**Guidance Document for Completing a Stage 1 Application to Support a Claim for Units of Biodiversity Gain**

**Introduction**

The Wallacea Trust biodiversity methodology defined a unit of biodiversity change as a 1% uplift or avoided loss per hectare in the median value of a basket of metrics that reflect the conservation objectives for the submitted habitats. This methodology works in all 1500 ecoregions and all habitats and can be used to quantify the biodiversity benefits that are being gained from investments made by organisations to improve biodiversity at their own sites or those of their suppliers. This allows claims to be made such as: Site A which covers 1000 hectares has achieved a 30% overall increase in biodiversity in X amount of years. Being able to present results in this format allows organisations to compare the biodiversity benefits being generated from different investments and also allows ESG reporting in a standardised format. We are used to seeing climate investments reported using the accepted unit of climate change which is 1 tonne of carbon dioxide equivalent not emitted or sequestered, so why not report biodiversity investments in a similar standardised way?

The system works by identifying a series of metrics (usually based around taxonomic groups of species) that together reflect what would be regarded by most biologists as an overall improvement in biodiversity for the concerned habitats. Data are collected in the project site to measure the species richness weighted by conservation value of each species and by their relative abundance at the submitted site before a conservation intervention begins. Then, these same metrics are also measured at either 1) a reference site (for biodiversity uplift projects) that (wherever possible) has been managed using the same strategy for the same time period as the submitted site to give an indication of the level of biodiversity uplift that can be achieved over the project period, or 2) a paired development site (for avoided loss projects) to give an indication of the level of biodiversity that is going to be loss if there is no protection programme implemented in the project site.

For uplift projects, once the project intervention are implemented then the biodiversity uplift in each of the metrics is calculated by subsequent verification events at three to five year intervals after project initiation by again re-surveying the same sample sites, effort and survey methodologies used at the biodiversity baseline studies performed at project initiation. As the project advances in time, each of the metrics at these verification events will have changed by a different percentage from the baseline at project initiation and the median value is then taken as the overall uplift from the baseline. The number of units of biodiversity change that can be claimed are then produced by multiplying the median uplift by the total hectares of the submitted site. Thus, a conservation investment can quantify the biodiversity gain units being achieved over the lifetime of the project.

For avoided loss projects, this system can also be used to quantify how well biodiversity is being protected in sites that are under serious threat which would reduce the biodiversity unless conservation measures are put in position. In these cases, the metrics are measured at the project site being protected and also at a paired development site which is an example of the type of land use that the protected site will become in the absence of protection measures. The median percentage uplift from the value of the metrics in these paired development sites to reach the biodiversity levels of the protected site is then multiplied by the amount of hectares in the protected site expected to be loss during the project period (e.g. 25 years) under the baseline scenario (i.e. if no project interventions were implemented) to calculate the amount of biodiversity units you would achieve over the lifetime of the protection programme). Subsequent verification events are then repeated at say three-year intervals at the protected site and if the biodiversity value is maintained or increases from the biodiversity baseline studies performed at project initiation then 3/25ths of the units of biodiversity gain can be claimed.

Many organisations will want to just quantify the biodiversity benefits they are gaining so they can compare different investments, grants or conservation strategies. Others will want to report these gains for their ESG reporting. However, once a unit of biodiversity gain has been quantified and verified it can also be traded as a biodiversity credit. Project developers can utilise the open source Wallacea Trust methodology and collect the data themselves or via consultants or volunteer naturalist surveyors, using remote sensing techniques (camera traps, audio moths, eDNA) and field-based surveys. Once these data are collected the project developers or their consultants can calculate the numbers of units of biodiversity gain that have been achieved for their projects. However, for the market (i.e. those reading ESG reports or those buying credits) to have confidence that these claims are underpinned by solid science, independent academic peer review is needed.

The Biodiversity Futures Initiative is a non-profit network of leading international academic specialists in different taxa, ecoregions and habitats that has been established to verify claims of biodiversity gain. The verification is a two-stage process. Stage 1 is designed to provide independent academic validation of the proposed baskets of metrics that are being used to quantify the biodiversity and the sampling strategy designed to measure changes in these metrics. The idea is for this peer review to happen before any surveys are commissioned, to provide independent advice on the most cost-effective approach to use. The review output from this Stage 1 evaluation will be a short report with comments on the following items:

* Was the choice of the Reference site or Paired development site adequate?
* Has permanence been demonstrated in the design of the project?
* Has adequate quantification of leakage been demonstrated in the design of the project?
* Does the selection of metrics reflect the conservation objectives for the submitted sites?
* Are the methodologies proposed to quantify selected metrics appropriate?
* Are there any issues likely to be encountered when auditing the data?
* Is the sampling strategy design appropriate for each selected metric?

If significant problems are identified in the Stage 1 review process, then a recommendation to review the proposal is made to the applicant and wherever deemed necessary the application may require to be resubmitted for Stage 1 review. If there no significant problems detected by the Stage 1 review, then the recommendation is that the applicant proceeds with commissioning the surveys and quantifying the biodiversity change. Applicants should complete as much of the Stage 1 review form using the guidance notes as possible and then submit it for a pre-application screening review. This screening review costs £500 and provides feedback and assistance in identifying appropriate baskets of metrics and also on other aspects of the application. With this advice, the proponent can then complete the form in detail and submit it for a full review. A Stage 1 review will cost £2000 and should be completed within 3 weeks of the receipt of the payment.

A Stage 2 review application is a much more extensive as amongst other things requires auditing datasets provided for each metric, using academic peer review. The output from this Stage 2 review will be a short document explaining how the data and claims were audited and one of two conclusions:

1. The data provided support a claim of an X% increase in biodiversity across Y number hectares.
2. The data provided do not support a claim of an X% increase in biodiversity across Y hectares and in the reviewers’ opinion a claim for Z% increase is more justifiable.

**List of definitions**

**Baseline scenario** is the most likely future scenario for land use and land or marine management in the project area in the absence of the project intervention(s).

**Beneficiary organization** is the organization that can use the verified claim of biodiversity gain either for ESG reporting or for monetization via biodiversity credits.

**Biodiversity** is defined a descriptor representing abundance and species richness of the Kingdoms of plants, animals and fungi within a specific area.

**Biodiversity units of gain** are defined as a 1% improvement or avoided loss per hectare as measured by the median percentage change in a basket of a minimum of 5 biodiversity metrics that together reflect the conservation objectives for the ecoregion and habitats included in the application.

**Biodiversity metrics** are the measurements of different aspects of the plant, animal or fungi communities which have been selected so that changes in the overall biodiversity over time reflect agreed conservation objectives for that ecoregion or habitat.

**Median percentage change** is defined if there are odd numbers of metrics as the middle value of each of the metrics when listed in ascending value. If there are even numbers of metrics, then the median value is midway between the two middle values when each metric is listed in ascending order.

**Improvements in biodiversity** need to be defined in each of the applications. For example, an increase in species richness of a particular group, or an increase in abundance of threatened species or a decline in abundance of invasive species are all possible definitions of improvement.

**Ecoregions** refers to the list of terrestrial, freshwater and marine ecosystems as defined by the World Wildlife Fund.

**Habitat** is a place where organisms live. There are multiple different classification systems that can be used for habitat and which classification system is being used needs to be defined within each application.

**Leakage area** is defined as a buffer around the project site within the area of influence of the involved communities, which is also monitored for habitat structure losses as a result of community actions displaced from the project site.

**Naturally occurring species** are those defined by governments or wildlife NGO’s as being native to the area or introduced a sufficiently long time ago that they are now regarded as naturalised.

**Project interventions** are a set of activities designed to restore, protect, monitor and improve the management of the Project site and as a result increase or maintain biodiversity and have positive impacts on local livelihoods and ecosystems.

**Project site** is an area greater than 50 hectares proposed to be restored or protected through the implementation of project interventions and then monitored over the project period.

**Project period** is the period comprehended between the starting and completion phases of the project. By default, the Project period should be at least 20 years in duration (preferably 25 – 30 years).

**Project region is** a discrete geographical area within which Project sites are or could be located as part of a Project, and that includes any reference areas or leakage buffers.

**Reference site** is a site within the same geographical area and at minimum of similar size of the submitted site where the proposed management approach for the project site has been applied over a similar period (wherever possible) as proposed for the project period, and therefore a likely predictor of the improvements in each of the metrics selected at the project site over the project period.

**Paired development site** is a site within the same geographical area and at minimum of similar size to the submitted site and which has been subjected to the same development activity as proposed for the project site and is therefore a likely predictor of the loss of biodiversity if the proposed development at the submitted site proceeds.

**Section 1: Applicant and beneficiary organisation**

**Questions 1 to 5:** This section is to identify the organisation that is submitting the application and also which organisation will be claiming the units of biodiversity gain if the application process is successful.

**Question 6:** The type of organisation that can implement these projects is not important although evidence that the organisation has worked at grass roots level on related types of projects and is well connected with the project participants and other stakeholders (owners, users and managers of the project site) for the proposed project would be an advantage. What the reviewers are looking for here is whether the beneficiary organisation has relevant expertise and experience.

**Section 2: Project description, additionality, permanence and leakage**

This section concentrates on understanding the location and habitat structure of the submitted project site and how it fits into the wider landscape. The management of the site over the last five years is important to understand, and in particular to confirm that no actions have been taken over these past five years, that are deliberately aimed at lowering the biodiversity value of the site (beyond routine operations needed for the previous management regime).

**Question 7:** The area required is the total area in hectares (must be greater than 50 hectares) of the project site, excluding the area of the reference site or paired development site.

**Question 8:** In addition to looking at the map figure included in the review form, the reviewers will be checking the mapping files (shapefile or .kml format) used to put together the provided maps (along with their metadata information). The written part of this question should describe the current connectivity and any expected improvements in the project site’s connectivity once the interventions have been implemented.

**Question 9:** In addition to looking at the map figure included in the review form, the reviewers will be checking the mapping files (shapefile or .kml format) used to put together the provided maps (along with their metadata information). The mapping files should contain the habitats within the project site clearly identified. Please note that there are multiple habitat classification systems in use (e.g. EUNIS, UKHab, Phase 1 classification, IUCN Red List habitat classification scheme etc.), and as such in the written part of this question please identify which system is being followed for habitats classification.

**Question 10:** This question is designed to understand management practices in the preceding five-year period and how they would have impacted on the current biodiversity. Intensive arable farming practices (inputs of herbicides, pesticides and fertiliser plus regular ploughing) for example would be expected to have had a significant impact on biodiversity, but these have been completed as part of normal arable management. What is being assessed here is whether any additional measures outside normal management practices have been taken to reduce the

biodiversity. For example, a grassland site sprayed with glyphosate, immediately prior to an application would be considered an attempt by the applicant to artificially reduce the biodiversity value of the submitted site in order to obtain a higher uplift in biodiversity in future years.

**Question 11:** If there are multiple land tenures or ownerships, a map outlining the boundaries of for each type/person/organization identified is mandatory. As there can be many forms of land occupancy (e.g. tenancies, lease holders, community owned village land etc.), please ensure any such occupancy is overlaid on the ownership map. Please note that in addition to looking at the map figure included in the review form, the reviewers will be checking the mapping files (shapefile or .kml format) used to put together the provided maps (along with their metadata information). If there is only a single land tenure or ownership for the whole submitted area, then this just needs to be identified in the text description.

**Question 12:** Projects should have a minimum time-period of 20 years, but longer periods are desirable in order to demonstrate permanence.

**Question 13:** This question should describe in a maximum of 500 words the interventions to be implemented at project initiation and how the site will be managed over the duration of the project period in order to improve biodiversity in the project site. If it is easier, you can also reply to this question in a table format identifying the various actions and timescales.

**Question 14:** Identify the organization responsible for delivering the management programme and their relevant experience for this role.

**Question 15***:* Using a reference site is the preferable option as in order to have an estimate of the likely biodiversity gain that will be achieved over the project period and to identify abundance levels for species after the uplift has occurred. The reference site should be as close as possible to the submitted site and most importantly have been managed in the same way as being proposed for the submitted site for a known time period. The starting point in terms for habitats, geology and soil types for the reference site needs to be the same or as close as possible to the project site. Where differences in reference site to the submitted site can be identified (e.g. length of time the management programme has been running, different starting habitat structure etc.) these should be clearly described.

In addition to giving potential investors an indication of the likely uplift over the project period, the other role that the reference site provides is the identification of the likely upper level of the quintiles required for determining relative abundance intervals for each species, thus allowing assignment of a relative abundance score value to count data at each site and surveying period during the project period. As the conservation value of each species is scored on a 5-point scale, it is important that abundance has the same weighting (i.e. a 5 point scale) otherwise abundance data could swamp conservation values. If for example, across all surveyed locations within the project site a combined total of 5 sparrowhawks is recorded and then in all surveyed locations within the reference site (when surveyed with the same methods and survey effort) a combined total of 15 sparrowhawks is recorded, then this value of 15 is taken as the upper limit of the quintiles for abundance scoring for that species. These quintiles would then be set at: **Abundance score value 1** when a surveyed site (project or reference) has between 1 – 3 sparrowhawks; **Abundance score value 2** = when between 4 – 6 sparrowhawks; **Abundance score value 3** when between 7 – 9 sparrowhawks; **Abundance score value 4** when between 10 – 12 sparrowhawks and **Abundance score value 1** when more than 13 sparrowhawks.

If for some reason there is no suitable choice of reference site available, then the only way that abundance can be allocated is for each species to assign **Abundance score value 1** for the combined total of individuals recorded across all surveyed locations in the project site. Then allow an increase in **Abundance score values** for every doubling of numbers. For the sparrowhawk example above, the following abundance values would apply: **Abundance score value 1** when between 1 – 5 sparrowhawks; **Abundance score value 2** when between 6 – 9 sparrowhawks; **Abundance score value 3** when between 10 – 19 sparrowhawks; **Abundance score value 4** when between 20 - 39 sparrowhawks and **Abundance score value 5** when more than 40 sparrowhawks.

To get the same abundance score as for the reference site then there would need to be a much higher number of sparrowhawks and in this example the maximum abundance score that the uplift would show if the submitted site achieved a total of 15 sparrowhawks after the management interventions would be 3. Note these calculations are done for all species and abundance values are multiplied by conservation values for each species. Undervaluing the increase in abundance means that the likely overall biodiversity gain measured in a project with a reference site will always be higher than a project without a reference site.

Please note that this doubling method approach will significantly disadvantage sites where extant species are being reintroduced, since such reintroductions require reasonable sized initial populations to survive. In these cases, if the submitted application at a Stage 2 review can demonstrate evidence from published studies of likely upper levels for introduced species, then this can potentially be used as the upper quintile limit for that introduced species and calculated in the same way as for when there is a reference site.

**Question 16:** Projects should have a minimum time period of 20 years, but longer periods are desirable in order to demonstrate permanence.

**Question 17:** Each of the threats need to be identified and quantified as much as possible so that the levels of loss in the absence of the protection programme over the project period can be identified. This is the crucial question for additionality. What percentage of the biodiversity will be lost in the absence of the intervention (please note that in most case this is estimated through rates of habitat loss due to degradation or deforestation in the project region). For example, if the section describes likely annual losses are 1% then over a 25-year period, then the potential losses amount to 25% over the project period. If the site covers 1000 hectares and the difference in biodiversity between the submitted site and paired development site is 500% then the units of avoided biodiversity loss would be calculated as 1000 x 500 x 0.25.

**Question 18:** Is the proposed protection a reasonable way to protect the submitted site over the project period.

**Question 19**: Describe the skills and previous experience of the organisation responsible for managing the protection programme.

**Question 20:** A paired development site which is an example of what the site will become unless it is protected, is needed in order to give an idea of the level of biodiversity loss that will occur if this happens. Preferably, the paired development site should be immediately adjacent to the site (and always within the project region) and be an example of what will happen if the project is not implemented.

**Question 21:** This question is needed in order to address the issue of potential leakage, where protecting the project area can then result in simply displacement of those threats to adjacent non-protected areas. Please note that leakage area will need to be included in the monitoring programme.

**Question 22:** In order to demonstrate permanence beyond the duration of the planned management programme, measures that make it more likely than not that the biodiversity gains will continue indefinitely need to be identified. These could include financial benefits to the local communities linked to continued protection of the biodiversity, achievement of a conservation designation, amongst other options.

**Question 23:** This question only needs to be answered if the units of biodiversity gain are going to be monetized as biodiversity credits. In these cases, the applicant needs to demonstrate that the budgets for the project would not work unless there was additional funding from selling biodiversity credits.

**Section 3: Proposed biodiversity metrics, survey methods and sampling strategy**

**Question 24:** A structural metric is one which directly or indirectly affects species richness and abundance of other taxa. These include metrics such as the DEFRA biodiversity metric 4.0 to quantify changes in habitat in the UK context, canopy cover or 3D structure for forest restoration projects, plant communities, rugosity for coral reefs.

**Question 25:** Describe the survey method by which this structural metric will be quantified and why it should be regarded as a structural metric.

**Question 26:** Methods to how the structural metric data could audited at a Stage 2 application should be identified. This is important to ensure that data is collected in an auditable way.

**Questions 27 – 32:** A minimum of an additional 4 metrics will need to be selected and measured and which considered together would indicate an improvement or maintenance of biodiversity at the site. The basket of metrics selected needs to encompass the biodiversity objectives for the ecoregion, country and local area. Within the project site there will normally be multiple habitats and the identified metrics should reflect all these habitats and concentrate on aspects of the biodiversity that are likely to be impacted by the proposed management strategy. Note biodiversity measurements can be used to quantify other natural capital benefits at the site and these metrics can also be included. For example, monitoring lichen communities can identify changes in air quality, monitoring of aquatic macroinvertebrates can reflect changes in water quality, measurements of species richness and abundance of pollinating bee and hoverfly species identify the contribution to pollination that the site is making, and changes in soil macroinvertebrate communities are an indication of improvements in soil health. However, if the management plan does not impact, say air quality, then there is no point in including lichen monitoring. The selected metrics therefore need to encompass at least the top 4 metrics that would indicate an improvement in the site in line with conservation and natural capital objectives for that site and which should result from the proposed long-term management plan for the site.

For each taxa the species richness and relative abundance (wherever possible) needs to be determined and the methodology for collecting these data should be identified.

**Question 33:**The required stratification may differ amongst metrics. For example, soil invertebrates are largely influenced by soil types whereas breeding bird communities are mostly affected by the structural complexity of the site. The sampling effort should be structured to provide sufficient replicates that rarefaction curves are levelling out for each studied taxon. Ideally the response to this question should contain both the logic for how samples are being stratified, figure map(s) showing the proposed selection and spatial distribution of sample sites for each metric in both the project site and either the reference site or paired development site,

the mapping files (in shapefile or .kml format) used to put together the provided maps (along with their metadata information). Please note that in most cases it should be already possible to design the sampling strategy at the time of submitting this application. However, we understand that for some projects it may difficult or too expensive to accurately complete this sampling strategy design until closer to the sampling period because strata used for quantifying some metrics may not be able to be quantified until closer to the time (e.g. if you are stratifying higher plants by level of grazing pressure and cutting regime). If that is the case for the project you are submitting, then it may be possible to submit a provisional sampling strategy design idea here, and then a more comprehensive strategy (including the map with location of each replicate) in a separate one-day review application to BFI (incurring an additional review fee) before you start the sampling.

**Question 34:** The important point here is that there needs to be equal sampling effort between the project site and either the reference or paired development sites, including overall conditions for sampling being near identical (e.g. timings, weather issues etc). If there is greater sampling effort in either the project or the reference/paired development sites then the data from the larger data set has to be randomly sampled so that the two data sets are equal in terms of sampling effort.

**Submission of the application**

The best way to proceed with the application is to complete all sections of a Stage 1 review form to the best of your ability and then submit it for a review a Stage 1 review (cost £2000). The outcome of a Stage 1 review will be a letter with one of the following decisions:

1. If the applicant completes the data collection using the proposed metrics, methodologies and sampling strategy design, it should be possible to quantify the biodiversity gain at a Stage 2 review.
2. The application needs to include some recommended changes outlined in the attached document and if these are included in the project design then it should be possible to quantify the biodiversity gain at a Stage 2 review.
3. The application as it stands will need significant changes, outlined in the attached document, and resubmission for Stage 1 review is required before it can be accepted as suitable to proceed with data collection to quantify biodiversity gain.

Please note that if in the Stage 1 review it for whatever reason it was not possible to include a comprehensive sampling strategy design then the application, if everything else was and allowed of a type 1 or type 2 answer and the provisional sampling strategy design idea was accepted by the reviewers, the applicant will be expected to submit the detailed sampling strategy design (including text description, figure maps and mapping files for review) as soon as they have the information available. This will count as a Stage 1 follow up review, focused on the sampling strategy design, and will incur in an additional £1000 charge to the applicant for this additional review.

Please note that if for some reason the project developer does not have the capacity to answer some of the more technical questions required in the Stage 1 review or has uncertainty about the feasibility of the project at this early stage and would like some feedback on one or multiple sections of their project design then there is the possibility submitting it for an initial review (cost £500). This is NOT a guarantee that the application will be approved, but an early indication of whether there are major problems. This stage can also offer advice on how to improve aspects of the application (e.g. suggested basket of metrics, sampling programme etc.). The results of this initial pre-Stage 1 review will be a letter to the project proponent with one of the following outcomes:

1. It is worthwhile advancing the proposed project into a complete Stage 1 review, pending that any identified weaknesses in the application and advice for improvement is addressed.
2. It is not worthwhile advancing the proposed project into a complete Stage 1 review, because there are weaknesses already identified that that would indicate refusal.

After the approval of the Stage 1 review then the project should go ahead and complete the biodiversity baselining surveys of the selected metrics, and then submit an application for a Stage 2 review. This Stage 2 review will then confirm the baseline datasets against which future uplift or avoided loss claims will be quantified. Future verification applications (Stage 3 applications) will then repeat the data collection at the project site only to identify biodiversity gains (e.g. this project has achieved a 40% gain per hectare over baseline levels across 1000 hectares or, in the case for avoided loss projects this project has maintained biodiversity levels over the last 3 years and can claim 3/25th of the biodiversity value for protecting this area over the full 25 years*).* Some organisations will want to stop at that stage and just include the claims in their ESG reports whilst other will want to monetize 80% of the claim using block chain or traditional registries.