

San Francisco Public Utilities Commission (SFPUC)

PRE-ISSUANCE VERIFICATION LETTER

WATER INFRASTRUCTURE CRITERIA UNDER THE CLIMATE BONDS STANDARD

Type of engagement: Assurance Engagement

Period engagement was carried out: July 2018

Approved verifier: Sustainalytics

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Scope and Objectives

The San Francisco Public Utilities Commission (“SFPUC”), has engaged Sustainalytics to review and verify that SFPUC’s green bond meets the requirements under the Water Infrastructure, Nature-Based Solutions, criteria of the Climate Bonds Standard.

The proceeds of the bond will finance green infrastructure projects under the Sewer System Improvement Program (SSIP) to manage stormwater.¹ SFPUC has identified eight initial Nominated Projects under the program which include:

- Mission & Valencia Green Gateway
- Wiggle Neighborhood Green Corridor
- Chinatown Green Alley
- Sunset Boulevard Greenway
- Holloway Green Street
- Yosemite Creek Daylighting
- Visitacion Valley Green Nodes
- Baker Beach Green Street

Please note, this pre-issuance assurance letter will cover the entire bond; however, the Scorecard in Schedule 2 is applicable for the eight Nominated Projects listed above. SFPUC had previously engaged with Sustainalytics in 2016 to provide assurance on the remaining Sewer System Improvement Program projects covered under the bond.²

Climate Bonds Standards Criteria

Pre-issuance requirements for the Water Infrastructure, Nature-Based Solutions, criteria under Climate Bond Standards Version 2.1:

1. Allocation – *all criteria*
2. Governance – *all criteria*
3. Technical Diagnostics – *all criteria*
4. Nature-Based Solutions – *all criteria*
5. Adaptation Plan – *all criteria*

For details, see Schedule 2: The Scorecard for Evaluating the Issuer’s Vulnerability Assessment & Adaptation Plan.

¹ SFPUC Green Infrastructure Projects <http://sfwater.org/index.aspx?page=614>

² SFPUC Pre-Issuance Verification Letter for Sewer System Improvement Program
https://www.climatebonds.net/files/files/Verification%20Letter_SFPUC%20%281%29.pdf

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Issuing Entity's Responsibility

SFPUC was responsible for providing information and documents relating to:

- The details concerning the selection process for the Nominated Projects
- The details of the Nominated Projects
- The management systems for internal processes and controls for Nominated Projects, including: tracking of proceeds, managing unallocated proceeds and Earmarking funds to Nominated Projects
- The details of commitments for reporting prior to issuance, including: investment areas, management of unallocated proceeds and frequency of periodic Assurance Engagements

Independence and Quality Control

Sustainalytics, a leading provider of ESG and corporate governance research and ratings to investors, conducted the verification of SFPUC's green bond, issued to finance Nominated Projects, and provided an independent opinion informing SFPUC as to the conformance of the green bond with the Pre-Issuance requirement and Water Infrastructure, Nature-Based Solutions criteria of the Climate Bonds Standard.

Sustainalytics has relied on the information and the facts presented by SFPUC and/or Alliance for Global Water Adaptation (AGWA). Sustainalytics is not responsible for any aspect of the Nominated Projects referred to in this opinion including estimates, findings, opinions, or conclusions are incorrect. Thus, Sustainalytics shall not be held liable if any of the information or data provided by SFPUC management and used as a basis for this assessment were not correct or complete.

Sustainalytics makes all efforts to ensure the highest quality and rigor during its assessment process and enlisted its Sustainability Bonds Review Committee to provide oversight over the assessment of the bond.

Verifier's Responsibility

The work undertaken as part of this engagement included conversations with relevant SFPUC employees and review of relevant documentation to confirm the green bond's conformance with the Climate Bonds Certification Pre-Issuance Requirements, which include:

- Conformance of SFPUC's green bond with the Climate Bonds Standard Version 2.1;
- Conformance with the Technical Criteria on Water Infrastructure, Nature-Based Solutions
- Conformance with the Internal Processes & Controls requirements
- Conformance with Reporting Prior to Issuance requirements

Basis of the Opinion

Sustainalytics conducted the verification in accordance with the Climate Bond Standard Version 2.1 and with International Standard on Assurance Engagements 3000 – Assurance Engagements other than Audits or Reviews of Historical Information.

Sustainalytics planned and performed the verification by obtaining evidence and other information and explanations that Sustainalytics considers necessary to give reasonable assurance that the SFPUC green bonds meets the requirements of the Climate Bond Standard. Upon reviewing evidence and other information, Sustainalytics is of the opinion that SFPUC will ensure compliance with Climate Bond Standard requirements.

Conclusion

The San Francisco Public Utilities Commission is aiming to finance infrastructure projects for its Wastewater Enterprise which qualify under the Water Infrastructure, Nature-Based Solutions, criteria of the Climate Bonds Standard that will contribute to better management of stormwater in the city. Based on the limited assurance procedures conducted of the SFPUC's water infrastructure projects, Sustainalytics believes that, in all material respects, SFPUC's Nominated Projects are in conformance with the Water Infrastructure, Nature-Based Solutions criteria of the Climate Bonds Standard Pre-Issuance Requirements.

Schedule 1A: Pre-Issuance General Requirements

Selection of Nominated Projects and Assets:	<p>1.1 Statement on the environmental objectives of the bond</p> <p>1.2 Confirmation that Nominated Projects and Assets meet the Climate Bonds criteria</p> <p>1.3 Document a list of Nominated Projects and Assets</p> <p>1.4 Confirmation that Nominated Projects and Assets will not be nominated to other Climate Bonds</p> <p>1.5 Confirmation that Net Proceeds of the Green Bond shall not be greater than the value of the Nominated Projects and Assets</p>
Internal Processes and Controls	<p>2.1.1 Tracking of proceeds</p> <p>2.1.2 Managing of unallocated proceeds</p> <p>2.1.3 Earmarking funds to Nominated Projects and Assets</p>
Reporting Prior to Issuance	<p>3.1.1 Investment area of Nominated Projects and Assets</p> <p>3.1.2 Intended types of temporary investments for the management of unallocated proceeds</p> <p>3.1.3 Approach of Verifier</p> <p>3.1.4 Whether periodic Assurance Engagement will be undertaken, and the expected frequency of any periodic Assurance Engagements</p>

Schedule 1B: Conformance to the Pre-Issuance Requirements

Procedure Performed	Factual Findings	Error or Exceptions Identified
Verification of requirements specified under Selection of Nominated Projects and Assets	<p>1.1 The objective of the bond is to primarily use proceeds to finance green infrastructure projects under the Sewer System Improvement Program (SSIP) to manage stormwater.</p> <p>1.2 The Nominated Projects meet the Water Infrastructure, Nature-Based Solutions, minimum scoring requirements outlined in the Scorecard for Evaluating the Issuer's Vulnerability Assessment & Adaptation Plan (Schedule 2).</p> <p>1.3 The eight Nominated Projects and Assets include:</p> <ul style="list-style-type: none"> • Mission & Valencia Green Gateway • Wiggle Neighborhood Green Corridor • Chinatown Green Alley • Sunset Boulevard Greenway • Holloway Green Street • Yosemite Creek Daylighting • Visitacion Valley Green Nodes • Baker Beach Green Street <p>1.4 SFPUC's management confirms that the projects shall not be nominated to other Climate Bonds.</p> <p>1.5 SFPUC's management confirms that the net proceeds of the bond shall not be greater than the value of the projects.</p>	None
Verification of requirements specified under Internal Processes and Controls	<p>2.1.1 SFPUC's management confirms that proceeds will be segregated and tracked in a systematic manner and will be exclusively used to finance Nominated Projects.</p> <p>2.1.2 SFPUC's management confirms that all net proceeds will be used to finance the Nominated Projects. In some cases, partial expenses have already been incurred and charged to the 2016 green bond.</p> <p>2.1.3 SFPUC's management has confirmed that the proceeds from the bond have been used for the repayment of debt originally raised for the Nominated Projects.</p>	None
Verification of requirements specified under Reporting Prior to Issuance	<p>3.1.1 SFPUC's management confirms that the proceeds of the transaction will primarily be used to finance green infrastructure projects under the Sewer System Improvement Program (SSIP) to manage stormwater.</p> <p>3.1.2 SFPUC's management confirms that all net proceeds will be immediately used (i.e. allocated at issuance) to finance the SSIP projects.</p> <p>3.1.3 The bond's offer letter confirms that an approved third party verifier has been appointed to confirm the bond's conformance with pre-issuance requirements of the Water Infrastructure criteria of the Climate Bonds Standard.</p> <p>3.1.4 The bond's offer letter confirms that an approved third party verifier will conduct post-issuance assurance exercise within a year's time to reaffirm conformance of the bond with the Water Infrastructure criteria of the Climate Bonds Standard.</p>	None

Schedule 2: Scorecard for Evaluating the Issuer's Vulnerability Assessment & Adaptation Plan

The Mitigation Theme has two major categories: (1) the determination of project- related emissions, and (2) determination of emissions reduced/avoided. Eligibility for certification under this theme is determined through existing methodologies deemed acceptable under the Water Climate Bonds Standard (e.g. CDM, American Carbon Registry, etc.)

Under the guidance of the methodology selected, the Issuer must propose a clear GHG baseline, which must describe the calculations and assumptions (inputs) used to arrive at that baseline. Issuers must also estimate net expected GHG impact (mitigation impact >0) compared to Business as Usual, as well as a credible, independently verifiable, method of tracking impact over the life of the bond. Conservative assumptions, values and procedures must be used to ensure that the GHG emission reductions or removals are not over-estimated.

The issuer is eligible for certification only if either:

- No net GHG emissions impact is expected, and the issuer discloses the justification for this decision with supporting documentation;
- A negative net GHG emissions impact is expected, and the issuer has estimated the GHG mitigation impact that will be delivered over the operational lifetime of the project or asset. This impact should be defined in terms of the decreased emissions or increased sequestration relative to a business as usual baseline."

Evaluation of the issuer's mitigation assessment

The Alliance for Global Water Adaptation's (AGWA) has determined that the eight Nominated Projects have no net GHG emissions impact. The following scorecard has been completed by AGWA.

		Requirement E = Provide evidence D = Disclose	Max score	Actual score
FOR EVALUTION OF THE ISSUER'S VULNERABILITY ASSESSMENT				
SECTION 1: ALLOCATION (To be completed for all water infrastructure assets)				
1.1	Are there accountability mechanisms in place for the management of water allocations that are effective at a sub-basin and/or basin scale?	D	1	1
1.2	<p>Are the following factors considered in the definition of the available resource pool?</p> <ul style="list-style-type: none"> • Non-consumptive uses (e.g. navigation, hydroelectricity) • Environmental flow requirements • Dry season minimum flow requirements • Return flows (how much water should be returned to the resource pool, after use) • Inter-annual and inter-seasonal variability • Connectivity with other water bodies • Climate change impacts 	E	7	7
1.3	Are arrangements in place to accommodate the potentially adverse impacts of climate change on the resource pool? (E.g., using best available science to plan for future changes in availability, undertaking periodic monitoring and updating of plans as climate science improves.)	E	1	1

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1.4	Are arrangements in place to accommodate the potentially adverse impacts of climate change on the resource pool? (E.g., using best available science to plan for future changes in availability, undertaking periodic monitoring and updating of available pool.)	E	1	N/A
1.5	Do plans define responses to “exceptional” circumstances, such as an extended drought, that influence the allocation regime? (E.g., triggers water use restrictions, reduction in allocations according to pre-defined priority uses, suspension of the regime plan, etc.)	E	1	1
1.6	For international / transboundary basins, is there a legal mechanism in place to define and enforce water basin allocation agreements? Is it flexible enough for increased variability in water supplies due to more frequent climate extremes?	D	1	N/A
1.7	Are water delivery agreements defined on the basis of actual in situ seasonal/annual availability instead of volumetric or otherwise inflexible mechanisms?	E	1	1
1.8	Has a formal environmental flows (e- flows)/sustainable diversion limit or other environmental allocation been defined for the relevant sub-basin or basin? (If there is a pre-existing plan, then has the environmental flows program been updated to account for the new project?)	E	1	1
1.9	Have designated environmental flows/allocation programs been assured/implemented?	E or D	1	1
1.10	Has a mechanism been defined to update the environmental flows plan periodically (e.g., every 5 to 10 years) in order to account for changes in allocation, water timing, and water availability?	E	1	0
1.11	Is the amount of water available for consumptive use in the resource pool linked to an active, guiding public planning document? (E.g., a river basin management plan or another planning document – please indicate)	E	1	1
1.12	If present, is the water management plan a statutory instrument that must be followed rather than a guiding document?	D	1	1
	TOTAL ALLOCATION SCORE		Max = 18	15/16

SECTION 2: GOVERNANCE (To be completed for all water infrastructure assets)

2.1	Have water entitlements been defined according to one of the following? <ul style="list-style-type: none"> • Purpose that water may be used for • Maximum area that may be irrigated • Maximum volume that may be taken in a nominated period • Proportion of any water allocated to a defined resource pool 	D	1	1
2.2	Is the surface water system currently considered to be neither over-allocated nor over-used? How might climate change affect this? N.B. Over-allocated would be if e.g. current use is within sustainable limits but there would be a problem if all legally approved entitlements to abstract water were used. Over-used would be if existing abstractions exceed the estimated proportion of the resource that can be taken on a sustainable basis.	E	1	0
2.3	If the investment uses groundwater, is the groundwater water system	E	1	N/A

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	currently considered to be neither over-allocated nor over-used? N.B. Over-allocated would be if e.g. current use is within sustainable limits but there would be a problem if all legally approved entitlements to abstract water were used. Over-used would be if existing abstractions exceed the estimated proportion of the resource that can be taken on a sustainable basis.			
2.4	Is there a limit to the proportion (e.g. percentage) of water that can be extracted? How might this need to change if water supplies become more variable due to climate change? (e.g. will having sufficient amounts to meet basic human needs take precedence over others?)	E	1	1
2.5	Are governance arrangements in place for dealing with exceptional circumstances (such as drought, floods, or severe pollution events), especially around coordinated infrastructure operations?	D	1	1
2.6	Is there a process for re-evaluating recent decadal trends in seasonal precipitation and flow OR recharge regime, in order to evaluate "normal" baseline conditions?	D	1	1
2.7	Is there a formal process for dealing with new entrants?	D	1	1
2.8	For existing entitlements, is there a formal process for increasing, varying, or adjusted use(s)?	D	1	1
2.9	Is there policy coherence across sectors (agriculture, energy, environment, urban) that affect water resources allocation, such as a regional, national, or basin-wide Integrated Water Resources Management (IWRM) plan?	E	1	1
2.10	Are obligations for return flows and discharges specified and enforced?	D	1	1
2.11	Is there a mechanism to address impacts from users who are not required to hold a water entitlement but can still take water from the resource pool?	D	1	0
2.12	Is there a pre-defined set of priority uses within the resource pool? (E.g., according to or in addition to an allocation regime)	D	1	1
2.13	If there are new entrants and/or entitlement holders want to increase the volume of water they use in the resource pool and the catchment is open, are these entitlements conditional on either assessment of third party impacts, an Environmental Impact Assessment (EIA) or an existing user(s) forgoing use?	D	1	1
2.14	Are withdrawals monitored, with clear and legally robust sanctions?	E	1	1
2.15	Are there conflict resolution mechanisms in place?	E or D	1	1
	TOTAL GOVERNANCE SCORE		Max = 15	12/14

SECTION 3: TECHNICAL DIAGNOSTICS (To be completed for all water infrastructure assets)

3.1	Does a water resources model of the proposed investment and ecosystem (or proposed modifications to existing investment and ecosystem) exist? Specify model types, such as WEAP, SWAT, RIBASIM, USACE applications). Scale should be at least sub-basin.	E	1	1
3.2	Can the system model the response of the managed water system to varied hydrologic inputs and varied climate conditions?	E	1	1

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3.3	Are environmental performance limits (ecosystem, species, ecological community) and/or ecosystem services specified?	E	1	1
3.4	Can these performance limits be defined and quantified using the water resources?	E	1	1
3.5	Have these limits been defined based on expert knowledge and/or scientific analysis?	E	1	1
3.6	Are these performance limits linked to infrastructure operating parameters?	E	1	1
3.7	Are these limits linked to an environmental flows regime?	E	1	1
3.8	For new projects, is there an ecological baseline evaluation describing the pre-impact state?	E	1	1
3.9	For rehabilitation / reoperation projects, is there an ecological baseline evaluation available before the project was developed?	E	1	1
3.10	Has there been an analysis that details impacts related to infrastructure construction and operation that has been provided?	E	1	1
3.11	Are lost species and/or lost or modified ecosystem functions specified for restoration in the environmental evaluation?	E	1	1
3.12	Have regional protected areas / nature reserves been included in the analysis for impacts from the investment asset and future climate impacts?	E	1	1
3.13	Does the model include analysis of regression relationships between climate parameters and flow conditions using time series of historical climate and streamflow data?	E	1	0
3.14	Does the model include climate information from a multi-modal ensemble of climate projections (e.g., from the Climate Wizard or the World Bank's Climate Portal) to assess the likelihood of climate risks for the specified investment horizon(s)?	E	1	0
3.15	Are changes in the frequency and severity of rare weather events such as droughts and floods included?	E	1	1
3.16	Are sub-annual changes in precipitation seasonality included?	E	1	1
3.17	Is GCM climate data complemented with an analysis of glacial melt water and sea level rise risks, where appropriate (e.g., high or coastal elevation sites)?	E	1	0
3.18	Is paleo-climatic data (e.g., between 10,000 and >1000 years before present) included?	E	1	0
3.19	Is the number of model runs and duration of model runs disclosed?	E	1	0
3.20	Has a sensitivity analysis been performed to understand how the asset performance and environmental impacts may evolve under shifting future flow conditions?	E	1	0
3.21	Is directly measured climate data available for more than 30 years and incorporated into the water resources model?	E	1	1
3.22	Has evidence demonstrated that climate change has already had an impact on operations and environmental targets? Are these impacts specified and, to the extent possible, quantified? These impacts should be responded to directly in the Adaptation Plan.	E	1	1
3.23	Does the evidence suggest that climate change will have an impact on operations and environmental targets over the operational lifespan? Are	E	1	1

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	these impacts specified and, to the extent possible, quantified? These impacts should be responded to directly in the Adaptation Plan.			
3.24	Is there a discussion of the uncertainties associated with projected climate impacts on both operations and environmental impacts?	E	1	0
	TOTAL DIAGNOSTIC SCORE		Max = 24	17/24

SECTION 4: NATURE-BASED SOLUTIONS

(To be completed for nature-based-solutions and hybrid water infrastructure only)

That is, this section only needs to be completed if:

- A. As a nature-based solution, the asset reflects the intentional use of natural and/or nature-based features, processes, and functions (see Box 1) as an integral part of addressing a human need and doing so in a manner that protects, manages, restores, and/or enhances natural features, processes, and systems in a functioning and sustainable manner.
- B. Where feasible, the asset prioritises natural features over nature-based features. Such features include the protection, restoration, expansion, and/or creation of natural systems and processes as an explicit component of the desired project outcomes.

SECTION 4.1: SITE INVENTORY

How well do we understand the systems and processes at the project site?

4.1.1	Is this a “greenfield site” (i.e., undeveloped land used for agriculture, landscape design, or left to evolve naturally)? If so, will existing ecosystem services be expanded/supported/maintained?	E	1	N/A
4.1.2	A. Has an eco-hydrological model been developed? Specify model type, such as WEAP, SWAT, RIBASIM, USACE. B. Is this a quantitative model? C. Has it been calibrated against site data? D. Does the model include water quantity?	E	4	4
4.1.3	Has the calibrated eco-hydrological model been reviewed by an independent expert?	E	1	1
4.1.4	Have sources of pollution been analysed for the following (even if none have been found)? <ul style="list-style-type: none">• Pointsource• Nonpoint source	E	2	2
	TOTAL SITE INVENTORY SCORE		Max = 8	7/7

SECTION 4.2: ECOLOGICAL BASELINES FOR MANAGEMENT

Do we understand how the ecological characteristics of the site will evolve over time?

4.2.1	Is there an inventory of species that can be used as a baseline for vegetation and animal species?	E	1	1
4.2.2	If there is an inventory of species that can be used as a baseline for vegetation and animal species, does it specify or identify endangered / threatened species, ecological communities, or categories of species?	E	1	1
4.2.3	Have studies on current or potential climate impacts on key species (e.g., endangered or threatened species) been included?	E	1	0
4.2.4	Is the flow regime used as a basis for ecological management?	E	1	0
4.2.5	Is there a climate trends analysis for the site or region based on at least 30		1	1

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	years of climate data?			
4.2.6	Is there an assessment of exotic invasive species?	E	1	1
4.2.7	If there is an assessment of exotic invasive species, has a plan been developed to cope with exotic invasive species?	E	1	1
4.2.8	Has there been an assessment of tradeoffs between reliability vs environmental benefits to support decision making processes?	E	1	1
	TOTAL ECOLOGICAL MANAGEMENT SCORE		Max = 8	6

SECTION 4.3: DATA INVENTORIES OF LOCALISED & INDIGENOUS ASSETS

Do we have access to adequate, credible data about the project site?

4.3.1	Is there an inventory of existing water-related ecosystem services based on 30 or more years of data?	E	1	1
4.3.2	Does any existing inventory of water-related ecosystem services related to runoff / land-use include the following data? <ul style="list-style-type: none"> • Fire regime • Sediment / erosion load • Nutrient load • Land-use change 	E	3	3
4.3.3	Do inventories of water-related ecosystem services related to water <i>quality</i> include the following data: <ul style="list-style-type: none"> • Water quality for environmental services (e.g., habitat, ecological communities, erosion) • Water quality for human needs / services (e.g., drinking water, agriculture) 	E	2	2
4.3.4	Is there an existing inventory of water-related ecosystem services related to water <i>quantity</i> ? <ul style="list-style-type: none"> • Water quantity for environmental services (e.g., habitat, flow regime) • Water quality for human needs / services (e.g., service reliability) 	E	2	2
	TOTAL EXISTING INVENTORIES SCORE		Max = 8	8

SECTION 4.4: BROADER ECOSYSTEM IMPACTS

Do we understand how the project's impacts may extend beyond the site?

4.4.1	Has there been a determination of proposed / estimated impacts from project construction and operations regarding local, upstream, and downstream species / ecological communities?	E	1	1
4.4.2	Has there been a determination of proposed / estimated impacts on existing local, upstream, and downstream eco-hydrological systems from modification regarding: <ul style="list-style-type: none"> • Pollution • Downstream flow regime • Groundwater impacts • Land tenure (e.g., public vs private) 		4	3
4.4.3	Has there been a determination of proposed / estimated impacts and benefits on eco-hydrological systems from changes in allocation via the following?		2	1

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	<ul style="list-style-type: none"> • Relevant environmental flows management plans • Groundwater management plans 			
4.4.4	Has the monitoring system contributed to the development and goals of the basin management plan?		1	1
	TOTAL BROADER IMPACTS SYSTEMS SCORE		Max = 8	6

SECTION 4.5: MONITORING & MANAGEMENT SYSTEMS

Do we have effective management processes and tools to maintain ecological integrity over time?

4.5.1	Have target performance indicators been explicitly defined for: Infrastructure services Ecosystem services	E	2	2
4.5.2	Is there a monitoring plan in place for infrastructure performance indicators?	E	1	1
4.5.3	Is there a monitoring plan in place for ecosystem performance indicators?	E	1	1
4.5.4	Are monitoring outcomes connected to the decision making and management/operations process?	E	1	1
4.5.5	Is there a multi-stakeholder basin management plan?	D	1	1
	TOTAL MONITORING & MANAGEMENT SYSTEMS SCORE		Max = 6	6

FOR EVALUTION OF THE ISSUER'S ADAPTATION PLAN

SECTION 5: ADAPTATION PLAN

AP. 1	Is there a plan to restore or secure lost/modified ecosystem functions/species?	E	1	1
AP. 2	Is the adaptation plan for environmental targets / infrastructure robust across specified <i>observed</i> / recent climate conditions? Confer VA	E	1	1
AP. 3	Is the adaptation plan for environmental targets / infrastructure robust across specified <i>projected</i> climate conditions? Confer VA	E	1	1
AP. 4	Is there a monitoring plan designed to track ongoing progress and impacts to inform future decisions?	E	1	1
AP. 5	Is there a plan to reconsider on a periodic basis the VA for operational parameters, governance and allocation shifts, and environmental performance targets?	E	1	1
	TOTAL ADAPTATION PLAN SCORE		Max = 5	5

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As the Opinion is based on information made available by the client, Sustainalytics does not warrant that the information presented in this Opinion is complete, accurate or up to date.

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The client is fully responsible for certifying and ensuring its commitments' compliance, implementation and monitoring.

Sustainalytics

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For more information, visit www.sustainalytics.com

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