GOLD STANDARD PASSPORT

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SECTION A. Project Title

[See Toolkit 1.6]

Title: **Programme for the application of advanced hull coatings to reduce shipping fuel consumption**. VPA No. 1.

Date: 22 September 2015

Version no.: 7

Version history:

Draft version 1 (13 December 2013) was submitted to Gold Standard to support Clarification Request.

Draft version 2 (9 July 2014) was submitted to Gold Standard to support Pre-Feasibility Assessment (PFA). Current version incorporates changes based on Gold Standard feedback to PFA, 22 August 2014.

Version 3 (30 October 2014) to validation.

Version 4 (12 April 2015) was submitted in response to Draft Validation Report

Version 5 (25 August 2015). Submission in response to first round Registration Review comments.

Version 6 (3 September 2015). Submission in response to second round Registration Review comments.

Version 7. Shipping company names and ship names and IMO numbers for one shipping company have been redacted in this, redacted, version of the document, for reasons of confidentiality, as agreed to with Gold Standard.

Note: instructions from the GS template have been retained for clarity in some places, text being shown in blue.

SECTION B. Project description

[See Toolkit 1.6]

The project is the first of a Programme of Activities described below.

The Programme of Activities (PoA) consists of the application of improved hull coating to ship hulls. The type of coating most commonly used on ships is a self polishing copolymer (SPC) which slowly releases a biocidal antifouling agent. The Programme Coordinating Entity is the manufacturer of the advanced coating products, International Paint. The three advanced hull coating products to be included in this PoA are denominated Intersleek 1100SR, Intersleek 900 and Intersleek 700. Intersleek 1100SR is a fluoropolymer-based silicone system and is a modification of Intersleek 900. The fluoropolymer is developed from that used in Intersleek 900 by addition of particular chemical groups in order to enhance the slime resistance and slime release properties. Intersleek 900 is a fluoropolymer foul-release coating; Intersleek 700 is a silicone foul-release coating. Biocidal antifoulings contain bioactive materials intentionally added to control the growth of organisms; biocidal coatings have a higher toxicity rating to both the environment and humans compared to the Intersleek systems. Moreover, the use of Intersleek 1100SR, Intersleek 900 and Intersleek 700 reduces hull friction and hydrodynamic drag, reducing fuel consumption. Ships are generally propelled by engines that use fossil fuels, which release carbon dioxide (CO_2) when burnt. CO_2 is a greenhouse gas (GHG) and its emissions are the main source of global warming. Reduced fuel consumption through the use of the improved hull coating would reduce CO_2 emissions. Therefore all projects within the PoA would both reduce greenhouse gas (GHG) emissions as well as reduce contamination of seawater by reducing the release of paint and entirely avoiding the release of any biocidal antifouling agent.

The proposed PoA would be implemented by International Paint (IP), the manufacturer of the advanced hull coatings. IP will be the aggregation entity for projects within the PoA.

Projects within the PoA would generally be ships travelling between ports in different countries. The fuel consumed for these trips is classified as international bunker fuels and the emissions from burning these fuels are not part of the national GHG inventories. International agreements limit GHG emissions from certain countries, but do not cover emissions from international shipping, since these emissions are not in the national inventories. Fuel savings leading to emissions reduction could generate carbon credits under the Gold Standard, if the requirements are met. In the case of domestic shipping, i.e. between ports in the same country carbon credits would accrue provided there are no regulations covering shipping emissions.

The requirements for projects within this Programme are specified in Draft Version 2[1] of the Gold Standard methodology "Reducing Vessel Emissions through the Use of Advanced Hull Coatings."

Carbon credits generated by Projects within the Programme would be shared between International Paint and the ship owner/operator. To this end, an agreement is needed between the coating manufacturer and the purchaser of the coating product that covers the following issues:

- "*Benefits to the shipping company*. The coating manufacturer would share with the shipping company or charter operator a part of the carbon credits. All must formally commit in this agreement to not claim credits from the same ships as part of activities under another scheme.
- "*Obligations of the shipping company or charter operator*. In order to determine emissions reduction, data covering ship speed, fuel consumption, days since coating application, sea condition, etc. are needed for a substantial part of the docking cycle with the traditional hull coating prior to the application of the advanced hull coating. These are used to determine baseline emissions. Each data item may be based on "noonday" data, voyage data, or a combination of the two. Similar data are also needed for the entire docking cycle following the application of the advanced hull coating. Furthermore information must be provided on whether any measures with a potential impact on fuel consumption have been implemented during that period. Thus, the shipping owner or charter operator

[1] A proposed revision to the approved version of the methodology was submitted to the Gold Standard on June 23, 2014. Certain revisions were accepted by e-mail by Gold Standard on 9 Sep. 2014. Subsequently, Draft version 2 of the methodology was prepared incorporating the approved changes. Change with respect to methodology version 1, all accepted by GS, are shown in blue in the text.

is obliged to provide the needed data and information, as part of its formal agreement with the coating manufacturer. The detailed data would be considered confidential, and would only be shared with the validation and verification entities and The Gold Standard Foundation, with the understanding that the information would not be publicly available. Summary statistics used to determine fuel savings and emissions reduction would be published in the verification reports and would be publicly available. Provided the results confirm fuels savings, they would contribute to increase confidence in advanced hull coating products, making them common practice."

The PoA would be coordinated by International Paint in the following way. Each VPA within the proposed VPA would comprise a set of ships that are coated with an advanced hull coating over a certain period of time. Successive VPAs will comprise sets of ships that are so coated in subsequent time periods. Additional VPAs may be added up to a point when the activity is no longer considered additional, which may arise if there are regulations requiring the use of advanced hull coating, or the application of such coatings become common practice, in either case, as specified in detail in the methodology, and elsewhere in this PoA. If additionality is not lost, for either reason, carbon credits may be claimed for a period of 28 years from the date of registration of the PoA. (The Gold Standard PoA allows carbon credits to be claimed over a 28-year period comprising all VPAs within the PoA.) Note that individual VPAs within the PoA would have a much shorter crediting period, since each ship can claim carbon credits for a single docking cycle with the application of the advanced hull coating.

SECTION C. Proof of project eligibility

C.1. Scale of the Project

[See Toolkit 1.2.a]

Please tick where applicable: *Voluntary market Programme of Activities (icons do not show)*

Project Type	Large	Small
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	x	☐

	☐

C.2. Host Country

[See Toolkit 1.2.b]

THERE IS NO HOST COUNTRY FOR THIS PROJECT. Ships generally ply in international waters. CO_2 emissions for these voyages are from use of international bunker fuels. These emissions are not part of national GHG inventories of any country.

C.3. Project Type

[See Toolkit 1.2.c and Annex C]

Please tick where applicable:

Project type	Yes	No
Does your project activity classify as a Renewable Energy project?	☐	☐
Does your project activity classify as an End-use Energy Efficiency Improvement project?	X	☐
Does your project activity classify as waste handling and disposal project?	☐	☐

Please justify the eligibility of your project activity:

Gold Standard (Toolkit) definition is as follows:

"The end-use energy efficiency improvement category is defined as the reduction in the amount of energy required for delivering or producing non-energy physical goods or services."

The use of advanced hull coatings reduces hull friction and hydrodynamic drag, reducing fuel consumption. Les fuel is used to deliver the same quantity of freight or passenger transport services. Therefore it is an end-use energ efficiency improvement project.

Pre Announcement	Yes	No
Was your project previously announced?	☐	x

Explain your statement on pre announcement

Project Idea Note was presented to Gold Standard, 9 Nov. 2010.

Email from Meinrad Buerer, Gold Standard, 16 Nov. 2010: "to confirm that the type of project activity described in the attached memo would indeed be eligible under Gold Standard"

New methodology submitted to Meinrad Buerer, Gold Standard: 13 Sept. 2011.

C.4. Greenhouse gas

[See Toolkit 1.2.d]

Greenhouse Gas	
Carbon dioxide	x
Methane	☐
Nitrous oxide	☐

C.5. Project Registration Type

[See Toolkit 1.2.f]

Project Registration Type	
Regular	☐

Pre-feasibility assessment	Retroactive projects (T.2.5.1)	Preliminary evaluation (eg: Large Hydro or palm oil-related project) (T.2.5.2)	Rejected by UNFCCC (T2.5.3)
	X	☐	☐

If Retroactive, please indicate Start Date of project activity dd/mm/yyyy: 01/01/2010

SECTION D. Unique project identification

D.1. GPS-coordinates of project location

[See Toolkit 1.6]

Ships are at sea during much of the time. There is no specific project location. Each ship has a name and a country identification. Moreover, each ship has a unique number issued by the International Maritime Organisation (IMO). The following is a quote from IMO Ship Identification Number Scheme[2]:

"The IMO ship identification number scheme was introduced in 1987 through adoption of resolution A.600(15), as a measure aimed at enhancing "maritime safety, and pollution prevention and to facilitate the prevention of maritime fraud". It aimed at assigning a permanent number to each ship for identification purposes. That number would remain unchanged upon transfer of the ship to other flag(s) and would be inserted in the ship's certificates. When made mandatory, through SOLAS regulation XI/3 (adopted in 1994), specific criteria of passenger ships of 100 gross tonnage and upwards and all cargo ships of 300 gross tonnage and upwards were agreed. The implementation of the scheme became mandatory for all ships as of 1 January 1996."

Example of ship name showing IMO number.

[2] http://www.imo.org/OurWork/Safety/Implementation/Pages/IMO-identification-number-scheme.aspx

Ship names and IMO numbers for First VPA are listed below[3].

	Ship Id: IMO no.7 **Classification no.**	**Ship name**	**Type of ship**	**Advanced coating date**	**Status**
	Shipping company	[redacted]			
1	9xxxx14/ 86366		Ro-Ro Cargo		Eliminated from list[4]
2	9xxxx52 86375		Ro-Ro Cargo	25/08/2012	OK
3	9xxxx40 86374		Ro-Ro Cargo	28/08/2012	OK
4	9xxxx68 86377		Ro-Ro Cargo	03/09/2013	OK
5	9xxxx56 86376		Ro-Ro Cargo	20/08/2013	OK
6	9xxxx70 86378		Ro-Ro Cargo	28/08/2013	OK
7	9xxxx76 82973		Ro-Ro passenger	14/02/2011	OK
8	9 xxxx88 82974		Ro-Ro passenger	31/01/2011	OK
9	9 xxxx90 83199		Ro-Ro passenger	23/12/2010	OK
10	9 xxxx54 79707		Ro-Ro passenger	08/03/2011	OK
11	9 xxxx12 79832		Ro-Ro passenger	15/01/2011	OK
12	9 xxxx64 71590		Pure Car Carrier	01/09/2013	OK
13	9 xxxx52 71589		Pure Car Carrier	27/08/2011	OK
14	9 xxxx02 74845		Pure Car Carrier	26/09/2013	OK
15	9 xxxx93 74599		Pure Car Carrier	10/09/2013	OK
16	9 xxxx68 88032		Ro-Ro passenger	08/01/2013	OK
17	9 xxxx63 88027		Ro-Ro passenger	20/12/2012	OK
	Shipping company	**Lykiardopoulo & Co**			
18	9289726	Argenta	Very Large Crude Carrier	28/02/2010	OK

	Coordinates
Latitude	xx° xx' xx" N

[3] Note: one shipping company did not want their ships identified, for reasons of competitiveness. In these cases, four digits of the IMO number and ship names have been redacted. However, a separate five digit "Classification number" has been added to allow ship identification. Gold Standard agreed to this.

[4] The initial list in versions 1 and 2 included this ship. Data for this ship does not meet the requirements for the revised Gold Standard methodology. Hence this ship is not included in this version. However, in order not to change the serial numbers, the row is not deleted.

Longitude	xx° xx' xx'' W

Explain given coordinates

Not applicable

D.2. Map

[See Toolkit 1.6]

Not applicable

SECTION E. Outcome stakeholder consultation process

E.1. Assessment of stakeholder comments

[See Annex J]

[See Local Stakeholder Consultation Report B.5 and insert table from "C.3.iii Assessment of all comments". Insert a summary of alterations based on comments]

On 26 June 2013, a Programme Design Consultation was undertaken at the London, UK, headquarters of the International Maritime Organisation (IMO) responsible for GHG emissions in international shipping. Invitations were e-mailed to 69 potential stakeholders, representing international government organizations, non governmental associations, research institutes, universities, shipping companies, shipping associations, technology suppliers, technical consulting companies as well as British government in the areas of shipping and environment. A number of key stakeholders participated in the meeting, including Mr. Adrian Rimmer of the Gold Standard, representatives from other NGOs including Carbon War Room, Forum for the Future, and IMAREST (The Institute of Marine Engineering, Science & Technology), as well university research institutes and technology providers. A number of shipping companies were also represented.

Local Stakeholder Consultation and Stakeholder Feedback Round has now been completed at the VPA level, as dictated by the Gold Standard's advise that relevant ship owners/operators within VPA 1 and coating manufacturing plant workers be consulted. All relevant comments are included in the "IP Hull Coating Programme LSC Report".

The table below shows Gold Standard categories for local stakeholders. Since there is no host country or local area, codes A, B, C, and D are not applicable. However, a number of international NGOs were present the Design Consultation meeting in London, listed as "D" in the Design Consultation Report, and a few NGOs are GS supporters (F). As for category E, a Gold Standard expert (Adrian Rimmer) participated in the Design Consultation meeting in London.

Category code	Category	Contact details
A	Local people impacted by the project or official representatives	
B	Local policy makers and representatives of local authorities	
C	For CDM / JI projects, an official representative of the DNA or DFP of the host country of your project, or the UNFCCC focal point if the DNA or DFP has not yet been set-up. (For voluntary GS projects, the DNA must also be notified. An invitation letter can be sent, however no formal response is required).	See http://www.unfccc.int
D	Local non-governmental organisations working on topics relevant to your project	
E*	The local Gold Standard expert who is located closest to your project location	**See Annex A**
F	Relevant international Non-Governmental Organisations (NGOs) supporting The Gold Standard, with a representation in your region and ALL GS Supporter NGOs located in the host country of the project.	**See Annex A**

E.2. Stakeholder Feedback Round

Please describe report how the feedback round was organised, what the outcomes were and how you followed up on the feedback.

[See Toolkit 2.11]

The stakeholder consultation process is described in the Design Consultation Report. Version 1 was uploaded Feb. 2014. Version 2 of the Report (prepared for submission to validation) includes minor changes but not in the stakeholder consultation process. No changes were made to this document during validation process or in registration review. The document has been uploaded on the Gold Standard registry as "Hull_coating_PoA_design_consultation_14oct14 clean.pdf."

The outcome of the consultation process is reported in Sec. C of the Design Consultation Report. Below we copy some relevant parts (Design Consultation Report, Sec. 3.2):

"*Most of the comments related to the application of the methodology and the comments were positive. However, concern was expressed in three areas:*

1. *That the methodology is limited to non-biocidal coatings, but there are advanced, biocidal hull coatings as well.*
2. *The methodology is limited to ships in long voyages, since only entire days of sailing are counted for the*

determination of fuel consumption and emissions reduction.

3. *The methodology is limited to advanced hull coatings and does not contemplate multiple measures to reduce fuel consumption.*

"*On the first issue, we believe that the biocidal nature of the advanced hull coatings is a major part of the "Do no harm" aspect of Gold Standard requirements. Therefore, we believe that the methodology should remain as written, and be limited to non-biocidal coatings.*

...

"On the third issue, applicability to multiple measures, the methodology would require more significant changes, outside the applicability conditions specified in the approved methodology. All such changes would require a new / revised methodology preparation and submission, and be subject to Gold Standard approval."

The main changes respond to the second issue raised. A methodology revision covering this and a few other issues was prepared and submitted to Gold Standard, which accepted the changes resolving this issue.

International Paint as PoA Coordinating / Managing Entity (CME) invites ship owners and operators to a presentation, on the Intersleek product line and the benefits of participating in the Gold Standard PoA. The most recent presentation took place in London, United Kingdom, on 29th April, 2014.

Since the two ship owners/operators whose ships are included in VPA-1 did not participate at the 2013 Design Consultation meeting, nor subsequent presentations, a separate consultation of these ship owners/operators was consulted electronically. Emails were sent to the ship owners on July 10, 2015, and each was invited to provide feedback. Files uploaded to the Registry include screenshots of the emails *(file names "SFR email with link July 10 2015.pdf" and "SFR email with link July 10 2015.pdf")* as well as responses from both ship owners *(file names "LSC Feedback Aug 19 2015.pdf" and "LSC Feedback form July 22 2015.pdf".)*

Moreover, workers and other personnel at the plant where the advanced hull coating is manufactured were also consulted through a live in-person meeting, conducted in Felling, United Kingdom on June 26, 2015. A full report including invitees, attendees, meeting format, questions and answers and feedback obtained has been uploaded on the Registry (*file name VPA1 Local Stakeholder Review 29_06_2015.doc*).

E. 3. Discussion on continuous input / grievance mechanism

[See Annex W]

Discuss the Continuous input / grievance mechanism expression method and details, as discussed with local stakeholders.

Local stakeholder consultation at the VPA level has been completed, and the following was presented to and discussed with stakeholders. Moreover, the same is presented in the PoA Passport. The Gold Standard contact email address in table below has been added as a result of a comment received during the registration review process, August 14, 2015.

	Method Chosen (include all known	Justification

	details e.g. location of book, phone, number, identity of mediator)	
Continuous Input / Grievance Expression Process Book	Not used	Not applicable since there is no local area for project.
Telephone access	Not expected to be used. However, a phone number has been provided: Tel: +44 20 7932 9900	Not practical, since expensive international calls would be required. However, a phone number has been provided.
Internet/email access	Project email/contact form: http://www.internationalmarine.com/contactus/feedback.aspx Please copy Gold Standard at: info@goldstandard.org	While there is no local area and therefore no local stakeholders, the global impact of the project activity suggests that anyone could be a potential stakeholder and therefore should have an opportunity to comment. Therefore this is the most effective mechanism for receiving input. Since this is the only option for providing feedback, we propose the following[5]: *"There is always a web admin to receive the emails and website comments. All received emails and website comments shall be logged and recorded with the date, comments, action requested and project responses. Stakeholders are not required to give their personal details when they wish to make a comment on the website."*
Nominated Independent Mediator (optional)	No mediator nominated	Since there is no local area affected by the project activity, no conflicts are expected. However, in case such conflicts emerge, that cannot be resolved directly, an independent mediator could be brought in.

All issues identified during the crediting period through any of the Methods shall have a mitigation measure in place. The identified issue should be discussed in the revised Passport and the corresponding mitigation measure should be added to sustainability monitoring plan in section G.

[5] The text cited is taken from The GS Passport of "Avoided methane emission through aerobic composting at Vietstar municipal solid waste treatment facility"

SECTION F. Outcome Sustainability assessment

F.1. 'Do no harm' Assessment

[See Toolkit 2.4.1 and Annex H]

Safeguarding principles	Description of relevance to my project	Assessment of my project risks breaching it (low, medium, high)	Mitigation measure
Human Rights	There is no relevance to the project, since the change is in manufacture of hull coating material (in the International Paint factories, located in Felling, UK, Houston, Texas, USA and Singapore) and its application. There are 100+ dry docks around the world where the advanced hull coatings could be applied.	Low risk	None needed
1. The project respects internationally proclaimed human rights including dignity, cultural property and uniqueness of indigenous people. The project is not complicit in Human Rights abuses.	No indigenous people affected.		
2. The project does not involve and is not complicit in involuntary resettlement.	No human settlements are affected.		
3. The project does not involve and is not complicit in the alteration, damage or removal of any critical cultural	The project activity is undertaken at dry docks where ships receive hull coating and other maintenance requiring the ship to be removed		

heritage.	from water. None of these activities affect critical cultural heritage. This is true for the project activity (application of advanced hull coating) as well as the baseline hull coating.		
Labour Standards	The advanced hull coating is manufactured in the United Kingdom, the United States and Singapore in plants that meets the highest labour standards, both national and, in the case of the UK, those of the European Union.	Low risk	None needed
4. The project respects the employees' freedom of association and their right to collective bargaining and is not complicit in restrictions of these freedoms and rights	**United Kingdom labour law**[6] "regulates the relations between workers, employers and trade unions. People at work in the UK benefit from a minimum charter of employment rights, which are found in various Acts, Regulations, common law and equity. This includes the right to a minimum wage of £6.50 for over 21-year-olds under the National Minimum Wage Act 1998. The Working Time Regulations 1998 give the right to 28 paid holidays, breaks from work, and attempts to limit excessively long working hours. The Employment Rights Act 1996 gives the right to leave for child care, and the right to request flexible working patterns. The Pensions Act 2008 gives the right to be automatically enrolled in a basic occupational pension, whose funds must be protected according to the Pensions Act 1995. To get fair labour standards beyond the minimum, the most important right is to collectively participate in decisions about how an enterprise is managed. This works through collective bargaining, underpinned by the right to strike, and a growing set of rights of direct workplace participation. Workers must be able to vote for trustees of their occupational pensions under the Pensions Act 2004. In some enterprises, such as universities, staff can vote for the directors of the organisation. In enterprises with over 50 staff, workers must be informed and consulted about major economic developments or difficulties. This happens through a		

[6] Source: https://en.wikipedia.org/wiki/United_Kingdom_labour_law

	steadily increasing number of work councils, which usually must be requested by staff. However, the UK remains behind European standards in requiring all employees to have a vote for their company's board of directors, alongside private sector shareholders, or government authorities in the public sector. Collective bargaining, between democratically organised trade unions and the enterprise's management, remains the "single channel" for individual workers to counteract the employer's abuse of power when it dismisses staff or fix the terms of work. Collective agreements are ultimately backed up by a trade union's right to strike: a fundamental requirement of democratic society in international law. Under the Trade Union and Labour Relations (Consolidation) Act 1992 strikes are basically lawful if they are "in contemplation or furtherance of a trade dispute".” **USA**: The **National Labor Relations Act of 1935**[7] “(49 Stat. 449) 29 U.S.C. § 151–169 (also known as the **Wagner Act** after NY Senator Robert F. Wagner[1]) is a foundational statute of US labor law which guarantees basic rights of private sector employees to organize into trade unions, engage in collective bargaining for better terms and conditions at work, and take collective action including strike if necessary.” **Singapore**: The Employment Act[8] “is Singapore's main labour law. It provides for the basic terms and conditions at work for employees covered by the Act.” EMPLOYMENT ACT (CHAPTER 91), (Original Enactment: Act 17 of 1968), REVISED EDITION 2009 (31st July 2009)		

[7] Source: https://en.wikipedia.org/wiki/National_Labor_Relations_Act

[8] Source: http://www.mom.gov.sg/employment-practices/employment-act

5. The project does not involve and is not complicit in any form of forced or compulsory labour.	**United Kingdom labour law** regulates the relations between workers, employers and trade unions. People at work in the UK benefit from a minimum charter of employment rights, which are found in various Acts, Regulations, common law and equity. This includes the right to a minimum wage of £6.50 for over 21-year-olds under the National Minimum Wage Act 1998. The Working Time Regulations 1998 give the right to 28 paid holidays, breaks from work, and attempts to limit excessively long working hours. The Employment Rights Act 1996 gives the right to leave for child care, and the right to request flexible working patterns. The Pensions Act 2008 gives the right to be automatically enrolled in a basic occupational pension, whose funds must be protected according to the Pensions Act 1995. **United States:** Legal slavery ended in the United States in 1865. The **National Labor Relations Act of 1935**[9] (49 Stat. 449) 29 U.S.C. § 151–169 (also known as the **Wagner Act** after NY Senator Robert F. Wagner[1]) "is a foundational statute of US labor law which guarantees basic rights of private sector employees to organize into trade unions, engage in collective bargaining for better terms and conditions at work, and take collective action including strike if necessary." **Singapore**: The Employment Act is Singapore's main labour law. It provides for the basic terms and conditions at work for employees covered by the Act. EMPLOYMENT ACT (CHAPTER 91), (Original		

[9] Source: https://en.wikipedia.org/wiki/National_Labor_Relations_Act

	Enactment: Act 17 of 1968), REVISED EDITION 2009 (31st July 2009)[10]		
6. The project does not employ and is not complicit in any form of child labour	**UK - Child Labor and Exploitation** "There are extensive laws and regulations regarding child labor and exploitation in England and Wales. The main legislation restricting the use of children in employment is the Children and Young Persons Act 1933[11]. The term "child" in this context is defined as anyone of compulsory school age (up to age sixteen).[69] The general rules are that no child may be employed under the age of fifteen years, or fourteen years for light work;[70] be required to work during school hours; before 7 a.m. or after 7 p.m. on any day; or be required to work for more than two hours on any day they are required to attend school, for more than twelve hours in any week they are required to attend school; or for more than two hours on Sundays. For non-school days, children under the age of fifteen may work up to five hours a day on days that they are not required to attend school, not including Sundays, up to a maximum of twenty five hours per week. Those aged fifteen years or older may work up to eight hours per day on any day school attendance is not required, up to a maximum of thirty five hours per week, with the limit to working a maximum of two hours on a Sunday still applying. Anyone employing children over the age of fourteen must provide them with at least a one hour break after they have worked four or more hours.[71] It is an offense to employ a child in contravention of these laws, punishable by a fine. Additional provisions are applicable to children in the entertainment industry, which provides an exemption: that children can perform certain duties under a license.[72] Local authorities can also make by-laws to further restrict the hours or		

[10] Source: http://statutes.agc.gov.sg/aol/search/display/view.w3p;page=0;query=DocId%3A571f13ea-3a91-47ef-a07b-f45d12fc2101%20Depth%3A0%20ValidTime%3A16%2F05%2F2013%20TransactionTime%3A16%2F05%2F2013%20Status%3Ainforce;rec=0

[11] Source: http://www.legislation.gov.uk/ukpga/Geo5/23-24/12

	circumstances in which children may work.[73]" **United States:** "The most sweeping federal law that restricts the employment and abuse of child workers is the Fair Labor Standards Act (FLSA). Child labor provisions under FLSA are designed to protect the educational opportunities of youth and prohibit their employment in jobs that are detrimental to their health and safety."[12] **Singapore**: "Generally, a child must be at least 13 years of age before he can start working. The minimum legal age for working in Singapore is governed by the Employment Act and the Employment (Children and Young Persons) Regulations[13], and is enforced by the Ministry of Manpower."		
7. The project does not involve and is not complicit in any form of discrimination based on gender, race, religion, sexual orientation or any other basis	**United Kingdom**: As well as having rights for fair treatment, the Equality Act 2010[14] "requires that people are treated equally, unless there is a good justification, based on their gender, race, sexual-orientation, beliefs and age." **United States**: "Employment discrimination law in the United States derives from the common law, and is codified in numerous state and federal laws, particularly the Civil Rights Act 1964[15], as well as in the ordinances of counties and municipalities. These laws prohibit discrimination based on certain characteristics or protected categories. The United States Constitution also prohibits discrimination by federal and state governments against their public employees. Discrimination in the private sector is not directly constrained by the Constitution, but has become subject		

[12] Source: United States Dept. of Labor. http://www.dol.gov/dol/topic/youthlabor/

[13] Source: http://statutes.agc.gov.sg/aol/search/display/view.w3p;page=0;query=DocId%3A911aba78-1d05-4341-96b7-ee334d4a06f0%20%20Status%3Ainforce%20Depth%3A0;rec=0

[14] Source: http://www.legislation.gov.uk/ukpga/2010/15/contents

[15] Source: https://en.wikipedia.org/wiki/Civil_Rights_Act_of_1964

	to a growing body of federal and state law. Federal law prohibits discrimination in a number of areas, including recruiting, hiring, job evaluations, promotion policies, training, compensation and disciplinary action. State laws often extend protection to additional categories or employers." **Singapore**: The Employment Act is Singapore's main labour law. It provides for the basic terms and conditions at work for employees covered by the Act. EMPLOYMENT ACT (CHAPTER 91), (Original Enactment: Act 17 of 1968), REVISED EDITION 2009 (31st July 2009)		
8. The project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments	In addition to being compliant with all local labour laws as stated above, the Project Proponent also provides health and safety training for all of its employees. The advanced coating being manufactured and applied as part of the project activity has been proven to contain a much lower level of VOC's than the incumbent baseline product, so employee safety and health is thereby improved in the working environment.		
Environmental Protection	All environmental impact with respect to the baseline are favourable.	Low risk	None needed
9. The project takes a precautionary approach in regard to environmental challenges and is not complicit in practices contrary to the precautionary principle. This principle can be defined as: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."			

10. The Project does not involve and is not complicit in significant conversion or degradation of critical natural habitats, including those that are (a) legally protected, (b) officially proposed for protection, (c) identified by authoritative sources for their high conservation value or (d) recognized as protected by traditional local communities			
Anti-Corruption	Project activity involves transactions between private parties (coating manufacturers and ship owners/ operators). There is little scope for corruption.	Low risk	None needed
11. The project does not involve and is not complicit in corruption			
Additional relevant critical issues for my project type	**Description of relevance to my project**	**Assessment of relevance to my project (low, medium, high)**	**Mitigation measure**
1. None			
2			
etc…			

F.2. Sustainable Development matrix

[See Toolkit 2.4.2 and Annex I]

Insert table as in section D3 from your Stakeholder Consultation report (Sustainable Development matrix).

Indicator	Mitigation measure	Relevance to achieving MDG	Chosen parameter and explanation	Preliminary score
Gold Standard indicators of sustainable development.	**If relevant copy mitigation measure from "do no harm" –table, or include mitigation measure used to neutralise a score of '–'**	Check www.undp.or/mdg and www.mdgmonitor.org **Describe how your indicator is related to local MDG goals**	**Defined by project developer**	Negative impact: score '-' in case negative impact is not fully mitigated score 0 in case impact is planned to be fully mitigated No change in impact: score 0 Positive impact: score '+'
Air quality	Not needed since impact is positive (see columns to right)		Reduced fuel consumption in ship engines means that less fuel is burnt, with proportionally less emissions of sulphur oxides (SO_x) and nitrogen oxides (NO_x) from combustion. Emissions of NOx and SOx also depend on other parameters which are not known, so quantification of these emissions reduction is not feasible. Please see document "Estimating emissions of NOx and SOx.pdf" uploaded on GS Registry. The application of Intersleek coatings reduces	+

			the emissions of volatile organic compounds (VOCs). VOCs are released during the application of the coatings. Intersleek systems are inherently higher in volume solids and lower in VOC compared to biocidal systems. Biocidal systems are typically 50-60% volume solids and 340 to 500 grammes per litre VOC; Intersleek systems are >70% volume solids and <240 grammes per litre VOC.	
Water quality and quantity	Not needed since impact is positive (see columns to right)		The baseline hull coating is a class of biocidal antifoulings known as self polishing copolymers (SPC); these paints are designed to dissolve away into the environment during use and so significant quantities of this paint (which include biocides) is also lost to the marine environment. The application of the advanced hull coating (Intersleek) would reduce the amount of paint released into the marine environment. Moreover, since Intersleek is biocide-free, no biocide will be released to the marine environment.	+
Soil condition	Not needed since impact is positive (see columns to right)		Insofar as seawater covers tidal flats and coastal ecosystems (e.g. mangrove swamps), as well as where seawater irrigation is practiced, the non biocidal nature of Intersleek coatings reduces toxic substances from soils. Intersleek coating systems contain environmentally hazardous components, especially dibutyl tin dilaurate, and are hence not entirely non-toxic. However, environmental analyses following ISO14040 and ISO14044 accounting for the human and environmental hazard ratings associated with each component in the coatings indicate that Intersleek products are substantially lower in toxicity compared to biocidal systems. Moreover, considerably less paint volume is needed with Intersleek coating compared to baseline biocidal coatings. Therefore, the end-	+

			of-life disposal of paint residues disposed on land would reduce soil contamination.	
Other pollutants	Not needed since impact is positive (see columns to right)		The fact that the advanced hull coatings used in the project (Intersleek) has no biocides means that none are released into the water, as noted above. The baseline SPC coating has significantly higher impacts in the categories use of material resources and acidification. This is partly due to the fact that more paint is used, but more importantly due to the high quantities of copper required for the SPC coating. Copper is a scarce resource and the extraction and processing of copper ore is related to high emissions of sulphur compounds contributing to acidification. Therefore the use of the advanced Intersleek hull coating would reduce the acidification potential. During a normal docking cycle for a vessel coated with a biocidal coating, 1 to 3 coats are applied at each docking adding to the final quantity of paint used over the normal lifetime of 15 years. The Intersleek systems require only a refresh of the final coat at each subsequent docking after initial application resulting in significantly less paint used. This is referenced in the Eco Environmental Analysis (EEA). Since a much smaller quantity of the advanced coating is needed, there is less waste at the end of the docking cycle when the ship needs to be recoated. Intersleek 700 and Intersleek 900 require 83% less paint volume compared to traditional biocidal coating[16]. The same will be true for Intersleek 1100SR.	+

[16] International Paint, "Eco-efficiency – a new tool to support better decisions on hull coating investments", Sept. 2010, p. 4

			Less waste is also generated, mainly because less paint is needed. Thus, Intersleek 700 and Intersleek 900 generate 74% less waste tins[17].	
Biodiversity	Not needed since impact is positive (see columns to right)		The release of biocides to the environment may cause bioaccumulation of hazardous substances in food chains and genetic damage etc. This may in turn lead to loss of biodiversity. Since the project activity comprises the application of biocide-free hull coating, this impact is eliminated.	+
Quality of employment	Not needed since impact is positive (see columns to right)		The manufacturer of the advanced hull coating provides extensive training and knowledge transfer to its employees. Project proponent also offers training to customers including ship owners/operators and to dry dock workers around best practices for coating application. Those employed in the activity would acquire skills involving a sustainable technology. Project proponent also offers ongoing training to its own staff around sustainable technologies, and the topics of carbon and emission reductions resulting from improving fuel economy. Moreover, since there are less VOC emissions, workers are exposed to less contamination.	+
Livelihood of the poor	Not needed since there is no change in impact (see columns to right)		Insofar as the project activity reduces shipping fuel costs, it would reduce the cost of getting products to markets, indirectly benefitting those who depend on their production being sent by ships to markets. However, no benefits are claimed.	0
Access to affordable and clean energy	No impact, not relevant		No impact	0

[17] Op. Cit.

services				
Human and institutional capacity	Not needed since impact is positive (see columns to right)		The application of an advanced hull coating to save fuel would increase awareness as well as experience with sustainable technologies for managers and operators in shipyards where advanced hull coating is applied. Moreover, the application of the monitoring methodology to evaluate ship fuel consumption would add to human and institutional capacity of ship owners and operators.	+
Quantitative employment and income generation	Not needed since there is no change in impact (see columns to right)		Project activity involves the application of an advanced hull coating instead of the baseline coating. No quantitative change in employment is expected.	0
Balance of payments and investment	Not needed since there is no change in impact (see columns to right)		Many ships are registered in developing countries, because of the importance of convenience flags (Liberia, Panama, Bahamas, Marshall Is.). However, even by geographical location, CO_2 emissions are dominated by ships from Non-Annex 1 (developing) countries, as shown in the table below[18]. **CO_2 emissions (million tonnes in 2005) by nation of ship registration and by geographical location** Country group / By flag / By geographical location Non-Annex 1 / 147 / 134 Annex B / 50 / 59 Economies in transition / 0.79 / 4.4	0

[18] Source: Table 10 from Haifeng Wang, Economic costs of CO_2 emissions reduction for non-Annex I countries in international shipping. *Energy for Sustainable Development*, 14 (2010) 280–286.

			The opportunity of fuel savings and Gold Standard carbon credits should encourage investment towards energy efficiency improvements in developing countries.	
Technology transfer and technological self-reliance	Not needed since impact is positive (see columns to right)		As noted above, many ships are registered in or are based in developing countries. The certification of energy savings and emissions reduction through GS carbon credits would help promote the transfer of advanced coating technologies to these countries, and to ship owners and operators in general. The ability to evaluate energy performance through the monitoring aspects of the methodology would also create additional skills which would be applicable to other energy efficiency measures as well.	+

Justification choices, data source and provision of references

The main reference is the Life-Cycle Analysis conducted for the Intersleek coatings and reported in the report cited above:

- International Paint, "Eco-efficiency – a new tool to support better decisions on hull coating investments", Sept. 2010

A supplementary study, to support the relevance of developing countries to international shipping is the paper, cited above:

- Haifeng Wang, Economic costs of CO_2 emissions reduction for non-Annex I countries in international shipping. *Energy for Sustainable Development*, 14 (2010) 280–286.

Air quality	Air quality improvements include lower NOx and SOx emissions, as well reduced VOC emissions. **NOx and SOx emissions**. We have elaborated a short report "Estimating emissions of NOx and SOx.pdf" submitted to Gold Standard in August 2015. This document includes extracts from: • Directive 2012/33/EU of the European Parliament and of the Council of 21 November 2012 amending Council Directive 1999/32/EC as regards the sulphur content of marine fuels. (CELEX-32012L0033-EN-TXT.pdf) • Report of the International Maritime Organisation: MEPC-67-6-INF3-2014-Final-Report-complete.pdf **VOC emissions**: Information on VOC emissions can be found in Table 2 (p. 12) and Table 3 (pp. 15-17) of the report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels*

	(Intersleek EEA Report 091222.pdf) was third party reviewed and ISO 14040 + 14044 compliant. This document was also submitted to support validation and to Gold Standard in August 2015.
Water quality and quantity	The report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels* cited above also includes information on water quality benefits. Table 10 (p. 24) lists "Leaching factors for components leaching to the marine environment during in service." The leaching factors with the project activity are very low in comparison with the baseline coating. Marine ecotoxicity shown in Tables 15 and 16 (p. 29) and Figure 14 (p. 36) further indicate the lower toxicity of the project paint compared to the baseline paint. Figure 11 (p. 35) shows large reduction in acidification potential with the project activity.
Soil condition	Table 13 of the same report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels* lists paint volumes for the project activity and the baseline hull coating. Smaller paint volumes are needed. Moreover, as noted above, paint toxicity of the project activity is considerably smaller.
Other pollutants	Referring to the same report, Table 17 (p. 33) quantifies all environmental benefits. Figure 11 (p. 35) shows large reduction in acidification potential with the project activity. Figure 12 (p. 35) shows large reduction in photochemical ozone depletion potential with the project activity. Figure 13 (p. 35) shows large reduction in human toxicity potential related to application of the paints
Biodiversity	The advanced hull coatings are biocide free, as noted in many parts of the cited report *Eco Efficiency Assessment*. See, e.g. p. 50 "Marine eco-toxicity"
Quality of employment	International Paint provides continued training for the application of its advanced hull coatings. Training materials include many documents, e.g. *Intersleek® Technical / Application Guidelines Shipyard/Contractor/Owner - November 2010[1].pdf and Dry docking procedure.pdf*. These documents were uploaded to the Gold Standard in August 2015.
Livelihood of the poor	No benefits are claimed
Access to affordable and clean energy services	No benefits are claimed
Human and institutional capacity	The Gold Standard methodology is itself a part of capacity building insofar as it provides a reliable tool to measure fuel savings and emissions reduction. International Paint also provides training material and literature to shipyards, contractors and vessel owners and operators to educate them on the sustainability and environmental benefits of advanced hull coatings, as well as information on data collection methods for compliance with the GS methodology and projects relying on same. Applicable documents to substantiate this point were uploaded to the GS registry in Aug., 2015 , and include *Intersleek® Technical / Application Guidelines Shipyard/Contractor/Owner - November 2010[1].pdf, Dry*

	docking procedure.pdf and Data collection method.pdf.
Quantitative employment and income generation	No benefits are claimed
Balance of payments and investment	No benefits are claimed
Technology transfer and technological self-reliance	As noted above, the Gold Standard methodology contributes to Human and institutional capacity. The results of the VPAs within the Gold Standard PoA, would help promote the transfer of a clean, fuel efficient technology, as well as knowledge related to data collection methods and sustainable, environmentally beneficial technologies.

SECTION G. Sustainability Monitoring Plan

[See Toolkit 2.4.3 and Annex I]

Note: International Paint has software for the determination of a number of sustainability parameters. The output of the software appears as an Eco-Efficiency Report. Such reports would be generated for each ship and provide information such as those listed below. The results of the report would be included in the Monitoring reports. Since each Eco-Efficiency Report is detailed, we believe it is more complete than the table below, which has therefore not been filled in.

The Eco-Efficiency Report does not include reduction in emissions of nitrogen oxides (NOx) and sulphur oxides (SOx). We have reviewed the status of these emissions in ships and summarised our findings in the document "Estimating emissions of NOx and SOx.pdf" uploaded on the Gold Standard registry.

In principle, NOx emissions can be calculated by multiplying fuel savings by an emissions factor. However, the emissions factor depends on engine type, engine rating, engine technology (defined by IMO as Tier 0 (pre-2000), Tiers 1, 2 and 3, as well as engine duty cycle. Since we do not know most of the parameters, we do not have an exact value of the emissions factor, which ranges from 52 to 93 kg/tonne of fuel.

SOx emissions depend mainly on the sulphur content of the fuels. Calculating SOx emissions (and especially emissions reduction) presents difficulties since the sulphur content of the main fuel used in shipping (heavy fuel oil, HFO) changes over time (as standards are tightened), is different for passenger ships, many ships increased the proportion of low sulphur HFO with time. Since we do not have information on the sulphur content of the fuels used, we cannot quantify these emissions.

Copy Table for each indicator

In the Sustainable Development matrix above, the following items were given a positive score:

1) Air Quality
2) Water Quality and Quantity
3) Soil Condition
4) Other Pollutants
5) Biodiversity
6) Quality of Employment
7) Human and Institutional Capacity
8) Technology Transfer and Technological Self-reliance.

The tables below cover these items with the numbers corresponding to the list above. Note that some of the items have more than one measureable parameter, identified by letters (a), (b), etc.

No	1
Indicator	Air Quality
Mitigation measure	None needed as impact is positive
Repeat for each parameter	
Chosen parameter	a) VOCs

Current situation of parameter		Intersleek systems are inherently higher in volume solids and lower in VOC compared to (baseline) biocidal systems. Biocidal systems are typically 50-60% volume solids and 340 to 500 grammes per litre VOC; Intersleek systems are >70% volume solids and <240 grammes per litre VOC.
Estimation of baseline situation of parameter		The value will depend on the surface area in each ship that would have been painted with the baseline coating. It will be determined individually in the Eco-Efficiency Report for each ship. The relevant input data (e.g. paint volumes) are recorded in the "Dataplan report" corresponding to the application of advanced coating on each vessel. The baseline value will be determined using other assumptions noted in the report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels* cited above.
Future target for parameter		As above. Determined from data recorded in the "Dataplan report" corresponding to the application of advanced coating on each vessel, and assumptions in the report *Eco Efficiency Assessment*
Way of monitoring	How	Calculation procedure which forms the basis of the Eco-Efficiency report for each vessel
	When	Any time after the application of the advanced hull coating
	By who	International Paint

Chosen parameter		b) NOx
Current situation of parameter		In principle, NOx emissions can be calculated by multiplying fuel savings by an emissions factor. However, the emissions factor depends on engine type, engine rating, engine technology (defined by IMO as Tier 0 (pre-2000), Tiers 1, 2 and 3, as well as engine duty cycle.
Estimation of baseline situation of parameter		Since emissions depend both on fuel consumption and an emissions factor. While the monitoring can include fuel savings, we do not know the emissions factor, since it depends on factors noted above that were not recorded in the baseline situation. Therefore, we are not able to quantify baseline NOx emissions
Future target for parameter		For the same reasons given above, we are not able to quantify project NOx emissions.
Way of monitoring	How	Not quantified
	When	N.A.
	By who	N.A.

Continuous input mechanism

Additional remarks monitoring

For more details, see short report "Estimating emissions of NOx and SOx.pdf" submitted to Gold Standard in August 2015. This document is cited in the previous section.

Chosen parameter		c) SOx
Current situation of parameter		SOx emissions depend mainly on the sulphur content of the fuels. Calculating SOx emissions (and especially emissions reduction) presents difficulties since the sulphur content of HFO changes over time, and it is not recorded in ship logs.
Estimation of baseline situation of parameter		Since emissions depend both on fuel consumption and an emissions factor. While the monitoring can include fuel savings, we do not know the emissions factor, since it depends on factors noted above that were not recorded in the baseline situation. Therefore, we are not able to quantify baseline SOx emissions.
Future target for parameter		For the same reasons given above, we are not able to quantify project SOx emissions.
Way of monitoring	How	Not quantified.
	When	N.A.
	By who	N.A.

Continuous input mechanism

Additional remarks monitoring

For more details, see short report "Estimating emissions of NOx and SOx.pdf" submitted to Gold Standard in August 2015. This document is cited in the previous section.

No		2
Indicator		Water Quality and Quantity
Mitigation measure		None needed as impact is positive
Repeat for each parameter		
Chosen parameter		Biocide content
Current situation of parameter		The baseline coating contains biocides, the advanced coatings that comprise the project activity do not. Moreover, the baseline coatings are self polishing compounds which leach into the water. Leaching factors are given in Table 10 (p. 23) of the report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels* cited above.
Estimation of baseline situation of parameter		The biocide content of baseline coatings is determined by surface areas painted and assumptions given in the same report *Eco Efficiency Assessment,* cited above.
Future target for parameter		Zero, since the advanced coatings contain no biocides
Way of monitoring	How	Calculation procedure which forms the basis of the Eco-Efficiency report on each vessel

	When	Any time after the application of the advanced hull coating
	By who	International Paint

Continuous input mechanism

Additional remarks monitoring

No		3
Indicator		Soil condition
Mitigation measure		None needed as impact is positive
Repeat for each parameter		
Chosen parameter		a) Paint volume (litres)
Current situation of parameter		Smaller paint volumes are needed with the advanced hull coatings. Moreover, they lack biocides, so that there is no toxicity from the disposal of the paint cans
Estimation of baseline situation of parameter		The value will depend on the surface area in each ship that would have been painted with the baseline coating. The relevant input data (e.g. surface areas painted) are recorded in the "Dataplan report" corresponding to the application of advanced coating on each vessel. The baseline value will be determined using other assumptions noted in the report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels* cited above.
Future target for parameter		Paint volumes used in the project activity are recorded directly in the "Dataplan report" corresponding to the application of advanced coating on each vessel.
Way of monitoring	How	Calculation procedure which forms the basis of the Eco-Efficiency report for each vessel
	When	Any time after the application of the advanced hull coating
	By who	International Paint

Continuous input mechanism

Additional remarks monitoring

Chosen parameter		b) Waste tins
Current situation of parameter		Since smaller paint volumes are needed with the advanced hull coatings, fewer paint tins will need to be disposed. Moreover, the advanced coatings lack biocides, so that there is no toxicity from the disposal of the paint tins.
Estimation of baseline situation of parameter		The value will depend on the surface area in each ship that would have been painted with the baseline coating. The relevant input data (e.g. surface areas painted) are recorded in the "Dataplan report" corresponding to the application of advanced coating on each vessel. The baseline value will be determined using other assumptions noted in the report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels* cited above.
Future target for parameter		The amount of tins (kg) can be determined from paint volumes used in the project activity are recorded directly in the "Dataplan report" corresponding to the application of advanced coating on each vessel.
Way of monitoring	How	Calculation procedure which forms the basis of the Eco-Efficiency report for each vessel
	When	Any time after the application of the advanced hull coating
	By who	International Paint

Continuous input mechanism

Additional remarks monitoring

No	4
Indicator	Other Pollutants
Mitigation measure	None needed as impact is positive
Repeat for each parameter	
Chosen parameter	Acidification potential
Current situation of parameter	Since the project causes fuel savings, there are reductions in NOx and SOx emissions, leading to reduced acidification potential. In generic terms, this is quantified in Figure 11 (p. 35) of the report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels*. However, since NOx and SOx emissions reduction cannot be quantified for individual vessels for reasons explained above, it is also not possible to quantify reduced acidification potential
Estimation of baseline situation of parameter	The acidification potential depend on the emissions of NOx and SOx and other factors. NOx and SOx emissions depend both on fuel consumption, and emissions factors that are not quantifiable.

		Therefore, we are not able to quantify baseline acidification potential.
Future target for parameter		For the same reasons given above, we are not able to quantify project acidification potential.
Way of monitoring	How	Not quantified.
	When	N.A.
	By who	N.A.

Continuous input mechanism

Additional remarks monitoring

No		5
Indicator		Biodiversity
Mitigation measure		None needed as impact is positive
Repeat for each parameter		
Chosen parameter		Biocide content
Current situation of parameter		The baseline coating contains biocides, the advanced coatings that comprise the project activity do not. Moreover, the baseline coatings are self polishing compounds which leach into the water. Leaching factors are given in Table 10 (p. 23) of the report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels* cited above. As noted in p. 47 of the report *Eco Efficiency Assessment: A comparative study of three fouling control systems for marine vessels* cited above, "*The release of eco-toxic substances to the environment may cause e.g. bioaccumulation of hazardous substances in food chains and genetic damage etc. This may in turn lead to loss of biodiversity*."
Estimation of baseline situation of parameter		The biocide content of baseline coatings is determined by surface areas painted and assumptions given in the same report *Eco Efficiency Assessment,* cited above.
Future target for parameter		Zero, since the advanced coatings contain no biocides.
Way of monitoring	How	Calculation procedure which forms the basis of the Eco-Efficiency report on each vessel
	When	Any time after the application of the advanced hull coating
	By who	International Paint

Continuous input mechanism

Additional remarks monitoring

Note that this monitoring parameter is the same as that for item 2: Water quality and quantity.

No		6
Indicator		Quality of Employment
Mitigation measure		None needed as impact is positive
Repeat for each parameter		
Chosen parameter		Labour conditions (job related health and safety)
Current situation of parameter		Baseline coating contains a much higher level of VOCs than the advanced hull coatings. Therefore workers are exposed to more contamination with baseline hull coating.
Estimation of baseline situation of parameter		Biocidal coatings (baseline) are still the standard practice and dominate the market share in the shipping industry.
Future target for parameter		As the use of advanced hull coatings increases, and more ships are coated with these advanced coatings rather than the baseline, biocidal coatings, so the level of VOCs the workers are exposed to decreases.
Way of monitoring	How	Project Proponent has software that determinates a number of sustainability parameters. The output of the software appears as an Eco-Efficiency Report. Such reports would be generated for each ship and provide information related to VOCs avoided through the use of the advanced hull coatings.
	When	Information and data will be provided with each VPA submitted, which it is anticipated to be annually or biennially.
	By who	Employees of Project Proponent.

Continuous input mechanism

Additional remarks monitoring

No	7
Indicator	Human and Institutional Capacity
Mitigation measure	None needed as impact is positive

Repeat for each parameter		
Chosen parameter		Training and education
Current situation of parameter		Limited training offered to ship owners/operators around sustainable technologies.
Estimation of baseline situation of parameter		Few ship owners/operators are aware of broader sustainability benefits of improving fuel economy.
Future target for parameter		Increased training sessions to promote the awareness and advantages of fuel efficiency in shipping and sustainable technologies. Training shall be offered to project proponent's employees (to be passed on to customers), vessel owners and operators, and managers and operators in shipyards as applicable.
Way of monitoring	How	Each monitoring report shall contain a section on Human and Institutional Capacity, and the Project Proponent will track and monitor the sessions offered, number/type of attendees, other training materials provided.
	When	Information and data will be provided with each VPA submitted, which it is anticipated to be annually or biennially.
	By who	Project Proponent

Continuous input mechanism

Additional remarks monitoring

No	8
Indicator	Technology Transfer and Technological Self-reliance
Mitigation measure	None needed as impact is positive
Repeat for each parameter	
Chosen parameter	Number and types of events attended and/or press releases published
Current situation of parameter	Project proponent has made a few presentations to discuss the methodology and advanced technology; a few press releases have been published, but mainly around the GS methodology, not the project/programme.
Estimation of baseline situation of parameter	A limited number of presentations have been made to date, as first project has yet to be registered
Future target for parameter	Project Proponent will: attend conferences and industry association meetings to discuss the methodology, programme and its benefits; participate in industry groups promoting best practices and innovation in the industry to drive finance into shipping; publish press releases

		and other publications to enable knowledge transfer around sustainable technology, fuel efficiency, environmental benefits and carbon credits.
Way of monitoring	How	Each monitoring report shall contain a section on Technology Transfer and Technological Self-Reliance, and the Project Proponent will track and monitor the sessions attended together with attendee type. In addition, any press releases or other publications made available in a given period for each VPA shall be monitored.
	When	Information and data will be provided with each VPA submitted, which it is anticipated to be annually or biennially.
	By who	Employees of Project Proponent.

Continuous input mechanism

Additional remarks monitoring

SECTION H. Additionality and conservativeness

This section is only applicable if the section on additionality and/or your choice of baseline does not follow Gold Standard guidance

Gold Standard methodology strictly followed. This section is not applicable.

H.1. Additionality

[See Toolkit 2.3]

H.2. Conservativeness

[See Toolkit 2.2]

ANNEX 1 ODA declaration

[See Toolkit Annex D]

No ODA is involved in any aspect of the project.