighting and electrical equipment such as light emitting diodes (LEDs), solar cell, sensor systems, platform screen doors, air or water cooled chillers 	
		Renewable Energy	<ul style="list-style-type: none"> • Renewable energy i.e., solar roof 	
		Water Management	<ul style="list-style-type: none"> • Improvement in water management including water treatment and recycling of water 	
	Social	Affordable Basic Infrastructure	<ul style="list-style-type: none"> • Upgrade station facilities, services and trains for all or elderly and special need groups • Health / hygiene services and equipment • Recreation areas for passengers / community • Support for school/college students, and children / elderly i.e., fare discount 	
		Employment Generation and Training	<ul style="list-style-type: none"> • Employment generation • Sharing knowledge to educational institutions • Sharing knowledge across the company • Relief measures for those affected by unexpected economic and financial disruptions. 	
		Quality Education	<ul style="list-style-type: none"> • Scholarships to underprivileged youth • Educational counseling to students 	

Schedule 2. Green/Social Bond and Green/Social Loan Principles Verifications

1. Use of Proceeds

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
1a	Type of SFIs	<p>The SFIs must fall in one of the following categories, as defined by the Principles:</p> <ul style="list-style-type: none"> • Green/Social Use of Proceeds Bonds/Loans • Green/Social Use of Proceeds Revenue Bonds/Loans • Green/Social Project Bonds/ Loans • Green/Social Securitized Bonds/ Loans 	<p>Review of:</p> <ul style="list-style-type: none"> • SFIs Issuance Information • BEM Sustainable Financing Framework <p>Correspondence with BEM management</p>	<p>The reviewed evidence confirms that the SFIs fall in the category: Sustainable Use of Proceeds Bonds/Loans.</p>
1b	Sustainability Project Categories	<p>The cornerstone of a Sustainability Bonds/Loans is the utilization of the proceeds of the SFIs which should be appropriately described in the legal documentation for the security.</p>	<p>Review of:</p> <ul style="list-style-type: none"> • SFIs Issuance Information • BEM Sustainable Financing Framework <p>Correspondence with BEM management</p>	<p>As identified by the SFIs Issuance Information the purpose of the SFIs is to use the proceeds for the financing or refinancing of:</p> <ul style="list-style-type: none"> • Clean Transportation • Energy Efficiency • Renewable Energy • Water Management • Affordable Basic Infrastructure • Employment Generation and Training • Quality Education <p>The BEM Sustainable Finance Framework considers Use of Proceeds from Green and Social perspectives. Specifically, the use of proceeds for the proposed BEM SFIs are summarised in Schedule 1 above.</p> <p>DNV's assessment concluded that these assets would present tangible and genuine environmental and social benefits in the target areas and for the target populations.</p> <p>Environmental Use of Proceeds impacts have been linked to SDGs 6; Clean Water and Sanitation, 7; Affordable and Clean Energy, 11; Sustainable Cities and Communities, 12; Responsible Consumption and Production, 13; Climate Action.</p> <p>Social Use of Proceeds impacts have been linked to SDGs 3; Good Health and Wellbeing, 4; Quality Education, 8; Decent Work and Economic Growth, 9; Industry, Innovation and Infrastructure, 11; Sustainable Cities and Communities.</p> <p>DNV considers the SDG linkages made to reasonably reflect the impacts resulting from the nominated projects and the Use of Proceeds set out in the Framework. DNV confirms that</p>

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
				<p>the Use of Proceeds set out in the framework have clear Green and Social benefits.</p> <p>In June 2024 DNV conducted the assessment of Electric Train (ISIC Code 491) against Thailand Taxonomy V1.0. Due to the nature of electric trains which have zero direct tailpipe CO2 emissions, they are automatically qualified as Green under Thailand Taxonomy. As of June 2024, DNSH Assessment for Thailand Taxonomy cannot yet be conducted as Thailand Taxonomy still has only one Environmental Objective.</p> <p>DNV also conducted an assessment of the Blue Line and Purple Line under ASEAN Taxonomy V3. DNV concludes that transport using electric trains would in principle meet the requirements for Green use of proceeds under the ATV3 Plus Standard. The activity complies with green Technical Screening Criteria of Freight rail transport activity stated in ATV3 which are:</p> <ol style="list-style-type: none"> 1. the trains and wagons have zero direct tailpipe CO2 emissions; and 2. The trains and wagons are not dedicated to the transport of fossil fuels. <p>DNV conducted a DNSH assessment and concluded that sufficient measures are in place to prevent significant harm to other environmental objectives.</p> <p>Please refer to Schedule 4 for more detail on DNSH Assessment.</p> <p>DNV concludes that BEM's Clean Transportation projects, including electric vehicles/trains, metro networks, related systems, stations, facilities, utilities and other infrastructure, are fully assessed as eligible green project under the ASEAN Taxonomy V3 Plus Standard.</p>
1c	Environmental and Social benefits	All designated Green Project categories should provide clear environmentally sustainable benefits, which, where feasible, will be quantified or assessed by the Issuer.	<p>Review of:</p> <ul style="list-style-type: none"> • SFIs Issuance Information • BEM Sustainable Financing Framework <p>Correspondence with BEM management</p>	<p>Clean Transportation</p> <p>DNV confirms that Clean transportation investments in Electrified Rail and supporting infrastructure as listed in Schedule 1 are considered to be green for the purposes of the Green Bond Principles and the Green Loan Principles. Electrified rail presents a low emissions alternative to road based transport. DNV considers these projects to be well aligned with the Principles.</p> <p>Energy Efficiency</p> <p>The LED Lighting upgrade investments have a direct impact on the energy consumption throughout the MRT infrastructure and have been quantified to reduce electricity</p>

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
				<p>consumption. DNV can confirm that this investment is well aligned with the Principles.</p> <p>Renewable energy</p> <p>Solar power is an eligible green investment category, assuming any solar facility does not have >15% fossil fuel back up.</p> <p>Water Management</p> <p>The water treatment and water recycling system installed on the MRT facilities for the purposes of recovering train washing water are a quantified water efficiency asset and are likely contribute a water saving for BEM. DNV can confirm that this investment is well aligned with the Principles.</p> <p>Affordable Basic Infrastructure</p> <p>The delivery of basic infrastructure associated with public transportation services in dense urban environments have been provided by the issuer. DNV can confirm that the benefits and target populations associated with the delivery of Affordable Basic Infrastructure have been well defined and are well aligned with the Use of Proceeds requirements of the Social Bond Principles and the Social Loan Principles.</p> <p>Employment Generation and Training</p> <p>The delivery of staff and contractor training for the personal and professional development of human resources, especially related to safety, sanitation and efficient operation of the railway is considered to be well aligned with the Social Bond Principles and the Social Loan Principles.</p> <p>Quality education</p> <p>The provision of scholarships to underprivileged youth and educational counseling to students are considered to be well aligned with the Social Bond Principles and the Social Loan Principles.</p> <p>DNV can confirm that the Use of Proceeds associated with the BEM Sustainability Bond and/or Loan are considered to qualify under and be well aligned with the Use of Proceeds and associated Categories Green Bond Principles, Social Bond Principles, Sustainability Bond Guidelines and Green Loan Principles.and Social Loan Principles.</p>
1d	Financing/ Refinancing share	In the event that a proportion of the proceeds may be used for refinancing, it is recommended that issuers provide an estimate of the share of financing vs. refinancing, and where appropriate, also clarify which investments or	Review of: <ul style="list-style-type: none"> • SFIs Issuance Information • BEM Sustainable Financing Framework 	Proceeds of the SFIs will be used to finance and/or refinance the assets listed in Schedule 1 above.

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
		project portfolios may be financed and/or refinanced.	Correspondence with BEM management	

2. Process for Project Selection and Evaluation

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
2a	Investment decision process	<p>The Issuer/Borrower of SFIs should outline the decision-making process it follows to determine the eligibility of projects using Sustainability Bond and/or Loan proceeds. This includes, without limitation:</p> <ul style="list-style-type: none"> A process to determine how the projects fit within the eligible Green and Social Projects categories identified in the Principles; The criteria making the projects eligible for using the Sustainability Bond and/or Loan proceeds; and The environmental/social sustainability objectives 	<p>Review of:</p> <ul style="list-style-type: none"> SFIs Issuance Information BEM Sustainable Financing Framework <p>Correspondence with BEM management</p>	<p>As per the BEM Sustainable Financing Framework, the Issuer/Borrower has set out the following for project selection:</p> <p>The selection and evaluation of eligible projects/assets for Sustainable Financing instruments will be performed in concert among BEM's Financial Planning Division, Quality Management Division, Corporate Communications Division, Investor Relations Division, and Sustainability Development Division ("Sustainable Finance Working Group"). In addition, Sustainable Finance Working Group will monitor the allocation process as per the Eligible Projects/Assets Description defined in the Use of Proceeds.</p> <p>BEM has in place policies, systems, and procedures including for Environmental and Social aspects that equip it to "do no significant harm" to the environment or social aspects. DNV can confirm that the Use of Proceeds set out in the BEM policies, systems and procedures and the BEM Framework provide mitigating measures for reducing the risk of significant harm.</p> <p>DNV has reviewed the structure and function of the Project Selection criteria and confirmed it is in line with the criteria set out in the Principles.</p>
2b	Issuer's /Borrower's environmental and social and governance framework	<p>In addition to information disclosed by an issuer/a borrower on its SFIs process, criteria and assurances, SFIs' investors/lenders may also take into consideration the quality of the SFIs' overall framework and performance regarding environmental sustainability.</p>	<p>Review of:</p> <ul style="list-style-type: none"> SFIs Issuance Information BEM Sustainable Financing Framework <p>Correspondence with BEM management</p>	<p>BEM has published a Corporate Sustainability Framework including focus on:</p> <ul style="list-style-type: none"> Communication - Sustainability Culture; Promoting training, learning, and counseling; Organisational Support for Sustainability. <p>BEM also has a stated set of ESG commitments related to its operations, goals and targets. DNV has confirmed this is well aligned to the purpose and function of the proposed SFIs.</p> <p>We have also carried out a high-level media review of BEM. No outstanding ESG incidents or controversies were identified. Based on the evidence reviewed and the discussion we had with senior managers, we found that BEM's current environmental, social and governance framework is in line with good practice of the industry for the nominated projects and assets within the proposed SFIs.</p>

3. Management of proceeds

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
3a	Tracking procedure	The net proceeds of SFIs should be credited to a subaccount, moved to a sub-portfolio or otherwise tracked by the Issuer/Borrower in an appropriate manner and attested to by a formal internal process that will be linked to the Issuer's/Borrower's lending and investment operations for Green/Social Projects.	Review of: <ul style="list-style-type: none"> SFIs Issuance Information BEM Sustainable Financing Framework Correspondence with BEM management	SFIs and the deployment of an amount equal to the net proceeds. DNV concludes that the process set out in BEM's Framework is aligned with the Management of Proceeds as set out in the Green Bond Principles, Social Bond Principles, Sustainability Bond Guidelines and Green Loan Principles. and Social Loan Principles.
3b	Tracking procedure	So long as the SFIs are outstanding, the balance of the tracked proceeds should be periodically reduced by amounts matching eligible green/social investments or loan disbursements made during that period.	Review of: <ul style="list-style-type: none"> SFIs Issuance Information BEM Sustainable Financing Framework Correspondence with BEM management	The evidence reviewed shows that BEM plans to trace the proceeds from the SFIs, from the time of issuance to the time of disbursement. On an annual basis, the outstanding balance of the SFIs will be reviewed.
3c	Temporary holdings	Pending such investments or disbursements to eligible Green and Social Projects, the Issuer/Borrower should make known to investors/Lenders the intended types of temporary investment instruments for the balance of unallocated proceeds.	Review of: <ul style="list-style-type: none"> SFIs Issuance Information BEM Sustainable Financing Framework Correspondence with BEM management	The net proceeds of the SFIs will be held in cash or cash equivalent on account until disbursement to the nominated assets as per the BEM Sustainable Financing Framework. BEM will aim to be fully allocated to Green and Social Projects within 30 months of Issue date. BEM have nominated the use of proceeds as per Schedule 1 within their Sustainable Financing Framework.

4. Reporting

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
4a	Periodical reporting	In addition to reporting on the use of proceeds and the temporary investment of unallocated proceeds, Issuers should provide at least annually a list of projects to which Sustainability Bond/Loan proceeds have been allocated including - when possible with regards to confidentiality and/or	Review of: <ul style="list-style-type: none"> SFIs Proceeds and Reporting Framework Correspondence with BEM management	BEM has confirmed that it will report on its corporate website and integrated annual reporting the following: Allocation Reporting (until full allocation): <ul style="list-style-type: none"> The amount of net proceeds allocated per Eligible Projects/Assets The percentage of financing/refinancing of projects/assets The amount of unallocated proceeds, if any, at the date of reporting Location and status of the projects/assets Impact Reporting:

Ref	Criteria	Requirements	Work Undertaken	DNV Findings										
		competitive considerations - a brief description of the projects and the amounts disbursed, as well as the expected environmentally sustainable impact.		<p>Where feasible, BEM intends to report on the impact of the portfolio by category from environmental perspective on an annual basis, subject to the availability of information and baseline data and based on methodologies that will be publicly available. BEM has set out a broad range of potential metrics in their Sustainable Financing Framework including:</p> <table border="1"> <tr> <td>Clean Transportation</td> <td> <ul style="list-style-type: none"> • Reduced and/or avoided GHG emissions (in t. CO2e/year) • # of passengers carried/passenger trips • Estimated reduction in car use in number or kilometres driven • Estimated reduction in fuel consumption • Total in kilometres of new or improved train lines • # of rolling stock, carriages, locomotives bought, repaired and modernized </td> </tr> <tr> <td>Energy Efficiency</td> <td> <ul style="list-style-type: none"> • Annual reduction of energy consumption • Annual GHG emissions avoided (in t.CO2e/year) </td> </tr> <tr> <td>Renewable Energy</td> <td> <ul style="list-style-type: none"> • Install capacity in megawatt • Annual GHG emissions avoided (in t .CO2e/year) </td> </tr> <tr> <td>Water Management</td> <td> <ul style="list-style-type: none"> • Annual reduction in water consumption • Annual volume of water reused (in cubic metres) • Annual volume of wastewater treated (in cubic metres) </td> </tr> <tr> <td>Affordable Basic Infrastructure</td> <td> <ul style="list-style-type: none"> • # of passengers carried/passenger trips • # of passengers/target population benefited • # of sanitation and healthcare equipment provided • # of Additional Cleaning Personnel Hired • # of recreation area / accessible infrastructure / facilities built • # of Road accident reduction • Estimated travel time reduction </td> </tr> </table>	Clean Transportation	<ul style="list-style-type: none"> • Reduced and/or avoided GHG emissions (in t. CO2e/year) • # of passengers carried/passenger trips • Estimated reduction in car use in number or kilometres driven • Estimated reduction in fuel consumption • Total in kilometres of new or improved train lines • # of rolling stock, carriages, locomotives bought, repaired and modernized 	Energy Efficiency	<ul style="list-style-type: none"> • Annual reduction of energy consumption • Annual GHG emissions avoided (in t.CO2e/year) 	Renewable Energy	<ul style="list-style-type: none"> • Install capacity in megawatt • Annual GHG emissions avoided (in t .CO2e/year) 	Water Management	<ul style="list-style-type: none"> • Annual reduction in water consumption • Annual volume of water reused (in cubic metres) • Annual volume of wastewater treated (in cubic metres) 	Affordable Basic Infrastructure	<ul style="list-style-type: none"> • # of passengers carried/passenger trips • # of passengers/target population benefited • # of sanitation and healthcare equipment provided • # of Additional Cleaning Personnel Hired • # of recreation area / accessible infrastructure / facilities built • # of Road accident reduction • Estimated travel time reduction
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Ref	Criteria	Requirements	Work Undertaken	DNV Findings				
				<table border="1"> <tr> <td data-bbox="916 302 1098 499">Employment Generation and Training</td> <td data-bbox="1098 302 1426 499"> <ul style="list-style-type: none"> • Estimated jobs created or retained • Customer satisfaction scoring • # of people within target group benefited </td> </tr> <tr> <td data-bbox="916 499 1098 640">Quality Education</td> <td data-bbox="1098 499 1426 640"> <ul style="list-style-type: none"> • # of scholarships awarded • # of students within target group benefited </td> </tr> </table> <p data-bbox="916 663 1394 770">DNV considers the proposed financial and impact reporting proposed and the means of communication to be aligned with the criteria set out in the Principles.</p>	Employment Generation and Training	<ul style="list-style-type: none"> • Estimated jobs created or retained • Customer satisfaction scoring • # of people within target group benefited 	Quality Education	<ul style="list-style-type: none"> • # of scholarships awarded • # of students within target group benefited
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Schedule 3. ASEAN Green and Social Bond Standards Verification

Summary criteria for assertions of compliance with the ASEAN Sustainability Bond Standards 2018 and compliance conclusion.

The criteria against which BEM and its nominated projects and assets have been reviewed prior to inclusion in the bond are grouped under the requirements as detailed within the ASEAN Sustainability Bond Standards 2018.

3.0: Criteria for ASEAN Sustainability Bonds

Ref.	Criteria	Requirements
3.1	(i) Must be an ASEAN Issuer, or; (ii) In the case of a Non-ASEAN Issuer, the eligible Sustainability Projects must be located in any of the ASEAN countries.	The Issuer and nominated project is located in Thailand, an ASEAN member country.
3.2	ASEAN Sustainability Bonds issuances must be originated from any of the ASEAN member countries.	The bond is to be originated from Thailand and issued in THB.

4.0: Guidance for the Four Components of the GBP

4.1 Use of Proceeds

Ref.	Criteria	Requirements
4.1.1	The utilisation of proceeds from the ASEAN Sustainability Bonds must be described in the documentation for issuance of the ASEAN Sustainability Bonds.	The Issuer has set out the Use of Proceeds in both the Sustainable Financing Framework and the listing of Nominated Projects and Assets as summarised in Schedule 1.
4.1.2	In relation to 4.1.1, the Issuer must disclose the following information: (i) The categories of eligible Green/Social Projects to which the ASEAN Sustainability Bonds proceeds will be allocated; and/or (ii) The information on specific Green/Social Projects in the case where the Issuer has identified the specific Green/Social Projects to which the ASEAN Sustainability Bonds proceeds will be allocated.	(i) The Issuer has set out the categories for Nominated Projects and Assets in the Use of Proceeds section of the Sustainable Financing Framework. (ii) The Issuer has detailed the specific Green and Social Projects as per Schedule 1 of this report.
4.1.3	All designated Green and Social Projects must provide clear environmental / social benefits, which will be assessed and, where feasible, quantified by the Issuer.	As per 1c in Schedule 2 above, the Nominated Projects have clear and demonstrated environmental and social benefits with defined target populations.
4.1.4	In the event that all or a proportion of the proceeds are or may be used for refinancing, it is recommended that Issuers provide an estimate of the share of financing and refinancing, and where appropriate, also clarify which investments or project portfolios may be refinanced and, to the extent relevant, the expected look-back period for refinanced Sustainability Projects.	The Issuer has detailed the financing and/or refinancing share as shown in Schedule 2.
4.1.5	Sustainability Bond Categories	Sustainability Bond categories have been disclosed by the Issuer in both the Sustainable Financing Framework and as per Schedule 1.

Ref.	Criteria	Requirements
4.1.6	For clarification purposes, fossil fuel power generation projects are excluded from the ASEAN SBS.	DNV has confirmed that the Use of Proceeds is not proposed to include fossil fuel power generation project related activities.

4.2: Process for Project Evaluation and Selection

Ref.	Criteria	Requirements
4.2.1	The Issuer of ASEAN Sustainability Bonds must clearly communicate to investors: (i) the environmental/social sustainability objectives; (ii) the process by which the Issuer determines how the projects fit within the eligible Green/Social Projects categories identified above; and (iii) the related eligibility criteria, including, if applicable, exclusion criteria or any other process applied to identify and manage potentially material environmental and social risks associated with the Green / Social Projects.	The Issuer has communicated: (i) The sustainability objectives of their Sustainability Finance Program and of the Nominated Projects and Assets has been communicated in the Sustainable Financing Framework. (ii) The Issuer has described the process for Project Evaluation and Selection in the Sustainable Financing Framework. (iii) Selection criteria has been set out in section 2.1 Use of Proceeds and section 2.2 Process for Project Selection and Evaluation.
4.2.2	The Issuer must establish the process for project evaluation and selection prior to the issuance of the ASEAN Green/Social Bonds and disclose the same to investors in the documentation for the issuance of the ASEAN Sustainability Bonds.	The Process for Project Selection and Evaluation has been defined and presented in the Sustainable Financing Framework prior to issuance.
4.2.3	Issuers are encouraged to position this information within the context of the Issuers' overarching objectives, strategy, policy and/or processes relating to environmental sustainability. Issuers are also encouraged to disclose any green standards or certifications referenced in project selection.	The Issuer has presented the Sustainable Financing Framework in the context of BEM's Sustainability Program, policies and procedures.
4.2.4	It is recommended that the Issuer's process for project evaluation and selection be supported by an external review.	This external verification has been conducted to provide external review of the Issuers claims.
4.2.5	The Issuer must make the following publicly available on a website designated by the Issuer at the time of the issuance and throughout the tenure of ASEAN Sustainability Bonds: (i) The process for project evaluation; (ii) The use of proceeds; and (iii) External review report on the process (if any).	The Issuer proposes to make publicly available on its corporate website the: (i) Sustainable Financing Framework including Process for Project Evaluation; (ii) Use of Proceeds, and; (iii) This external review report.

4.3: Management of Proceeds

Ref.	Criteria	Requirements
4.3.1	Prior to the issuance of the ASEAN Sustainability Bonds, the Issuer must disclose to investors in the documentation for the issuance of the ASEAN Sustainability Bonds the process for managing the net proceeds from the ASEAN Sustainability Bonds.	The issuer has disclosed to bond placement investors that it will hold Sustainability Bond proceeds raised in internal treasury cash accounts for allocation to existing and new investments associated with nominated projects and assets.
4.3.2	The net proceeds from the ASEAN Sustainability Bonds, or an amount equal to these net proceeds, must be credited into a sub-account, moved to a sub-portfolio or otherwise tracked by the Issuer in an appropriate manner and attested to by a formal internal process linked to the Issuer's lending and investment operations for Green and Social Projects. The total amount deployed from the net proceeds for the eligible Green and Social Projects need not occur simultaneously.	The Issuer has prepared and presented the process for the tracking and monitoring of proceeds and allocation reporting in the Sustainable Financing Framework.
4.3.3	As long as the ASEAN Sustainability Bonds are outstanding, the balance of tracked proceeds must be periodically adjusted to match allocations to eligible Green and Social Projects made during that period.	The Issuer has defined how proceeds are to be tracked and reported to match the allocation to eligible Green and Social Projects.
4.3.4	The Issuer must also disclose to investors in the documentation for the issuance of the ASEAN Sustainability Bonds the intended types of temporary placement for the balance of unallocated proceeds.	The Issuer has disclosed that all temporary investments will be held in cash or cash equivalent.
4.3.5	It is recommended that the Issuer's management of proceeds be supplemented by the use of an auditor, or other third party to verify the internal tracking method and the allocation of funds from the ASEAN Sustainability Bonds proceeds.	The Issuer has confirmed in order to provide transparent information about the reporting of the funds from bonds issued under this framework, BEM intends to engage a Second Party Opinion Provider / Verifier / External Auditor to provide the assessment on the alignment of the allocation of funds with Framework's criteria until the full allocation of the proceeds.
4.3.6	Where the Issuer appoints an auditor or other third party to verify the Issuer's management of proceeds, the Issuer must make the report produced by the auditor or other third party publicly available on a website designated by the Issuer at the time of the issuance of the ASEAN Sustainability Bonds.	The verification report will be made available for investors on its corporate website.

4.4: Reporting

Ref.	Criteria	Requirements
4.4.1	Issuers must report to investors at least on an annual basis and encouraged to make more frequent reporting on the use of proceeds until full allocation, and as necessary thereafter in the event of material developments. This should include a list of the projects to which the ASEAN Sustainability Bonds proceeds have been allocated, as well as a brief description of the projects and the amounts allocated and their expected impact.	The Issuer has confirmed annual reporting on the sustainability bond allocations until full allocation. DNV notes that BEM expects to fully and immediately allocate the proceeds raised after issuance. After confirmation of the full and complete allocation of proceeds, further allocation would not be expected and any ongoing allocation reporting would be expected to reflect that complete allocation had occurred.

Ref.	Criteria	Requirements
4.4.2	Where confidentiality agreements, competitive considerations, or a large number of underlying projects limit the amount of detail that can be made available, the Issuer may present the information in generic terms or on an aggregated portfolio basis.	The Issuer reserves the right to manage confidentiality obligations with regards to Sustainability Bond reporting.
4.4.3	It is recommended that Issuers use qualitative performance indicators, and where feasible, quantitative performance measures and disclosure of the key underlying methodology and/or assumptions used in the quantitative determination.	The Issuer intends to provide qualitative and where possible quantitative impact reporting.
4.4.4	It is recommended that the Issuer's annual reporting on the use of proceeds be supplemented by a confirmation of such use of proceeds by an external reviewer along with any relevant updates of the external review.	The Issuer has confirmed the initial SPO is to be the subject of this SPO. BEM will consider the review of annual reporting by an external party until the full allocation of the proceeds.
4.4.5	The Issuer must provide to investors the annual reporting and the external review on the annual reporting, if any, through a website designated by the Issuer and/ or annual reports throughout the tenure of the ASEAN Sustainability Bonds.	The verification report will be made available for investors on its corporate website.

5.0: External Review

Ref.	Criteria	Requirements
5.1	Issuers are recommended to appoint external review providers for their ASEAN Sustainability Bonds issuances.	DNV has been appointed as External Reviewer of the Sustainability Bond Issuance.
5.2	The external review may be partial, covering only certain aspects of the Issuer's ASEAN Sustainability Bonds framework or full, assessing alignment with all four core components as stated in the ASEAN SBS.	The scope of this verification is full compliance with the four core components as stated in the ASEAN SBS.
5.3	The external review provider must have the relevant expertise and experience in the components of the ASEAN Sustainability Bonds which they are reviewing.	DNV is an Accredited Verifier under the Climate Bonds Standard with global experience providing Green Bond Verification and Services since 2011.
5.4	The external review provider must also disclose their relevant credentials and expertise, and the scope of the review conducted in the review report.	DNV's credentials and expertise have been disclosed in this Opinion. The scope of this Verification has been detailed in the "Scope and Objective" section.
5.5	There are a variety of ways for Issuers to obtain outside input into the formulation of their ASEAN Sustainability Bonds process and there are several levels and types of review that can be conducted.	This Verification has been conducted as an independent external review and verification against the criteria set out in the ASEAN SBS.
5.6	Independent external reviews may vary in scope and may address an ASEAN Sustainability Bonds framework / programme, an individual ASEAN Sustainability Bonds issuance, the underlying assets and/or procedures.	This Verification has been conducted as an independent external review and verification against the criteria set out in the ASEAN SBS.

Schedule 4. Do No Significant Harm (DNSH) Assessment for Electric Trains

ASEAN Taxonomy V3.0 has published 4 Environmental Objectives (EOs) which are:

- EO1: Climate Change Mitigation
- EO2: Climate Change Adaptation
- EO3: Protection of Healthy Ecosystems and Biodiversity
- EO4: Resource Resilience and the Transition to a Circular Economy

As Electric Trains contribute to EO1 Climate Change Mitigation, DNSH assessment is conducted against EO2, 3, and 4 of ASEAN Taxonomy V3.0 to ensure that the projects do not cause damage to other EOs. Please note that as of June 2024, Thailand Taxonomy has only one objective so it is not possible yet to assess DNSH against the other Thailand Taxonomy Environmental Objectives.

DNV has conducted DNSH assessment based on the documents made available to DNV in June 2024 which includes:

- BEM Sustainable Financing Framework
- BEM 2023 One Report available on BEM's website
- [BEM 2023 Sustainability Report](#) available on BEM's website
- [BEM Green Procurement Policy](#) available on BEM's website

From the result of the assessment, DNV concluded that sufficient measures are in place to prevent significant harm to other environmental objectives.

EO2: Climate Change Adaptation

Climate Risk and Vulnerability Assessment (CRVA)

The table below shows the result of CRVA Checklist.

Step	Item	Description	Explanation	BEM response
1A	Lifespan of the Activity equipment and materials	Activity description.	What is the proposed Activity?	Underground/elevated mass transit system in Bangkok municipality area
1B		Equipment and materials description	What equipment and materials will be used to perform this Activity?	Train, tracking systems and relevant systems including maintenance, safety and signaling.
1C		Activity start	When will the Activity start operations?	Blue Line extension start date of operation is March 2020. Purple Line start date of operation is August 2016.
1D		Activity end	When will the Activity cease operations (either through deterioration of components or reduced demand for Activity)?	Blue Line Final year of operation expected is March 2050. Purple Line Final date of operation expected is September 2043.
1E		Operational life >10 years?	Will the operational life of the Activity be more than 10 years?:	Yes.

			<p>If no, conduct assessment using current IPCC climate scenarios and trends based on extrapolated current climate data.</p> <p>If yes, conduct current and future assessment using both IPCC climate scenarios and trends.</p>	
2A	Climate related hazards	Potential climate risks to the Activity	Identify and list potential risks to the Activity from [TABLE], considering location of the Activity and applicable scenarios and trends as described in 1E.	Flooding and sea level rise.
2B		Evaluate most common potential risks	Consider the likelihood of the risk based on the location of the Activity.	Bangkok and surrounding areas, and the lowlands are likely to face risk from flooding.
3A	Risk assessment	Projection of climate hazards	If activity has operational life >10 years, what potential hazards may occur based on using both IPCC climate scenarios and trends?	According to Thailand Climate Risk Profile published by World Bank in 2001, Thailand is cited as one of the ten most flood-affected countries in the world. The number of people affected by an extreme river flood could grow by over 2 million by 2035–2044, and coastal flooding could affect a further 2.4 million people by 2070–2100.
3B				
3C		Potential impact of climate related hazards	How could climate-related hazards could affect elements of the Activity? Direct impacts may not always occur; some may also be indirect (or impacts in succession). Where appropriate, use flowchart to map the anticipated risks and impacts from each identified climate-risk hazard.	Flooding may decrease BEM's revenues arising from a reduction in the volume of passengers; rising management costs for maintaining the efficiency in service provision, facilities, security; increasing maintenance cost due to the adjustment to prices of goods, services; rising transporting cost, including compliance with the government measures.

4A	Identify adequate and effective adaptation solutions	Adaptive solutions	List adequate and effective adaptation solutions under identified climate-related hazards.	<p>BEM has devised a strategy to handle flooding events caused by climate change by developing system service processes and equipment to be efficient, convenient, and safe in every circumstance, developing logistics management system of the Company as well as access to flood-prone sites, developing processes and options for managing products, inventories, spare parts to support maintenance work, developing equipment systems and service processes throughout the value chain to be efficient and environmentally friendly.</p> <p>New transportation projects that the Company has received concession contracts require the design of structures, systems, equipment to prevent and protect service areas to ensure comprehensive safety in every circumstance, such as designing the entrance-exit structure to the station area or Depot to be higher than the water level that previously flooded; and entrance-exit doors to the underground station area to be equipped with Flood Board or Stop Log and Flood Door in order to prevent flooding in the service area. The projects currently in operation, namely the MRT Blue Line and the MRT Purple Line, have such construction design and have been installed with such systems.</p>
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EO3: Protection of Healthy Ecosystems and Biodiversity

DNV took the sample of Purple Line and Blue Line EIA Reports available on MRTA's website. Based on the result of EIA report sampling, DNV does not detect any evidence to conclude that EO3 is not safeguarded. Along with the EIA reports, mitigation plans and results from monitoring are available on the website. (https://www.mrta.co.th/th/environmental-operations#content_14152.)

Aspect of Potential Significant Harm	Purple Line EIA Report	Blue Line EIA Report
Protection of Restoration of Biodiversity and Ecosystems	Potential impact on flora and fauna diversity identified. Mitigation and monitoring plan in place.	Potential impact on floras and faunas diversity identified. Mitigation and monitoring plan in place.
Impacts related to the Use of Water and Marine Resources	Potential impact on surface Water and Water Ecosystem, including impact from waste water discharge identified as material. Mitigation and monitoring plan in place.	Potential impact on surface Water and Water Ecosystem, including impact from waste water discharge identified as material. Mitigation and monitoring plan in place.
Impacts related to Noise	Noise Pollution identified as material, mitigation and monitoring plan in place.	Noise Pollution identified as material, mitigation and monitoring plan in place.

Impacts on biodiversity and ecosystems resulting from Pollution and the Use and Presence of Chemicals	Not applicable	Potential impact from the usage of refrigerant identified. Mitigation and monitoring plan in place.
Biodiversity and ecosystem impacts related to HV Electrical Equipment	Not applicable	Not applicable

EO4: Resource Resilience and the Transition to a Circular Economy

The table below shows the result of LCA Checklist based on the review of BEM 2023 Annual report and EIA purple line report sampling. It represents the best information and assessments available. Any areas of potential additional study are highlighted.

Life Cycle Assessment (LCA) Checklist

Step	Item	Description	Explanation	BEM Response
1A	Activity Definition	Activity	What is the proposed activity?	Underground/elevated mass transit system in Bangkok municipality area
1B		Period of Activity (Start / End)	When will the Activity start and what it is expected life?	Blue Line extension start date of operation is March 2020. Final year of operation expected is March 2050. Purple Line start date of operation is August 2016. Final date of operation expected is September 2043.
2A	Inputs and outputs throughout Activity lifecycle	Initial infrastructure / equipment	High level view of main equipment items	Track systems, Station infrastructures, signaling and communication systems, power supply, ventilation and air conditioning, fire safety systems, security systems, maintenance facilities, waterproofing and drainage systems
2B		Raw materials used	What type of raw materials will be used for the activity? (Mainly applies to manufacturing Activities)	Not applicable – Activity does not consume raw materials
2C		Replacements and Spares	What spares are likely to be consumed during Activity life?	Rolling stock
2D		Energy use	What forms of energy does the Activity consume?	Electricity from grid and from solar cells. The amount of renewable energy from solar cells in 2023 was 637,587 kWh.
2E		Emissions	What emissions does the Activity make?	Zero tailpipe emissions. In 2023 BEM's total GHG emissions scope 1 was 8,059 tCO ₂ e, and Scope 2 (Location-based) was 106,364 tCO ₂ e.
2F		Waste Streams	What forms of waste will the Activity generate in its lifetime?	EIA refers to solid and liquid waste generated during construction phase and operational phase. Waste bins are placed in the stations to accompany the waste generated by the commuters. The waste will then be collected and treated by competent authority. Wastewater from toilet is being treated on-site.

				Total waste generated in 2023 was 833.60 metric tons.
3A	Potential impacts from the Activity on EO4 (circular economy and resource resilience)	Initial infrastructure / equipment	For each of these categories, what are or could be the impact on EO4?	BEM is aware that the activity results in significant use of up-front equipment. Material recovery for end-of-life vehicles, electronic waste, and demolition waste needs to be put into consideration
3B		Raw materials used		Not applicable
3C		Replacements and Spares		Replacements and spares will be used during operation for maintenance of the electric trains.
3D		Energy use		Not applicable. Energy use is low per passenger-km compared to alternative modes of transport (older buses, cars). Energy intensity for rail business in 2023 was 0.000138 MWH/passenger-km.
3E		Emissions		Not applicable. Electric trains have zero tailpipe emission.
3F		Waste Streams		In 2023, 693,541 kg of waste was disposed for rail business.
4A	Proposed actions and improvements to mitigate impact	Initial infrastructure / equipment	What actions are or will be implemented to avoid harm to EO4?	BEM strictly adheres to Green Procurement Policy (https://www.bemplc.co.th/Environment?lang=en) to ensure that materials that have less negative impact to the environment. All tier-1 suppliers are assessed on sustainability through self-assessment. Possible future consideration: EPC / O&M contracts will specify end of life management plans to optimise recyclability and recycling of equipment during and at completion of operation.
4B		Raw materials used		Not applicable
4C		Replacements and Spares		According to BEM Green Procurement Policy (https://www.bemplc.co.th/Environment?lang=en). BEM is committed to materials that have less negative impact to the environment. Possible future consideration to ensure that the Green Procurement Policy covers all the replacements and spares.
4D		Energy use		In 2023, BEM cut down electricity consumption in the expressway business by 1,188,398 kWh from the previous year due to system improvement (replacing to LED, installing rooftop solar panels, etc.). Possible future consideration of sustainable energy depending on the situation of Power Purchase Agreement (PPA) in Thailand

4E		Emissions		Not applicable.
4F		Waste Streams		<p>BEM minimizes waste generation at source through waste separation into compostable waste, hazardous waste, infectious waste, and recyclable waste. Solid waste is reused for biofertilizers. In 2023, 44,344 kg of waste was recycled, equivalent to 5.3% of total waste generated.</p> <p>Possible future consideration to increase the percentage of recyclable waste collected through higher efficiency of waste segregation.</p>

Schedule 5. SFIs Programme External Review Form

Section 1. Basic Information

Issuer name:

Bangkok Expressway and Metro Public Company Limited. ("BEM")

Framework Name, if applicable:

Sustainable Financing Framework 2024

Independent External Review provider's name:

DNV (Thailand) Co., Ltd.

Completion date of this form:

18 June 2024

Date of review:

18 June 2024

Section 2. Overview

SCOPE OF REVIEW

The review:

- assessed the 4 core components of the Principles (**complete review**) and confirmed the alignment with the GBP/SBP/SBG (*delete where appropriate*).
- assessed only some of them (**partial review**) and confirmed the alignment with the GBP/SBP/SBG (*delete where appropriate*); please indicate which ones:
 - Use of Proceeds Process for Project Evaluation and Selection
 - Management of Proceeds Reporting
- assessed the alignment with other regulations or standards (CBI, EU GBS, ASEAN Green Bond Standard, ISO 14030, etc.); please indicate which ones:
 - Green Bond Principles ("GBP"), International Capital Market Association ("ICMA"), June 2021
 - Green Loan Principles 2023 ("GLP"), Loan Market Association ("LMA"), February 2023
 - Social Bond Principles ("SBP"), ICMA, June 2023
 - Social Loan Principles ("SLP"), LMA, February 2023
 - Sustainability Bond Guidelines ("SBG"), ICMA, June 2021
 - ASEAN Green Bond Standards ("GBS"), ASEAN Capital Markets Forum ("ACMF"), October 2018
 - ASEAN Social Bond Standards ("SBS"), ACMF, October 2018
 - ASEAN Sustainability Bond Standards ("SUS"), ACMF, October 2018
 - ASEAN Taxonomy for Sustainable Finance Version 3 ("ATV3"), ASEAN Taxonomy Board, 27 March 2024
 - Thailand Taxonomy Version 3, Thailand Taxonomy Board, April 2024

ROLE(S) OF INDEPENDENT REVIEW PROVIDER

- Second Party Opinion Certification
- Verification Scoring/Rating
- Other (*please specify*):

Does the review include a sustainability quality score²?

- Of the issuer Of the project
- Of the framework Other (please specify):
- No scoring

ASSESSMENT OF THE PROJECT(S)**Does the review include:**

- The environmental and/or social features of the type of project(s) intended for the Use of Proceeds?
- The environmental and/or social benefits and impact targeted by the eligible Green and/or Social Project(s) financed by the Green, Social or Sustainability Bond?
- The potentially material environmental and/or social risks associated with the project(s) (where relevant)?

ISSUER'S OVERARCHING OBJECTIVES**Does the review include:**

- An assessment of the issuer's overarching sustainability objectives and strategy, and the policies and/or processes towards their delivery?
- An identification and assessment of environmental, social and governance related risks of adverse impact through the Issuer's [actions] and explanations on how they are managed and mitigated by the issuer?
- A reference to the issuer's relevant regulations, standards, or frameworks for sustainability-related disclosure and reporting?

CLIMATE TRANSITION STRATEGY³**Does the review assess:**

- The issuer's climate transition strategy & governance?
- The alignment of both the long-term and short/medium-term targets with the relevant regional, sector, or international climate scenario?
- The credibility of the issuer's climate transition strategy to reach its targets?
- The level/type of independent governance and oversight of the issuer's climate transition strategy (e.g. by independent members of the board, dedicated board sub-committees with relevant expertise, or via the submission of an issuer's climate transition strategy to shareholders' approval).
- If appropriate, the materiality of the planned transition trajectory in the context of the issuers overall business (including the relevant historical datapoints)?
- The alignment of the issuer's proposed strategy and targets with appropriate science-based targets and transition pathways⁴ that are deemed necessary to limit climate change to targeted levels?
- The comprehensiveness of the issuer's disclosure to help investors assess its performance holistically⁵?

Overall comment on this section:

² The external review may indicate the provider's opinion of the overall sustainability quality of a bond or bond framework and assess whether it has a meaningful impact on advancing contribution to long-term sustainable development.

³ Where issuers wish to finance projects towards implementing a net zero emissions strategy aligned with the goals of the Paris Agreement, guidance on issuer level disclosures and climate transition strategies may be sought from the [Climate Transition Finance Handbook](#).

⁴ GHG emissions reduction targets that are in line with the scale of reductions required to keep the average global temperature increase to ideally 1.5°C, or at the very least to well below 2°C above pre-industrial temperatures. Science Based Targets Initiative (SBTi) is a branded verification body for science-based targets and SBTi verification is one way for issuers to validate the alignment of their emission reduction trajectories with science-based reference trajectories. In addition, ICMA has published a [Methodologies Registry](#) which includes a list of tools to specifically help issuers, investors, or financial intermediaries validate their emission reduction trajectories.

⁵ Including information such as the respective contribution (e.g. %) of the different measures to the overall reduction, the total expenses associated with the plan, or the issuer's climate policy engagement.

Section 3. Detailed Review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Does the review assess:

- the environmental/social benefits of the project(s)?
- whether those benefits are quantifiable and meaningful?
- for social projects, whether the target population is properly identified?

Does the review assess if the issuer provides clear information on:

- the estimated proceeds allocation per project category (in case of multiple projects)?
- the estimated share of financing vs. re-financing (and the related lookback period)?

Overall comment on this section:

BEM intends to use the proceeds of the SFIs to finance and/or refinance projects and assets within the categories of Clean Transportation, Energy Efficiency, Renewable Energy, Water Management, Affordable Basic Infrastructure, Employment Generation and Training and Quality Education. DNV undertook an analysis of the associated project types including type and location and scale of the assets to determine eligibility of these projects as “Green” and “Socially Beneficial” in line with the Principles. DNV evaluates and concludes that BEM’s nominated projects and assets are aligned with one of eligible Green and Social project categories specified in the Principles. Refer to Schedule 1 for further information.

DNV conducted the assessment of Electric Train against Thailand and ASEAN Taxonomy V3. Where thresholds are available, the assessment was done against the Plus Standard of ASEAN Taxonomy V3.

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Does the review assess:

- whether the eligibility of the project(s) is aligned with official or market-based taxonomies or recognised international standards? Please specify which ones.⁶
- whether the eligible projects are aligned with the overall sustainability strategy of the issuer and/or if the eligible projects are aligned with material ESG-related objectives in the issuer’s industry?
- the process and governance to set the eligibility criteria including, if applicable, exclusion criteria?
- the processes by which the issuer identifies and manages perceived social and environmental risks associated with the relevant project(s)?
- any process in place to identify mitigants to known material risks of negative social and/or environmental impacts from the relevant project(s)?

Overall comment on this section:

The SFI proceeds will be allocated to finance and/or refinance the assets as defined in Schedule 1. DNV has reviewed evidence that demonstrates that BEM regularly assesses opportunities for improvement and devises action plans and initiatives to mitigate negative environmental and social impacts from its operations.

3. MANAGEMENT OF PROCEEDS

Does the review assess:

- the issuer’s policy for segregating or tracking the proceeds in an appropriate manner?
- the intended types of temporary investment instruments for unallocated proceeds?
- Whether an external auditor will verify the internal tracking of the proceeds and the allocation of the funds?

⁶ The EU Taxonomy, CBI Taxonomy, UK Taxonomy, China catalogue, etc.

Overall comment on this section:

DNV has reviewed evidence showing how BEM plans to trace the proceeds from the SFIs, from the time of issuance to the time of disbursement. BEM will monitor the allocation of an amount equal to the proceeds via internal information systems. A record will be created to facilitate the monitoring and reporting of the issued SFIs and the deployment of an amount equal to the net proceeds.

4. REPORTING**Does the review assess:**

- the expected type of allocation and impact reporting (bond-by-bond or on a portfolio basis)?
- the frequency and the means of disclosure?
- the disclosure of the methodology of the expected or achieved impact of the financed project(s)?

Overall comment on this section:

BEM has confirmed that it will, where feasible, report on its website the following:

- i. The amount of net proceeds allocated per Eligible Projects/Assets;
- ii. The percentage of financing/refinancing of projects/assets ;
- iii. The amount of unallocated proceeds, if any, at the date of reporting;
- iv. Location and status of the projects/assets;
- v. Impacts Reporting associated with the SFIs;

Section 4. Additional Information

Useful links (e.g. to the external review provider's methodology or credentials, to the full review, to issuer's documentation, etc.)

BEM EIA Reports: https://www.mrta.co.th/th/environmental-operations#content_14152.

BEM Corporate Governance Policy: <https://www.bemplc.co.th/CorporatePolicy>

BEM 2022 Impact Report: [doc.pdf \(bemplc.co.th\)](#)

[BEM 2023 Sustainability Report \(https://bem.listedcompany.com/misc/sd-report/20240520-bem-sd2023-en.pdf\)](https://bem.listedcompany.com/misc/sd-report/20240520-bem-sd2023-en.pdf)

[BEM 2023 One Report \(https://bem.listedcompany.com/misc/one-report/bem-one-report-2023-en.pdf\)](https://bem.listedcompany.com/misc/one-report/bem-one-report-2023-en.pdf)

Analysis of the contribution of the project(s) to the UN Sustainable Development Goals:

Proposed Use of Proceeds contribute to UN SDG 3, 4, 6, 7, 8, 9, 11, 12, and 13

Additional assessment in relation to the issuer/bond framework/eligible project(s):

ABOUT ROLE(S) OF REVIEW PROVIDERS AS DEFINED BY THE GBP, GLP, SBP, SLP, SBG and ASEAN SUS

- 1. Second Party Opinion:** An institution with environmental expertise, that is independent from the issuer may issue a Second Party Opinion. The institution should be independent from the issuer's adviser for its SFIs Framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles, Green Loan Principles, Social Bond Principles, Social Loan Principles, Sustainability Bond Guidelines and ASEAN Sustainability Bond Standards. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental/social sustainability, and an evaluation of the environmental/social features of the type of projects intended for the Use of Proceeds.
- 2. Verification:** An issuer/a borrower can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from SFIs proceeds, statement of environmental/social impact or alignment of reporting with the relevant principles and/or guidelines, may also be termed verification.
- 3. Certification:** An issuer/a borrower can have its SFIs or associated Green/Social/Sustainability Financing Framework or Use of Proceeds certified against a recognised external green/social/sustainability standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.
- 4. SFIs Scoring/Rating:** An issuer/a borrower can have its SFIs, associated Green/Social/Sustainability Financing Framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialised research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental/social performance data, the process relative to the GBP, GLP, SBP, SLP, SBG and ASEAN SUS, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental/social risks.



About DNV

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