

Biodiversity Offset Payment Calculator Technical Review [Extract]



Planning,
Industry &
Environment

30 September 2020



EY Port Jackson Partners
Strategic Advisory

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The results of Ernst & Young’s work, including the assumptions and qualifications made in preparing the report, are set out in Ernst & Young’s report dated 30 September 2020 (“Report”). The Report should be read in its entirety including the applicable scope of the work and any limitations. A reference to the Report includes any part of the Report. No further work has been undertaken by Ernst & Young since the date of the Report to update it. This publication contains selected parts of the complete original.

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Summary

The need for a system to determine developer charges

- The Scheme is primarily designed to work by developers acquiring credits either directly through their own actions, or through the private market. The Scheme also allows developers to discharge their biodiversity obligations by paying a charge into the Biodiversity Conservation Fund (BCF).
- This charge should reflect the expected cost to the Biodiversity Conservation Trust (BCT) of securing like-for-like credits. If this cost is persistently underestimated, the BCT may have to employ variation rules more often than is desirable for achieving biodiversity outcomes. The charge should cover:
 - The likely cost to the BCT of acquitting its obligation with a like-for-like purchase.
 - A modest margin to account for risk and to ensure developers are incentivised to purchase credits directly through the private market where possible.

Recommendation 1

The responsible entity should calculate a developer charge that reflects a reasonable estimate of the cost to the BCT of acquitting the obligation in a like-for-like manner with a modest margin to account for risk and to encourage developers to directly acquire credits

Methodology of determining developer charges

- The nature of the markets for credits, particularly the large number of heterogeneous credit classes, makes it genuinely difficult to establish reliable estimates of likely credit prices. This is true for all credit classes, but particularly the credits that will need to be purchased by the BCT to ultimately meet developer obligations:
 - The Biodiversity Offsets Scheme is made up of 1342 potential credit classes for species and ecosystem credits, of which 1262 have never been transacted.
 - Of these credit classes, the BCT tends to accept developer charges for those with few or no transactions. 89% of developer charges accepted by the BCT have been for credit classes with five or fewer transactions since 2010.
- Accordingly, the lack of depth in trading suggests that historical data is either not available or needs to be treated with extreme caution when estimating future prices.
- We also note that many historical prices have been reported based on related party transactions and as such should be treated with caution as reliable estimates of likely credit prices traded at arm's length.
- We note that the current econometric model has been found to be methodologically sound by two technical reviews conducted by Applied Economics in 2018 and by Dr Roselyne Joyeux in 2019. That said, we do not support its use as the sole determinant of developer charges given the quality of the available data:
 - Developer charges are highly volatile, particularly in Offset Trading Groups (OTG) with no trade data. This reduces certainty for developers, the BCT, and landholders about future prices.

- A complement to an econometric model based on historical price data is the use of bottom-up cost estimates that can provide reasonable credit price estimates. Estimates would be based on the four components of landholder costs and margins:
 - Total Fund Deposits (TFDs) can be estimated without historical trade data by understanding the necessary management action costs.
 - Transaction and administration costs can be estimated and tend to be reasonably uniform.
 - Opportunity costs can be modelled using land value or discounted future cash flows.
 - Landholders' surplus margins (above the opportunity cost of the land) may be more difficult to predict but can be estimated through expert consultation.
- Market soundings could also be used to improve estimates of likely credit prices:
 - Interviewing existing suppliers would be a reasonable step in gathering price information, given that there are only 182 active BioBanking Agreements.
 - Landholders with the potential to generate certain credits are identifiable, due to correlation between credit class and geographic location.
 - Assessors may be a source of information about future BSAs and credit prices.

Recommendation 2

The body responsible for determining developer charges should not be bound to the current econometric model. Three sources - the econometric model, the cost-structure model and market soundings - should be taken into consideration and weighted according to the nature of the market for the credit class.

Responsibility for determining developer charges

- The BCT has the best access to the information required to determine developer charges as the market facilitator. In particular, its role in "seeking strategic biodiversity offset outcomes" as defined in the *Biodiversity Conservation Act 2016* (NSW) ('the Act') means that it is well placed to gather supply side information (e.g. by assisting landholders in entering into BSAs).
- The BCT can balance the competing objectives of development and biodiversity:
 - As an independent body, the BCT is incentivised to not compromise on biodiversity outcomes; decision-making that affects individual developers is best done at arm's length from government.
 - Balance between independence and government oversight is still achieved as the Minister appoints members of the Board for five year terms and retains the right to terminate appointment. Further, the Minister has power to direct the BCT if necessary.
- Balance is ensured by the mandate that developer charges levied by the BCT reconcile over time with prices ultimately paid by the BCT in acquitting their obligations.

Recommendation 3

- a. The BCT should be responsible for determining appropriate developer charges.
- b. The BCT should share information with the Department about:
 - BCT aggregate operating results
 - The value of contributions into the BCF, cost of acquittals, and related credit types
 - BCF administrative costs
 - The sources used for developing cost estimates for developer charges

Timeframe for providing developer charge estimates

- Developers benefit from the immediate availability of credit price estimates under the BOPC. The proposed approach will require a higher degree of judgment than the current BOPC approach. Changes to the method of determining developer charges should ensure that developers can be quoted a credit price within a reasonable period.
- The BCT could maintain estimates of all potential credit prices to enable instant quoting. This approach would be very resource intensive, would require estimation of credit prices that may never be traded and would risk market soundings being out of date at the time of quoting.
- The BCT should have sufficient time to provide an appropriate estimate. The BCT should maintain an econometric model, landscape-specific bottom-up cost models and should augment this with market soundings at the time required to provide a quote.
- We believe that the BCT should provide a quote within 30 days. This balances the need for providing developers timely information about charges and adequate time to complete the estimate. That said, there should be room for flexibility in exceptional circumstances where estimated pricing is more challenging.

Recommendation 4

- a. The BCT should be required to provide developers with a quote within 30 days.
- b. There should be a clause that allows the BCT to extend this timeframe in extraordinary circumstances, subject to approval by the CEO of the BCT.

Timeframe for acquittal of obligations

- The BCT currently aims to acquit BCF obligations within 2 years. This is not a legislative requirement; it has been determined by the BCT.
- We have been advised that BSAs can take up to three years to create. We also note that there may be longer lags from landholders first considering entering a BSA to completion.
- Allowing the BCT a longer timeframe to acquit credits would allow certain credits, which do not currently exist, to be created as supply matures. This would also be facilitated by the BCT publishing the credits it is seeking to acquire.
- This would increase the likelihood that the BCT could acquit obligations through like-for-like credit purchases.
- That said, allowing a longer time for acquittal may weaken accountability by delaying transparency over whether the BCT's calculated charges reflect the prices at which they eventually acquire credits. On balance, this is a reasonable trade-off for allowing market development by signalling to the market the demand for certain credits.

Recommendation 5

The BCT should revise their own goal of acquitting obligations within two years and allow obligations to be acquitted over a period of up to five years.

Publication of developer charges and the price of credit purchases by the BCT

- There is a tension between providing transparency of the BCT's actions and ensuring that that information from the BCT does not inappropriately influence market outcomes.
- The current model influences the market by anchoring expectations about the future price of credits. This problem has been exacerbated by the volatility of prices generated by the BOPC.
- The revised methodology for determining developer charges should reduce volatility but may continue to anchor expectations.
- We recommend that developer charges not be published until the BCT has purchased credits to match the obligation.

Recommendation 6

The BCT should publish developer charges at the time of acquittal.

1 Introduction

1.1 Context

1.1.1 Background of the Scheme

The NSW Biodiversity Offsets Scheme ('the Scheme') is established under the *Biodiversity Conservation Act 2016* (NSW) ('the Act'). The Act was introduced following an independent review of biodiversity legislation in NSW.¹ The Review Panel was encouraged to find ways to encourage economic development without devaluing the environment and biodiversity. The Panel recommended broader and deeper application of offsetting through more standardised, transparent and flexible methods for managing biodiversity in land use planning and development approval processes.

The Act establishes a framework to 'avoid', 'minimise', and 'offset' impacts on biodiversity from development and clearing and ensure land that is used to offset impacts is secured in perpetuity. It establishes a market-based approach for doing so, with flexible options for developers and strategic oversight by Government.

Scheme objectives are discussed in more detail in Section 2.

1.1.2 Key aspects of the Scheme

Key components of the Scheme include the:

- **Biodiversity Stewardship Agreements** (BSAs), which are voluntary in perpetuity agreements entered into by landholders to secure offset sites.
- **Biodiversity Stewardships Payments Fund** (BSPF), which hold the funds set aside to be used to make annual stewardship payments to holders of BSAs.
- **Biodiversity Conservation Fund** (BCF), which holds payments from developers that choose to make a payment into the BCF as an alternative to purchasing and retiring biodiversity credits to meet their project obligations.

The **Biodiversity Conservation Trust** (BCT) is an independent entity established under the Act with a Board appointed by the Minister. The object of the BCT is to protect and enhance biodiversity, including by "seeking strategic biodiversity offset outcomes to compensate for the loss of biodiversity due to development and other activities".

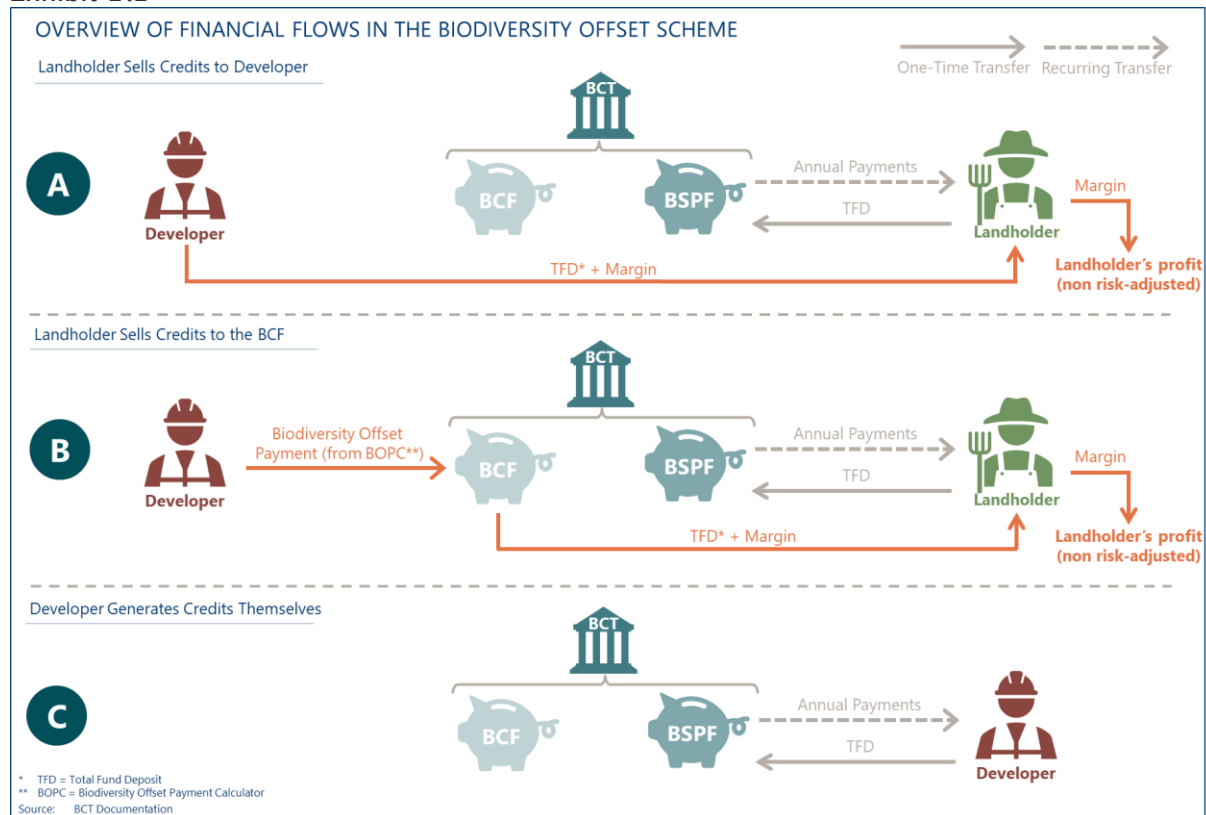
Where developers undertake development or clearing that generates a credit obligation, they have three options (Exhibit 1.1):

- A. Purchase 'like for like' credits in the market (from a landholder or via a broker).
- B. Generate credits themselves by finding and establishing an offset site.

¹ Independent Biodiversity Legislation Review Panel, *A review of biodiversity legislation in NSW* (2014)

- C. Use the Biodiversity Offsets Payment Calculator (BOPC) to determine the cost of the credit obligation and transfer this amount to the BCF (the BCT is then responsible for identifying and securing the offset obligation).

Exhibit 1.1



The BCT plays a critical role in the functioning of the Scheme by:

- **Managing funds on behalf of landholders via the BSPF:** As an independent expert body, it helps provide landholders with confidence that payments can be managed in perpetuity and the community with greater confidence that conservation outcomes are maintained.
- **Retiring credits on behalf of developers that have paid into the BCF:** As an independent body, the BCT provides stakeholders with confidence that developer obligations will be satisfied and that decisions regarding acquittals are made at arm's length from day-to-day government decision making. It also has the benefits of:
 - Providing developers with a mechanism to satisfy their offset obligation when relevant credits are unavailable in the private market.
 - Allowing a more strategic approach to investment in offsets by taking on requirements from multiple developers.

1.1.3 Key issues

Two key issues have a significant impact on the operation of the scheme:

- **BSA discount rate:** The Total Fund Deposit (TFD) formula determines the payment required into the BSPF. The formula uses the BSA discount rate to calculate the present value of management costs in perpetuity. The discount rate is currently set by the Department. If the discount rate is too high, there is a risk that the BCT may not be able to cover future management costs. Conversely, if the discount rate is too low, funds will

unnecessarily build up in the BSPF. Additionally, a low discount rate will increase the TFD amount, potentially impacting credit prices and landholder margins.

- **BOPC:** The Department has developed the calculator which prices developer payments (charges) under Option B in Exhibit 1.1. This is an econometric model that uses historical transaction data to estimate likely future credit prices. If developer payments are insufficient, the BCT may not have sufficient funds in the BCF to acquit the obligations accepted from developers.

Additional information about Scheme participants and governance is outlined in more detail in Section 2.

1.2 Scope and oversight of the Review

The Department of Planning, Industry and Environment ('the Department') in collaboration with the BCT engaged EY Port Jackson Partners to help assess the operation of the BOPC.

Key questions regarding the operation of the BOPC addressed in this Report include:

1. Does the application of the BOPC model make sufficiently robust and unbiased estimates of future credit prices to ensure a sustainable basis for the operation of the BCT?
2. How does the application of the BOPC model influence the dynamics of the market for biodiversity credits?

We also considered ways in which the operation of, and inputs to, the BOPC model could be improved to ensure the long-term sustainability of the BCT, including appropriate governance arrangements.

The Review was overseen by a **Steering Committee** comprised of:

- Paul Grimes, Coordinator-General, Environment, Energy and Science, DPIE
- Kate Wilson, Deputy Secretary, Policy, Strategy and Science, DPIE
- Paul Elton, Chief Executive Officer, BCT
- Duncan McGregor, Member, BCT Board

In developing the recommendations, we also conducted interviews with the Department and the BCT.

The review team did not engage directly with external stakeholders given the timeframe of the review. We believe there would be merit in consulting with external stakeholders as part of any implementation process.

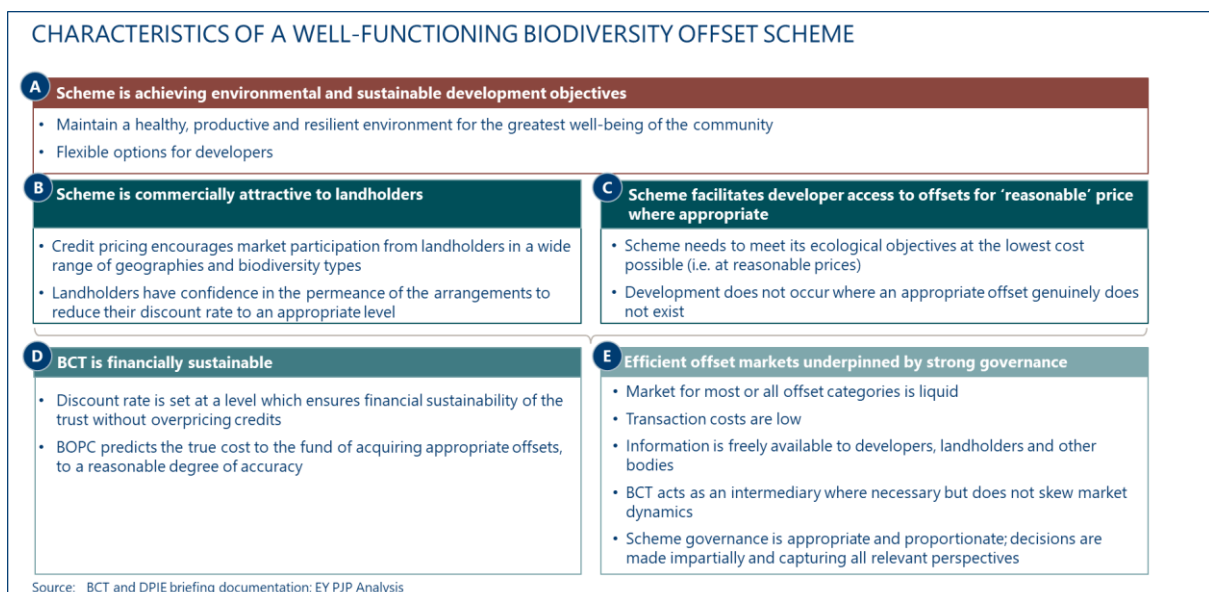
2 Objectives of the Scheme

2.1 Characteristics of a well-functioning Scheme

The Scheme needs to carefully balance multiple objectives to be successful. This section outlines our understanding of the characteristics of a well-functioning Scheme (Exhibit 2.1).

Recommended changes to the BOPC operate within the context of these broader objectives and Scheme characteristics.

Exhibit 2.1



The highest order objectives are the Scheme’s **environmental and sustainable development objectives**. These are both explicitly and implicitly captured in relevant legislation and related instruments that help guide the balance between biodiversity conservation and development.

The Scheme is a ‘market-based’ approach to delivering on these higher order objectives. As noted in Section 1, the offset scheme sits within an ‘avoid’, ‘minimise’, and ‘offset’ framework.

Throughout this report, and in many discussions of the Scheme, market language is used. We note that creating markets for offsets is not the primary policy objective, we also note that the “markets” are underdeveloped and for many credit classes this is likely to be a long term phenomenon. We believe that policy makers should be cautious about using a full market analogy in the context of an administratively created set of obligations and mechanisms to meet these obligations that are designed to ensure biodiversity outcomes at reasonable cost. We note that even in the case of carbon offsets, where there is a homogeneous credit type, market development has taken some time. In this context the “market” is really about facilitating a decentralised mechanism to allow matching of credit obligations with credit supply to ensure environmental outcomes at lower cost than would be possible if the two parts of the market could not be decoupled.

For a market-based approach to succeed, the Scheme should:

- **Be commercially attractive to landholders:** To ensure the market has adequate depth, credit pricing needs to:

- Encourage participation from landholders across a range of geographies and biodiversity types.
- Provide landholders with confidence in the permeance of the arrangements to reduce their discount rate to an appropriate level.
- **Facilitate access to offsets for developers at 'reasonable' prices (where appropriate):** The Scheme needs to meet its ecological objectives at the lowest cost possible (i.e. at reasonable prices). Credit prices should reflect the amount required to bring the credit into existence, with a reasonable rate of return for landholders. In some cases, 'reasonable' costs may be high because the costs of meeting the ecological objectives are high. Development does not occur where it genuinely not possible to adequately offset the environmental at affordable price.

At its foundation, a well-functioning Scheme needs:

- **Effective offset markets, underpinned by strong governance:** This captures issues such as liquidity, transaction costs, information access and the right balance of decision rights in the system.
- **A financially sustainable BCT:** Under the current framework, the BCT is playing the key roles of market intermediary and fund manager. By playing these roles, the BCT provides credibility that landholder management obligations will be funded (for all offsets) and assurance that developer obligations will be met (where developers pay into the BCF). In order to perform its current functions for the Scheme, the BCT must be financially sustainable.

These characteristics are discussed in more detail in the rest of this section.

2.2 Environmental and sustainable development objectives

The Scheme is established under the Act. The purpose of the Act is to:

...maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development.

"Ecologically sustainable development" is described in the *Protection of the Environment Administration Act 1991* (NSW) as requiring the "integration of social, economic and environmental considerations in decision making processes". This is achieved through the implementation of several legislated principles, including:

- **The precautionary principle:** A mere lack of certainty over threats of serious or irreversible environmental damage should not be used as a reason for postponing measures to prevent environmental degradation.
- **Inter-generational equity:** The present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.
- **Conservation of biological diversity and ecological integrity:** Conservation of biological diversity and ecological integrity should be a fundamental consideration in both public and private decisions.
- **Improved valuation, pricing and incentive mechanisms:** Environmental factors should be included in the valuation of assets and services, through measures such as "polluter pays", consideration of the full environmental lifecycle of a good or service, and incentive structures within markets.

The Scheme is designed to support an overarching strategic approach to conserving biodiversity at a bioregional and State scale.²

It aims to deliver a “pragmatic and achievable” approach to balancing economic, social and environmental outcomes through “a market-based system ... for avoiding, minimising, measuring and offsetting the biodiversity impacts of development with flexible options for developers and strategic oversight by government”.³ Upon its introduction, the then-Minister for Environment noted:

Because this is a pragmatic scheme, serious and irreversible impacts will not automatically halt State significant development and State significant infrastructure. This acknowledges that sometimes the social or economic benefits of major projects may outweigh the environmental impact.⁴

2.3 Sustainability for the BCT, landholders and developers

The commercial position, key considerations and incentives of major participants in the Scheme vary significantly. However, the Scheme will not function unless minimum thresholds for these participants are met (Exhibit 2.2).

Exhibit 2.2

CONSIDERATIONS FOR PARTICIPANTS WITHIN THE BIODIVERSITY OFFSET SCHEME			
KEY STAKEHOLDER	CREDIT PRICE COMPONENTS		KEY CONSIDERATIONS
Considerations for the BCT	}	Total Fund Deposit Present value of future land management payments	<ul style="list-style-type: none"> Investment returns CPI Management costs <ul style="list-style-type: none"> Risk of miscalculating returns and CPI (adequacy margin)
		Establishment Costs Transaction costs from entering into a BSA	<ul style="list-style-type: none"> Assessment costs Legal advice <ul style="list-style-type: none"> Accounting/financial advice
Considerations for landholders	} +	Opportunity Cost Forgone future income from alternative uses of the land	<ul style="list-style-type: none"> Current land use Land value <ul style="list-style-type: none"> Likely future profits
		Landholder's margin Covers landholder risks and pure profits	<ul style="list-style-type: none"> Risk of miscalculating land management expenses Risk of BCT ceasing/pausing payments
Considerations for intermediaries	} +	Intermediary's margin Covers intermediary's share of the overall margin	<ul style="list-style-type: none"> Costs of assessing and acquiring credits from landholders Risk of failing to sell credits at an appropriate price Transaction costs
Considerations for developers	} =	Credit Price Low enough to ensure projects are financially viable (where appropriate)	<ul style="list-style-type: none"> Project costs and risks Credit availability <ul style="list-style-type: none"> Credit transaction costs Project revenue

Source: BCT Documentation

Landholders will need enough financial incentive to participate in the Scheme. This means that landholder *margins* must cover:

- **Establishment costs:** This includes the BCT application fee, costs incurred in preparing an expression of interest (if applicable), costs of site assessment by an accredited assessor and other consultant fees as well as legal, taxation and interest costs. This may also include costs where there is a time lag between establishing the site and selling the necessary amount of credits.

² *Biodiversity Conservation Bill 2016 (NSW)*, Second Reading, Legislative Assembly, 16 November 2016

³ *Biodiversity Conservation Bill 2016 (NSW)*, Second Reading, Legislative Council, 9 November 2016

⁴ *Biodiversity Conservation Bill 2016 (NSW)*, Second Reading, Legislative Assembly, 16 November 2016

- **Opportunity costs:** Cost of alternate uses of the site. This could be the market value of the land, or the value associated with other uses of the land (e.g. agricultural uses) that the landowner is precluded from doing as a result of the BSA. The market value of land/the landholders' income from alternate use will have applied to it a discount rate assumption which is different to the assumption used for BSAs, reflecting the landholders' cost of capital and risk adjustments.
- **Risks to landholders:** These may include the risks of:
 - **Miscalculating land management expenses:** It may be difficult to reliably estimate in perpetuity management costs. The landholder will have to factor in the risk of miscalculating the land management expense (for the purpose of the TFD) and the associated shortfall of annual payments.
 - **The BCT ceasing/pausing agreed stewardship payments:** The landholder will have to factor in the risk that the BCT may cease/pause payments if their BSA account is in deficit (e.g. below the 80%)

A lower BSA discount rate can provide landholders with greater certainty that they will continue to receive agreed annual payments. However, increased TFDs (resulting from a lower discount rate) may reduce the allowance in credit prices for landholders' opportunity costs and margins. In general, when faced with a trade-off, landholders are likely to prefer a higher up-front margin over increased certainty in BCT stewardship payments as there are mechanisms that may allow management activity to be suspended if TFD funds are inadequate.

Developer participation in the Scheme is largely driven by development activity across NSW. Offsets are likely to represent only a small proportion of development costs (although they will represent a higher proportion of their margin). From the perspective of developers, it is desirable that:

- There is depth in the market to source credits that satisfy their obligation.
- Credit prices are capable of being absorbed in developer margins.
- The time and effort required to source offsets does not *unnecessarily* delay or impede development projects.

The BCT has been tasked with the role of fund manager and market intermediary. Giving this role to an independent government entity:

- Increases confidence that landholders will have access to annual payments in perpetuity and that conservation outcomes will be enduring (when landholders pay into the BSPF).
- Provides greater certainty that offset obligations will be met (when developers pay into the BCF).

For the BCT to play this role as intended it needs to be financially sustainable, that is, it can meet its liabilities and cover its administrative costs over the long-term. This expectation is consistent with the Government's financial management objectives, which highlight the importance of effective financial and asset management, responsible spending and intergenerational equity.⁵

In addition to the BCT, landholders and developers, **third-party intermediaries** could provide capital or expertise to help establish offset sites, and work with landholders and developers to source and pool offsets and better manage risk. Interviews have revealed that there is evidence of a small number of accredited assessors playing a "market making" role by

⁵ *Fiscal Responsibility Act 2012* (NSW)

coordinating the creation of BSAs for landholders for a fee. However, there is nothing to suggest that this will occur on an institutional scale soon.

2.4 Efficient offset markets underpinned by strong governance

A specific purpose of the Act is to establish “market-based conservation mechanisms through which the biodiversity impacts of development and land use change can be offset at landscape and site scales.”

Offsets are a financial instrument that can theoretically achieve environmental and development objectives more flexibly and at lower cost than, for example, traditional regulatory approaches.⁶ It achieves this by allowing preservation of biodiversity in a different geographical location and by a different landholder. It decouples the activity of development from the activity of biodiversity conservation, significantly expanding the range of alternatives to meet the biodiversity or ecological objective.

Efficient markets generally require:⁷

- **Liquidity:** Buying and selling credits is easy (transactions costs are low, buyers and sellers are easily matched).
- **Appropriate allocation of risk:** Risks and costs for decisions are allocated to the participants best placed to manage them.
- **Competition and contestability:** No/limited barriers to entry and exit as well as no/limited information asymmetry.
- **Enduring rules:** Market rules are stable enough to provide participants with sufficient confidence to participate.

There are some significant challenges to having an efficient offset market given the heterogeneity of the credits. Heterogeneity significantly impedes liquidity and complicates price discovery. In the majority of trading groups, liquidity is not thin - it is non-existent. Further, the scheme relies heavily on government input, through the BCF, the BSPF and TFD discount rate, and the broader rules of engagement. In some instances, the “market” for offset credits are not markets in the true sense, especially for trading groups with no trades to date. Consequently, it may be necessary for decision makers to take a close role in market management than would be acceptable in a more mature, efficient market.

Decision making under the Scheme is split between the Minister, the Department, the BCT and other system participants including assessors, landowners and developers. To deliver an effective market-based mechanism, the system needs to be underpinned by strong governance arrangements. This means that decision rights in the system are carefully located to balance incentives and capabilities, and adhere to the following principles:⁸

- **Role and responsibilities are clear (clarity):** Roles are clearly defined in terms of objectives, functions and co-ordination with other entities.

⁶ OECD, *Working Party on Biodiversity, Water and Ecosystems, Biodiversity Offsets: Effective Design and Implementation* (2013)

⁷ See for example, commentary in Centre for Market Design, *NSW Biodiversity Offset Scheme: Market design scoping paper* or Energy Security Board, *Post 2025 Market Design Issues Paper* (2019)

⁸ These themes arise in a range of sources including OECD, *Best Practice Principles on the Governance of Regulators* (2014); NSW Premier and Cabinet, *NSW Public Sector Governance Framework* (2013); Australian Public Service Commission, *Building Better Governance*, 2007 (archived)

- **Decision makers are objective and impartial (conflicts):** Decisions that involve reconciling competing or conflicting functions should be made by impartial decision makers - if trade-offs must be internalised, then additional transparency should be embedded.
- **Decision makers are expert (capability):** Decisions are made by those with the greatest expertise and insight into the primary factors that inform the decision.
- **Decision makers are accountable, and decisions are transparent (consequences):** There are clear procedures in place for making decisions, those that make decisions are answerable to those decisions and there are meaningful mechanisms in place to ensure compliance with rules.

3 Biodiversity Offset Payment Calculator

3.1 The need for a system to determine developer charges

3.1.1 Issue & Alternatives

Developers have three available methods to satisfy their offset obligations. They may:

- Purchase credits from a landholder either in the private market or through a bilateral agreement.
- Enter a Biodiversity Stewardship Agreement (BSA) to generate the necessary credits themselves.
- Make a payment into the Biodiversity Conservation Fund (BCF), transferring their credit obligation to the BCT.

Section 6.32 of the Act states that the Minister “is to establish an offsets payment calculator for the purpose of determining the amount that may be paid into the [BCF]”. This current calculator is the Biodiversity Offset Payment Calculator (BOPC).

The Act specifies that the calculator may include provision for:

- (a) the adoption of datasets and other information or rules published from time to time by the [BCT] or other specified person or body, and*
- (b) the use of specified computer programs and databases for determining the amount to be paid by the application of the calculator, and*
- (c) cost recovery by the BCT in connection with securing biodiversity offsets (including risk management costs).*

It is important to define the exact purpose of the funds accepted by the BCT. The amount developers are charged may have two subtly different purposes:

1. The amount required for the BCT to acquit the obligation using available variation rules.
2. The amount required for the BCT to achieve a true “like-for-like” acquittal of the obligation.

As noted above, the amount may also include a margin for administration and risk management cost recovery.

The difference between what a developer is charged and the price that the BCT pays in acquitting the obligation is the determinant of the BCF’s solvency. As at August 2020, the BCT has spent approximately \$3.04 million acquitting obligations for approximately \$3.50 million of developer charges - an operating profit of approximately \$460,000. However, on obligations it is yet to acquit, the BCT expects to pay over \$10 million more than what it has received in developer charges.⁹

⁹ BCT Offset Obligations Data

3.1.2 Analysis & Evidence

3.1.2.1 The charge should include the cost of acquiring like-for-like credits

The higher order biodiversity conservation objectives of the Scheme are best achieved when obligations are acquitted in a like-for-like manner. Like-for-like refers to credits of the same threatened ecological community in the same or adjoining IBRA subregion, or, in the case of non-threatened communities, of the same vegetation class and percentage of land cleared. Like-for-like species credits refer to the same threatened species.

Limited variation rules are available to developers that allow them to acquit their offset obligation with different credits of a higher threatened status. These variation rules may only be employed after demonstrating that they have taken reasonable steps¹⁰ to acquire like-for-like credits.

The BCT has access to more flexible variation rules. It may acquit credit obligations by funding conservation actions or acquiring a much wider range of credits. Such variations could be employed by the BCT when it is unable to find or afford like-for-like credits. Pursuing these options, while useful when like-for-like acquittal is genuinely impractical, may reflect a compromise on biodiversity outcomes.

Accordingly, the developer charge should include the funds necessary for the BCT to acquire like-for-like credits. If the BCT were to regularly fail to procure like-for-like credits due to funding shortfalls, making a payment into the BCF could become an avenue for developers to access the variation rules only available to the BCT, resulting in the Scheme failing to achieve its biodiversity objectives.

3.1.2.2 The charge should include a margin for risk and incentivising private transactions

Regardless of the method of calculating developer charges, there is unavoidable uncertainty in estimating future prices of offset credits. As such, a risk margin is necessary. The current BOPC methodology incorporates a risk margin that reflects the statistical certainty of the prediction of a credit's price. To protect the BCT's ability to consistently achieve biodiversity outcomes in a financially viable way, a risk margin on top of the predicted credit price should continue to be included.

There are administrative costs of the work required by the BCT to acquit a developer's obligation. These may include the labour costs of sourcing and securing credits or the marketing costs of inducing the creation of new credits. A small (4%) fee is currently levied by the BCT and added to a developer's charge. Such an admin fee, which should reflect the actual administration costs to the BCT, is necessary to prevent admin costs from eroding the funds available for achieving like-for-like acquittal.

A beneficial by-product of this margin that accounts for risk and admin costs also makes the option of paying into the BCF more expensive for developers than purchasing credits on the private market, subsequently incentivising private transactions where possible.

¹⁰ "Reasonable Steps" are defined in the *Ancillary rules: Reasonable steps to seek like-for-like biodiversity credits for the purpose of applying the variation rules*, published under clause 6.5 of the *Biodiversity Conservation Regulation 2017*

3.1.3 Findings & Recommendations

- The Scheme is primarily designed to work by developers acquiring credits either directly through their own actions, or through the private market. The Scheme also allows developers to discharge their biodiversity obligations by paying a charge into the BCF.
- This charge should reflect the expected cost to the BCT of securing like-for-like credits. If this cost is persistently underestimated, the BCT may have to employ variation rules more often than is desirable for achieving biodiversity outcomes. The charge should cover:
 - The likely cost to the BCT of acquitting its obligation with a like-for-like purchase.
 - A modest margin to account for risk and to ensure developers are incentivised to purchase credits directly through the private market where possible.

Recommendation 1

The responsible entity should calculate a developer charge that reflects a reasonable estimate of the cost to the BCT of acquitting the obligation in a like-for-like manner with a modest margin to account for risk and to encourage developers to directly acquire credits

3.2 Methodology of determining developer charges

3.2.1 Issue & Alternatives

Calculating the correct developer charge requires an estimate of the cost at which the BCT can acquire like-for-like credits. We believe that the methodology underlying this should address:

- The heterogeneous nature of the market for offset credits and its lack of depth.
- The desirability of some price stability for developer charges, due to:
 - Price signals that developer charges send to the market, affecting developer and landholder confidence in the Scheme.
 - The BCT's need for confidence that the solvency outcome of accepting an obligation is not time dependant.
- The actual cost to landholders of bringing credits into existence, including management, opportunity costs, establishment costs, and expectations of surplus margins.
- The possibility of gaining direct market knowledge given the few market participants.

There are three methods that can be used to determine developer charges:

1. **An econometric model** that uses historical prices and an underlying economic model to predict future credit prices. Currently, this is the method provided by BOPC V2, which was introduced in November 2019.

BOPC V2 assumes that the market for offset credits behaves according to the cobweb model. It predicts the price per credit for an Offset Trading Group (OTG) from the weighted average of previous prices for that OTG, adjusted for any changes in the discount rate. Coefficients that account for market momentum, perceived supply and demand, and other factors are applied to this weighted average. If no trades have occurred in that OTG, the future credit price is predicted from historical trades in similar OTGs, according to a set of Offset Price Rules. A statistical measure of uncertainty is generated and is added as a risk margin to the estimated credit price, along with an admin fee of 4%.

2. **A bottom-up cost estimate method** that takes estimated site management costs, BSA establishment costs, opportunity cost of land, and landholder surplus profit expectations into account to make reasonable credit price estimates.
3. **Market soundings** to determine expected cost of acquiring credits. Sources of information may be existing BSA holders, landholders with potential to generate credits, and accredited assessors. This method is feasible due to the small number of market participants.

3.2.2 Analysis & Evidence

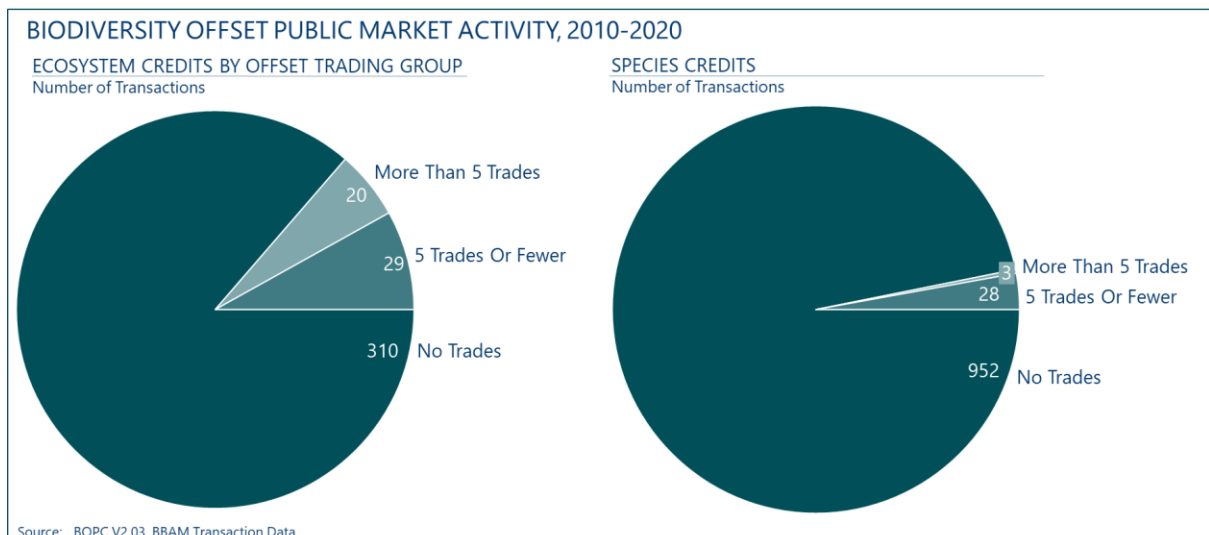
3.2.2.1 Many heterogeneous credit classes make it difficult to estimate credit prices

The nature of the Biodiversity Offsets Scheme, particularly the large number of heterogeneous credit classes, makes it genuinely difficult to establish reliable estimates of likely credit prices. This is true for all credit classes, but especially the credits that are often purchased by the BCT to meet developer obligations due to the absence of a liquid private market.

The Scheme consists of many potential credit classes

The Scheme consists of a high number of distinct credit classes with few and infrequent transactions. There are 359 different OTGs for ecosystem credits and 983 different species credits. 88% of ecosystem OTGs and 97% of species credits have never been traded, shown in Exhibit 3.1.

Exhibit 3.1



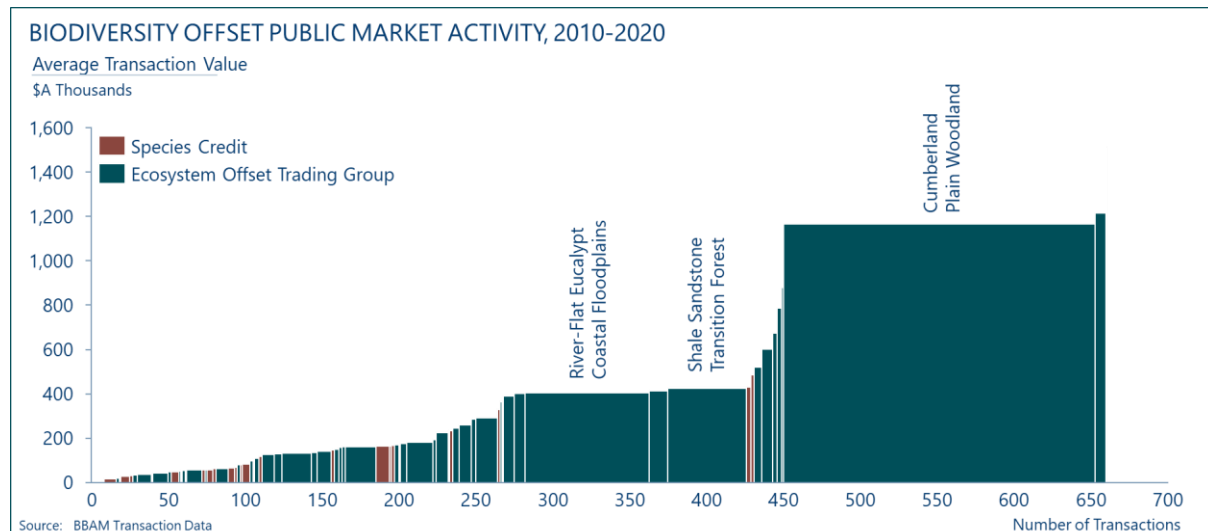
Lack of historical transaction data increases the difficulty of determining future prices. It is challenging for an econometric model to reliably predict future prices of credits for which historical transaction data does not exist. The cost of acquiring completely new or rarely traded credits may be more accurately estimated through a cost-structure model or consultation with market experts.

Market activity is dominated by a small number of trading groups with relatively high trade volume (Exhibit 3.2). An econometric model generally becomes more reliably accurate with more historical transaction data on which it can base its predictions. Accordingly, an

econometric approach may be a more appropriate method of estimating future market prices in relatively liquid, data-rich markets like these.

That said, even in these circumstances we should be cautious if the observed market prices do not represent arms-length prices. Recorded prices for related-party transactions may not be representative of the cost of acquiring credits.

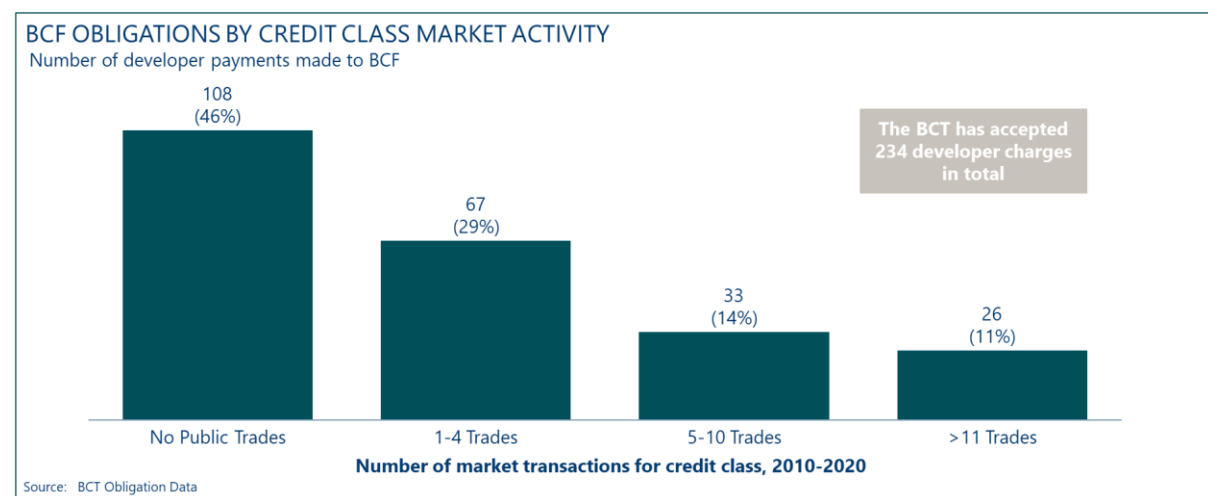
Exhibit 3.2



BCT tends to accept developer charges for credit classes with few or no transactions

The BCT provides an avenue for development to continue when the credits required by developers are not available on the private market. This mostly occurs with credits that have few or no past trades. Exhibit 3.3 shows that 46% of payments into the BCF are associated with credit classes with no market transactions. Due to the frequency with which the BCT relies on BOPC calculations for rarely traded credit classes, it is essential that the BOPC can predict costs to the BCT without any historical trades for that credit class.

Exhibit 3.3



Historical data must be treated with caution

The lack of depth in trading for all but a few credit classes, as demonstrated above, suggests that relevant historical data is unavailable or needs to be treated with extreme caution when estimating future credit prices.

- There is evidence that a non-trivial share of transactions since 2010 have been “non-market” trades, that is, trades in which the sale price per credit does not reflect a margin above the TFD that would reasonably cover landholder opportunity or establishment costs, or in some cases a price well below the TFD. This may occur, for example, when the developer and landholder are related entities, or when the landholder is an altruistic actor with no profit incentives. These credit prices are not realistic indicators of future credit prices and must be treated accordingly.
- Similarly, historical transaction data for species credits often does not reflect the cost the BCT will incur when acquiring such credits, due to the nature in which they are generated. Species credits can be generated by a landholder on top of ecosystem credits, with no extra management costs. As such, they are often sold by landholders to developers at nominal prices as an “add-on” to the ecosystem credits they are purchasing.
- Thin markets and the wide regionalisation of OTGs means that the weighted average price for an OTG may be easily affected by limited transactions in disparate parts of the state. As an example, development activity associated with the Princes Highway in NSW required the purchase of River Flat Eucalypt credits from landholders in Northern NSW, resulting in the BOPC charge for these credits in Western Sydney to be priced far below the market price.¹¹

3.2.2.2 An econometric model cannot be used as the sole determinant of developer charges

We note the econometric model currently being used to price ecosystem credit has been found to be methodologically sound by two technical reviews, conducted by Applied Economics in 2018¹² and by Dr Roselyne Joyeux in 2019.¹³ We do not support its use as the sole determinant of developer charges, given the quality and quantity of available data. Given the limitations of the input data, we recommend much greater reliance on alternate price estimation methods.

BOPC V2 is methodologically sound

Two technical reviews of the BOPC V2 methodology for ecosystem credits have been conducted: one in 2018 by Applied Economics, and one in 2019 by Dr Roselyne Joyeux. Both concluded that the economic and econometric models that underpin the BOPC V2 methodology have been developed appropriately. Findings included:

- The cobweb model provides a versatile framework to derive a dynamic economic model for credit prices. It is as relevant to the new Biodiversity Assessment Method (BAM) as it was to the BioBanking Assessment Method (BBAM) for which it was originally intended.
- The theoretical econometric models are appropriate and “state of the art” given the economic model, data constraints, and the panel data structure of OTGs.

¹¹ BCT, *Technical review of the BOPC - BCT key issues* (August 2020)

¹² Applied Economics, *Review of the Economic and Econometric models that underpin the ecosystem pricing model of the Biodiversity Offsets Payment Calculator (BOPC), and analysis of the impact of a monopolistic competition scheme* (2018)

¹³ Roselyne Joyeux, *Review of the Economic and Econometric models that underpin the Biodiversity Offsets Payment Calculator -BTD* (2019)

- Models have been estimated with the utmost care. Econometric estimates have been conducted using the best software and the most appropriate estimation specifications.
- Results are intuitive and statistically significant despite issues with insufficient data.
- Dynamic Panel Data models are the best models for the current state of the market.

These findings conclude that the current BOPC is sound as an econometric model. They do not address whether an econometric model is an appropriate tool for a scheme such as the BOS.

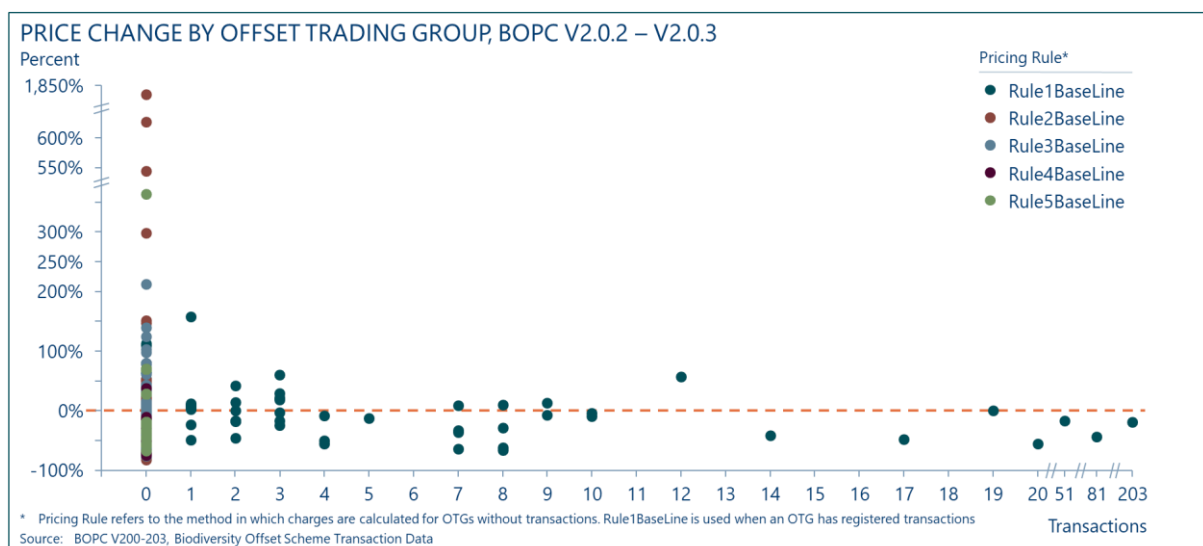
Developer charges are volatile between BOPC updates

The current model is updated quarterly to account for new data from transactions that occurred since the previous update, as well as evolving macroeconomic factors. Transactions for one OTG may affect the price of many other OTGs in the BOPC.

When predicting prices of credits with little prior transaction data, the current methodology uses price data from similar OTGs, using the dynamic panel data model to “[learn] an individual’s behaviour by observing the behaviour of others.”¹⁴ It uses this data according to a set of pricing rules, which broadly follow the variation rules available to the BCT, to determine which trades can be used for which OTGs. In Exhibit 3.4, “Rule1BaseLine” refers to OTGs that are priced based on their own transactions, and the subsequent rules are those that use trades in increasingly different OTGs to make price predictions.

Currently, charges calculated by the model are significantly volatile between updates. Charges for OTGs with no transactions often vary by over 50% and some by over 500% (Exhibit 3.4). Irrespective of the accuracy of these predictions, the instability in the price sends confusing signals to the market and creates a timing hazard for the BCT and developers around when charges are determined. We note that there is significant improvement in price stability for OTGs with more market transactions. This supports the hypothesis that an econometric model may be more appropriate in data-rich markets with trades conducted at arms-length.

Exhibit 3.4

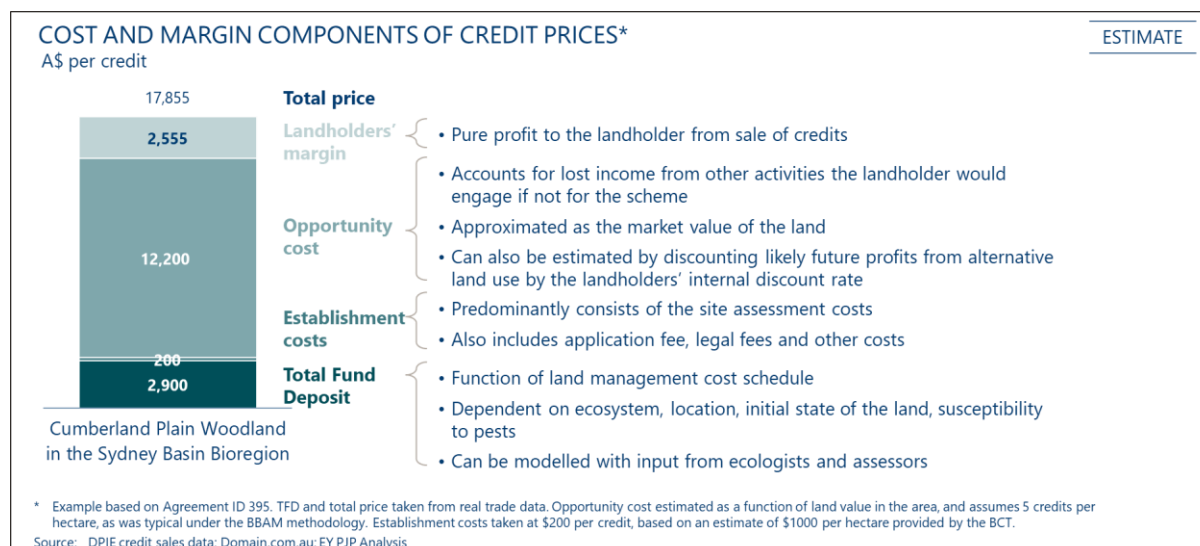


¹⁴ DPIE, *Biodiversity Offsets Payment Calculator - BTD Methodology Note* (October 2019)

3.2.2.3 Bottom-up cost estimates can complement an econometric model

A cost structure method offers an alternative to the econometric model, estimating the various costs associated with the production of offset credits to estimate the total credit price that the BCT could expect to pay. Such a method would need to predict a landholder's TFD, establishment costs, opportunity costs, and surplus margin, as illustrated in Exhibit 3.5.

Exhibit 3.5



For a given offset, the TFD can be estimated based on a combination of top-down and bottom-up data. Top-down data includes historical information on TFDs for the same or similar trading group. Bottom-up data could include information about the regions where the relevant plant communities are typically found, ecological data specific to these regions, and the predicted initial state of land. Input from ecologists, assessors, and landholders will be critical to successfully modelling these factors.

Scheme **establishment costs** consist of site assessment costs, application fees, legal advice, and other minor expenses. Though these costs vary from landholder to landholder, there is a degree of uniformity, particularly amongst application fees and site assessment costs. Input from site assessors and the landholders will be important to successfully estimating these costs.

The **opportunity cost** to a landholder consists of the likely future cash flows that would have been earned by the landholder from the alternative use of the land, discounted by the landholder's internal discount rate. For example, an area of a farm may earn profits of \$100,000 per year, and the landholder's discount rate might be 5%. The opportunity cost of converting this land to biodiversity credits is therefore $\$100,000 \div 5\%$ or \$2,000,000.

In practice, it can be difficult to estimate a landholder's internal discount rate, and the likely future profitability of their land. The market value of the land, however, provides a reasonable proxy for the opportunity cost, since this value implicitly accounts for the future cash flows that the land could generate. In estimating opportunity cost for the cost-structure credit pricing model, input from landholders and brokers with deep knowledge in the sector will be helpful.

The landholder's **surplus margin** is difficult to estimate. In theory, a landholder will be incentivised to bring credits into existence whenever the market price covers the previous three elements: TFD, establishment costs, and opportunity costs. While the market is still

developing, however, and landholders are either unaware of the scheme or unsure of its benefits, this additional margin may be required. This surplus margin may also be considered as the landholder's risk margin, accounting for the risks of incorrectly calculated management and opportunity costs, halted payments by the BCT, assessors and landholders should be consulted in order to understand this further.

Bottom-up cost estimates may also help resolve objections raised by stakeholders when the current econometric pricing calculator returns counterintuitive or nonsensical credit prices. These include concerns raised by the BCT about the under-pricing of credits for Threatened Ecological Communities compared to their non-threatened counterparts.

3.2.2.4 Market soundings may be used to improve estimates of likely credit prices

In addition to the outputs of the econometric model and bottom-up cost estimates, market soundings could be used as an input to the determination of developer charges.

Interviewing existing suppliers would be a reasonable step in gathering price information. The current supply for each credit class, where existent, is limited to a relatively small number of agreements. Currently, there are only 182 active BioBanking Agreements¹⁵ in total. As such, it would not be prohibitively time intensive to interview the landholders that hold certain credits.

Engaging potential suppliers would be another option in gathering information about the likely cost of procuring credits. Landholders with the potential to generate credits of a certain class are identifiable using the attributes of the credit class. Geographic location, vegetation attributes, and the extent of clearing can all be used to locate these landholders. Engaging such landholders may yield information about, and help develop, future supply of the required credits.

Consulting market experts could refine the determination of the likely cost of generating credits and reveal information about the future supply of credits. The accredited assessors that apply the Biodiversity Assessment Method to potential Biodiversity Stewardship Sites are well placed to make judgements on the likely cost of entering a BSA and thus the bottom-up cost of generating credits. This information could be used to refine the estimates made by the responsible body. Additionally, assessors may have on-the-ground market information about credits that may come into existence in the future.

3.2.3 Findings & Recommendations

- The nature of the markets for credits, particularly the large number of heterogeneous credit classes, makes it genuinely difficult to establish reliable estimates of likely credit prices. This is true for all credit classes, but particularly the credits that will need to be purchased by the BCT to ultimately meet developer obligations:
 - The Biodiversity Offsets Scheme is made up of 1342 potential credit classes for species and ecosystem credits, of which 1262 have never been transacted.
 - Of these credit classes, the BCT tends to accept developer charges for those with few or no transactions. 89% of developer charges accepted by the BCT have been for credit classes with five or fewer transactions since 2010.
- The lack of depth in trading suggests that historical data is either not available or needs to be treated with extreme caution when estimating future prices.

¹⁵ BBAM Spot Price Index, Sept 2020

- We also note that many historical prices have been reported based on related party transactions and as such should be treated with caution as reliable estimates of likely credit prices traded at arm's length.
- We note that the current econometric model has been found to be methodologically sound by two technical reviews (conducted by the parties noted above). That said, we do not support its use as the sole determinant of developer charges given the quality of the available data:
 - Developer charges are highly volatile, particularly in OTGs with no trade data. This reduces certainty for developers, the BCT, and landholders about future prices.
- A complement to an econometric model based on historical price data is the use of bottom-up cost estimates that can provide reasonable credit price estimates. Estimates would be based on the four components of landholder costs and margins:
 - TFDs can be estimated without historical trade data by understanding the necessary management action costs.
 - Transaction and administration costs can be estimated and tend to be reasonably uniform.
 - Opportunity costs can be modelled using land value or discounted future cash flows.
 - Landholders' surplus margins (above the opportunity cost of the land) may be more difficult to predict but can be estimated through expert consultation.
- Market soundings could also be used to improve estimates of likely credit prices:
 - Interviewing existing suppliers would be a reasonable step in gathering price information, given that there are only 182 active BioBanking Agreements.
 - Landholders with the potential to generate certain credits are identifiable, due to correlation between credit class and geographic location.
 - Assessors may be a source of information about future BSAs and credit prices.

Recommendation 2

The body responsible for determining developer charges should not be bound to the current econometric model. Three sources - the econometric model, the cost-structure model and market soundings - should be taken into consideration and weighted according to the nature of the market for the credit class.

3.3 Responsibility for determining developer charges

3.3.1 Issue & Alternatives

Under the current regime, administration of the BOPC has been delegated by the Minister to the Department, and the BCT are obligated to accept the charge it calculates. While there is some financial risk to the BCT or Department of miscalculation (mitigated somewhat by the flexible variation rules), there is also a risk of failing to accomplish the higher order objectives of the scheme if like-for-like acquittal is consistently financially unviable.

Determining developer charges with consideration given to the outputs of an econometric model, bottom-up cost estimates, and market soundings requires judgment. A decision must be made about which body is the most appropriate to be exercise this judgment.

This decision must establish clear roles and responsibilities, and must consider the following questions:

- Which body is **capable** of making pricing decisions?
- Which body can be **impartial in balancing conflicting objectives** of development and biodiversity?
- What **transparency** is required of the responsible body and how can it be held **accountable for the consequences** of its decisions?

An alternative to the current arrangement is for the BCT to take responsibility for determining developer charges, using the proposed methodology, with guidance provided and transparency required by the Department.

3.3.2 Analysis & Evidence

3.3.2.1 With ready access to required information, BCT is a capable decision maker

As outlined in the Act, part of the BCT's objective is:

“(b) seeking strategic biodiversity offset outcomes to compensate for the loss of biodiversity due to development and other activities”¹⁶

Information about the current and future supply of credits, including pricing information, may be gained by the BCT through engaging directly with landholders and conducting expressions of interest and reverse auctions. Its position as a sizeable market participant also means that it is well placed to communicate with assessors about the current and future supply of credits.

The BCT also has the best access to information to model management costs as the body responsible for approving BSAs. Bottom-up cost estimates rely on the ability to accurately predict the management and establishment costs required for generating certain credits.

While this information may be shared with the Department, detailed context, stakeholder relationships, and the BCT's position as a buyer of credits will be important in determining how this information is deployed. As such, the BCT is the best placed to acquire and act on information about the supply-side of the market in determining developer charges.

3.3.2.2 The BCT can impartially balance biodiversity and development objectives

The BCT is an independent body, required by legislation and regulation, and incentivised by reputational concerns, to consistently achieve biodiversity objectives. One reason that government establishes independent entities is to support arm's length impartial decision making (perceived and actual), allowing that entity to focus on a smaller subset of defined outcomes. Developer charges are applied on bilateral basis between the developer and Government (rather than the whole market, as is the case with the discount rate). Allowing this decision to rest with an independent body could help mitigate the perception that there could be instances of short-term political considerations leading to favourable pricing decisions made at the expense of biodiversity outcomes.

Due to the BCT's higher order objective to “protect and enhance biodiversity”, it is reasonable to be concerned that it may prioritise biodiversity objectives to the detriment of development

¹⁶ *Biodiversity Conservation Act 2016* (NSW), Section 10.4

in NSW by pricing developer charges too conservatively. However, its interests are also in the success of the Scheme. Pricing developer charges too high to the point of where support for the Scheme may be undermined would be contrary to its objectives.

In addition, the balance between the benefits of independence and the need for government oversight is achieved by the method of appointing the Board of the BCT. The Minister appoints members of the Board for five year terms, retains the right to terminate appointment, and has flexibility in the mandated number of sitting Board members. The Minister can also approve the BCT's business plan every four years and holds the power to direct the BCT if necessary.¹⁷

3.3.2.3 BCT should be accountable for reconciling developer charges with actual costs

There should be enhanced transparency requirements that help to ensure that developer charges reconcile over time with the prices ultimately paid by the BCT.

There is an existing requirement that the BCT operates on a not-for-profit basis. Currently, the BCT has adopted a policy of achieving a net zero operating result on a five-year rolling basis.

There should be a requirement for the BCT to share information with the Department about the value of contributions into the BCF, and the costs of acquittals, and the respective credit types.

3.3.3 Findings & Recommendations

- The BCT has the best access to the information required to determine developer charges as the market facilitator. In particular, its role in “seeking strategic biodiversity offset outcomes” as defined in the Act means that it is well placed to gather supply side information (e.g. by assisting landholders in entering into BSAs).
- The BCT can balance the competing objectives of development and biodiversity:
 - As an independent body, the BCT is incentivised to not compromise on biodiversity outcomes; decision-making that affects individual developers is best done at arm's length from government.
 - Balance between independence and government oversight is still achieved as the Minister appoints members of the Board for five year terms and retains the right to terminate appointment. Further, the Minister has power to direct the BCT if necessary.
- Balance is ensured by the mandate that developer charges levied by the BCT reconcile over time with prices ultimately paid by the BCT in acquitting their obligations.

Recommendation 3

- a. The BCT should be responsible for determining appropriate developer charges,
- b. The BCT should share information with the Department about:
 - BCT aggregate operating results.
 - The value of contributions into the BCF, cost of acquittals, and related credit types.
 - BCF administrative costs
 - The sources used for developing cost estimates for developer charges

¹⁷ *Biodiversity Conservation Act 2016 (NSW)*, Section 10.7

3.4 Timeframe for providing developer charge estimates

3.4.1 Issue & Alternatives

An advantage of the existing payments calculator is that it gives developers access to an instantaneous “one-click” calculation of the charge they must pay into the BCF to fulfil an offset obligation. Developers value the timeliness of this system.

The proposed change towards a more discretionary determination of developer charges will require some degree of work to be carried out in providing each quote. Any changes to the method for calculating developer charges should ensure that developers can still be quoted a price within a reasonable period.

3.4.2 Analysis & Evidence

3.4.2.1 The BCT could maintain estimates of prices to enable fast quoting

The proposed approach to determining credit prices will require the BCT to determine a quote on a case-by-case basis, meaning that developers must wait a certain period to be quoted their charge. To mitigate this, the BCT could develop and maintain estimates of the price of all, or a relevant subset, of common credit classes for which it expects to receive obligations. We note that this would be resource-intensive for the BCT (at least for a transitional period) but could be funded through a modest increase in the administration fee levied within developer charges.

3.4.2.2 The BCT should have time to conduct market soundings and revise estimates

When a developer requests a quote for payment into the BCF, the BCT may need to cross-check pre-determined estimates of credit prices through market sounding with market experts. This enables the BCT to sense-check any relevant econometric model outputs, as well as components of the bottom-up cost estimate, such as land opportunity costs and surplus margin expectations. These may have changed over time or could be highly dependent on the current set of suppliers within the market. The BCT should be allowed sufficient time to re-evaluate these estimates before delivering a quote to developers.

3.4.3 Findings & Recommendations

- Developers benefit from the immediate availability of credit price estimates under the BOPC. The proposed approach will require a higher degree of judgment than the current BOPC approach. Changes to the method of determining developer charges should ensure that developers can be quoted a credit price within a reasonable period.
- The BCT could maintain estimates of all potential credit prices to enable instant quoting. This approach would be very resource intensive, would require estimation of credit prices that may never be traded and would risk market soundings being out of date at the time of quoting.
- The BCT should have sufficient time to provide an appropriate estimate. The BCT should maintain an econometric model and landscape-specific bottom-up cost models and should augment this with market soundings at the time required to provide a quote.
- We believe that the BCT should provide a quote within 30 days. This balances the need for providing developers timely information about charges and adequate time to complete the

estimate. That said, there should be room for flexibility in exceptional circumstances where estimated pricing is more challenging.

Recommendation 4

- a. The BCT should be required to provide developers with a quote within 30 days.
- b. There should be a clause that allows the BCT to extend this timeframe in extraordinary circumstances, subject to approval by the CEO of the BCT.

3.5 Timeframe for acquittal of obligations

3.5.1 Issue & Alternatives

There is no legislative or regulatory specification for the time in which obligations must be acquitted by the BCT. Currently, the BCT Board has set themselves the goal of acquitting obligations within two years of receiving them. An alternative timeframe for acquittal could allow up to five years, in order to allow the supply of credits to increase as the market matures with time.

3.5.2 Analysis & Evidence

Biodiversity Stewardships Agreements can take up to three years from inception to come into existence. There is a longer lag still from the time when landholders first consider entering a BSA. Since part of the BCT's purpose is to encourage the supply of credits, it should be allowed the necessary timeframe to identify, engage, and guide landholders through the process of establishing BSAs. A longer timeframe for acquittal will result in greater supply of credits and lower prices to the BCT, as well as a higher probability that the BCT will be able to acquit its obligations in a like-for-like manner.

The Biodiversity Offsets Scheme operates in-perpetuity. Accordingly, the difference between an obligation being acquitted within two years year or five years is negligible in terms of achieving the Scheme's biodiversity objectives.

Admittedly, longer acquittal times will delay the feedback loop which compares the amount developers are charged for an obligation and the actual cost to the BCT of acquitting that obligation. This reduces transparency somewhat, but we consider this a reasonable trade-off, owing to the importance of improving supply in the Scheme, and the prerogative for the BCT to acquit its obligations in a financially and environmentally sustainable manner.

3.5.3 Findings & Recommendations

- The BCT currently aims to acquit BCF obligations within two years. This is not a legislative requirement; it has been determined by the BCT.
- We have been advised that BSAs can take up to three years to create. We also note that there may be longer lags from landholders first considering entering a BSA to completion.
- Allowing the BCT a longer timeframe to acquit credits would allow certain credits, which do not currently exist, to be created as supply matures. This would also be facilitated by the BCT publishing the credits it is seeking to acquire.
- This would increase the likelihood that the BCT could acquit obligations through like-for-like credit purchases.

- That said, allowing a longer time for acquittal may weaken accountability by delaying transparency over whether the BCT's calculated charges reflect the prices at which they eventually acquire credits. On balance, we think this is a reasonable trade-off for allowing market development by signalling to the market the demand for certain credits.

Recommendation 5

The BCT should revise their own goal of acquitting obligations within two years and allow obligations to be acquitted over a period of up to five years.

3.6 Publication of developer charges and the price of credit purchases by the BCT

3.6.1 Issue & Alternatives

It is important that the prices paid by developers into the BCF do not become price signals that influence market outcomes. These charges have the potential to be a price floor for landholders, who will be reluctant to set prices below the price that developers paid into the BCF. This makes it difficult for the BCT to purchase the necessary credits at the price it was paid by developers, resulting in financial losses for the Trust.

3.6.2 Analysis & Evidence

Interviews with the Department have revealed that assessors often use the publicly available BOPC as a tool for determining the price landholders are likely to receive for their credits in the private market. We understand that there are steps being taken to remove the BOPC from public view and we support this action.

Such price signals are especially problematic when price estimates are volatile and/or underestimate the cost of credits. Volatility affects landholder and developer confidence in the Scheme, while significantly under-pricing may stunt the supply of credits as landholders do not expect to receive a price high enough to cover their costs and profit expectations.

The revised methodology for determining developer charges that is outlined in this report should reduce the risk of volatility and under-pricing. However, there is a persistent risk that the market may continue to anchor price expectations on the charges levied on developers, if this information is made publicly available.

This risk must be balanced with the need for transparency of what the BCT is charging developers compared with what it pays for credits. We propose that developer charges are publicly disclosed only after the BCT has acquitted the obligation.

The Department has raised concerns that the BCT may use its access to privileged information about developer charges to obtain a financial advantage when purchasing credits. It could charge developers a price which far exceeds the likely price of purchasing the required credits. However, we have recommended that the BCT be required to share information with the Department about the value of contributions into the BCF and the costs of acquitting the related obligations. This will hold the BCT accountable and encourage it to reconcile developer charges with the cost of acquittals over time.

3.6.3 Findings & Recommendations

- There is a tension between providing transparency of the BCT's actions and ensuring that that information from the BCT does not inappropriately influence market outcomes.
- The current model influences the market by anchoring expectations about the future price of credits. This problem has been exacerbated by the volatility of prices generated by the BOPC.
- The revised methodology for determining developer charges should reduce volatility but may continue to anchor expectations.
- We recommend that developer charges not be published until the BCT has purchased credits to match the obligation.

Recommendation 6

The BCT should publish developer charges at the time of acquittal.