

Report 1: Year 1 Methods Report

Environmental Economic Accounting – Developing and trialling approaches for accounting to ensure respectful inclusion of Australian First Nations knowledges

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Acknowledgement of Country

We acknowledge the Traditional Owners of Country throughout Australia and their continuing connection to and stewardship of land, sea and community. We pay our respects to them and their cultures and to their Ancestors, Elders and future leaders.

Statement of generative AI used within this report

AI tools have not been used within this report other than to assist with ensuring the completeness of the Glossary. Throughout the report, all substantive analysis, interpretation, validation of content, and final academic judgement remained the responsibility of the authors.

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Contents

Summary	vii
Research partnership and positionality	viii
1 Introduction	1
2 SEEA EA and Indigenous peoples	4
SEEA EA overview	4
Bridging Indigenous and SEEA EA conceptualisation	5
General spatial and temporal context and principles of the SEEA-EA and their relation to First Nations mental models, values, and connections to land	9
3 First Nations partners	11
Tagalaka people.....	12
Esperance Wudjari Nyungars.....	14
4 Working in partnership	17
Principles.....	17
In practice (this project)	20
5 Extent Accounts	26
Bridging SEEA EA and Indigenous views on extent accounts.....	26
SEEA EA-aligned approach for extent accounts	27
6 Condition Accounts	35
Bridging SEEA-EA and Indigenous views on condition accounts.....	35
SEEA EA-aligned approach for condition accounts.....	36
7 Crosswalk and logic chains	42
Bridging SEEA EA and Indigenous views on logic chains	42
SEEA EA-aligned approach for crosswalk and logic chains	44
8 Flow of services	48
Bridging SEEA-EA and Indigenous views on flow of services.....	48
SEEA EA-aligned approach for flow of services.....	52
9 Summary overview of the methods proposed	57
Stock accounts.....	57
Flow accounts.....	57
Way forward	59
Timelines and Planned outputs.....	59
Critique of the SEEA EA approach, including misalignments with First Nations worldviews	59
Preparing for the online forum due quarter 1 2027	61
Glossary	62

References	63
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Tables

Table 1 Summary of First Nations partners for this project.....	12
Table 2 Tabular presentation of spatial units within the Ecosystem Accounting Area (EAA).....	33
Table 3 Scoring of the Condition (health) of individual assets and Country as a whole, with descriptors, extended from the Healthy Country Plan rating for targets (ETNTAC, 2018. P25)	39
Table 4 Example presentation for SEEA EA conditions account tables	41
Table 5 Example of a crosswalk table for this project. Each row represents the SEEA EA name and description and the First Nation name and description corresponding to a given service.	46
Table 6 Example of a logic chain table for this project. Each row represents a logic chain for a given service, from the asset providing the service to the main users and beneficiaries of that service.	47
Table 7 Example of flow account supply and use tables respectfully including the perspective of First Nations partners.	56

Figures

Figure 1 Ecosystem accounts structure, and relationship between accounts	4
Figure 2 First Nations perspective approach to SEEA EA	7
Figure 3 Conceptual approach proposed for this project	8
Figure 4 Map indicating location of the Native Title determinations of First Nations partners, Wudjari in Western Australia (Native Title determination in name of The Esperance Nyungars) and Tagalaka in Queensland (Native Title determination in name of Tagalaka People).....	11
Figure 5 Waterhole on Tagalaka Country. Photo credit: Mélanie Hamel	14
Figure 6 Coastal Wudjari lands, showing land and sea Country. Yokinup Bay can be seen in the distance and Dolphin Cove in the foreground (taken from the look out at Thomas River/Cape Arid National Park). Photo credit: Diane Jarvis.....	16
Figure 7 Benefits of ecosystem account development identified by First Nations research partners Tagalaka Aboriginal Corporation and Ewamian Ltd in Australia	19
Figure 8 Photographs taken during visit to Kardutjaanup, June 2025. Credits: Diane Jarvis (both left and right).....	21
Figure 9 Photos taken during visit to Tagalaka National Park, July 2025. Credits: Diane Jarvis (both left and right).....	22
Figure 10 Example from the SEEA EA training slides developed by the research team, this example illustrating how key SEEA EA accounts and flow of services and benefits were explained to Steering Committee members by relating the accounting terms to Country and to people	24
Figure 11 Graphic recording of activities undertaken during first series of joint workshops with researchers and Wudjari during March 2026 Credit: Will Besson of Tuna Blue and Candice Smith, Wudjari Artist and Co-Scribe.	31
Figure 12 Scoring of the Condition (health) of individual assets, and Country as a whole, visualised as a scale.....	39

Figure 13 Graphic recording of discussions focusing on the reference state for healthy Country, undertaken during first series of joint workshops with researchers and Wudjari during March 2026 Credit: Will Besson of Tuna Blue and Candice Smith, Wudjari Artist and Co-Scribe	40
Figure 14 Illustration of the logic chain.....	43
Figure 15 Example scale for scoring importance of services.....	54
Figure 16 Example scale for scoring satisfaction with flow of services	54
Figure 17 First Nations SEEA EA framework developed for this project.....	58
Figure 18 Project timeline	59

Summary

This report presents the co-designed methods for a research project aimed at co-developing approaches to respectfully include Australian First Nations knowledges into the United Nations System of Environmental-Economic Accounting – Ecosystem Accounting (SEEA EA) framework. This research seeks to contribute to the National Ecosystem Accounting Project led by the Australian Government's Department of Climate Change, Energy, Environment and Water, focusing on services to First Nations partners.

The project involves partnerships with Tagalaka Aboriginal Corporation in Queensland and Esperance Tjaltraak Native Title Aboriginal Corporation in Western Australia, alongside academic researchers, to ensure ecosystem accounts reflect Indigenous perspectives meaningfully and respectfully. As a collaboration between First Nations peoples and non-Indigenous researchers, the project methodology emphasises co-design to ensure First Nations priorities and governance shape the ecosystem accounting methods adopted by the project in a manner that aligns with the SEEA EA.

The SEEA EA is an internationally recognized, modular accounting framework that organizes ecosystem data by extent, condition, and ecosystem services, linking ecosystems to ecosystem services and economic units with these relationships illustrated by logic chains. The ecosystem services are categorised as provisioning, regulating, and cultural services within SEEA EA.

The worldviews of First Nations Peoples emphasise holistic, interconnected, and non-linear relationships between people and Country, challenging SEEA EA's linear and reductionist approach. Adaptations to SEEA EA to respectfully include First Nations knowledges may include consideration of circular models of ecosystem-human interactions, inclusion of stewardship services (flows from people to Country), ecosystem disservices, and recognition of cultural, spiritual and relational values.

The co-designed methodological approach adopted for the project was developed during online and on Country workshops between First Nations partners and researchers. The agreed approach for developing the accounts involves a four-step process for each account type: (1) review existing First Nations and scientific knowledge from exiting literature; (2) conduct joint workshops with researchers and First Nations partners to co-develop classifications, spatial extents, condition scoring, and ecosystem services; (3) researchers analyse data and produce draft maps, narratives, and tables; (4) using a review and validation process, outputs are collaboratively refined until suitable for approval by First Nations partners. As part of this process, the First Nations partners will each examine and critique the SEEA EA approach, and explore alternate ways of measuring and reporting information for

This report is the first output from the project, reporting on the methods to be used. Next steps for the project include further workshops between the First Nations partners and researchers, both on Country and online, and a national forum with other First Nations groups to test and refine methods for co-developing ecosystem accounts that integrate First Nations knowledge systems, informing environmental accounting policy and practice. Subsequent outputs from the project will include Report 2: Data Collection Report and Report 3: Final Report.

Research partnership and positionality

This project is a research partnership between Tagalaka Aboriginal Corporation in northern Queensland and Esperance Tjaltraak Native Title Aboriginal Corporation in southern Western Australia, together with three non-Indigenous academic researchers with expertise in Environmental-Economic Accounting (SEEA EA), environmental economics and conservation science. The partnership brings together complementary knowledge systems and expertise to explore how ecosystem accounting can better recognise and reflect First Nations relationships with Country.

The academic researchers acknowledge their position as non-Indigenous researchers working within a framework that originates from Western environmental accounting traditions. While SEEA EA provides an internationally recognised framework for ecosystem accounting, it was not developed with or by First Nations peoples and does not adequately represent many Indigenous values, knowledge systems and relationships with Country. Recognising this, the project adopts a collaborative co-design approach in which methods are developed in partnership with Tagalaka and Wudjari knowledge holders. Rather than applying externally developed methods to Indigenous contexts, the project seeks to co-develop approaches that are guided by Australian First Nations priorities, knowledges and governance, while remaining compatible with the SEEA EA framework. This approach aims to produce ecosystem accounts that are scientifically robust, culturally relevant, and useful for participating First Nations communities as well as broader research and policy audiences.

1 Introduction

The United Nations System of Environmental-Economic Accounting – Ecosystem Accounting (SEEA EA)¹ (details in Chapter 2) is a framework for measuring and reporting on ecosystems and their contributions to economic and human well-being. It provides a structured way to quantify ecosystem services and their role in the economy. Within Australia, Environmental Economic Accounting has been a focus of the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for a number of years since development and agreement of the National Strategy and Action Plan in 2018. Since that date there have been a number of different projects supported by DCCEEW to trial and test applications of Economic Accounting at regional and national scale². Increasingly, there is recognition that ecosystem accounts should reflect the diverse ways in which people value and relate to the environment. However, existing approaches have had limited capacity to recognise First Nations knowledges, values and relationships with Country.

This project³ seeks to explore how First Nations Peoples' knowledges can be integrated into Ecosystem Accounts prepared using the SEEA EA framework. As such, the project is focusing on services to First Nations people. To do so, the project is set out as a partnership between Tagalaka Aboriginal Corporation in northern Queensland, Esperance Tjaltraak Native Title Aboriginal Corporation in the southern coast of Western Australia, and three non-Indigenous academic researchers with expertise in Environmental-Economic Accounting (SEEA EA), environmental economics and conservation science. Working across two distinct environmental and cultural contexts, the project aims to co-develop methods for integrating First Nations knowledges and values into the SEEA EA framework in ways that are meaningful for Indigenous communities while remaining compatible with national ecosystem accounting. We will explore how well the SEEA EA framework reflects Indigenous ontologies and axiology, its ability to encapsulate First Nations' knowledges and its usefulness in creating meaningful data for First Nations peoples. Should challenges emerge, we will explore alternate ways of presenting these knowledges alongside SEEA EA, using culturally appropriate and respectful methods co-designed by researchers and Tagalaka and Wudjari knowledge holders.

In addition to preparing ecosystem accounts, the project will develop recommendations for incorporating First Nations perspectives into environmental accounting policies. By working closely with First Nations partners and testing the approach with a wider group of First Nations people, the project seeks to identify common themes and assess how frameworks, such as the National

¹ For more information see <https://seea.un.org/ecosystem-accounting>

² For more information see <https://www.dcceew.gov.au/environment/environment-information-australia/natural-capital-accounts>

³ More information on the project can be found at <https://nesplandscapes.edu.au/projects/nesp-rh/environmental-economic-accounting-first-nations/?tab=overview-tab>

Environmental Accounts Program (NEAP)⁴, can relate to accounts that reflect Indigenous knowledge. The project will also collaborate with the Nature Repair Market team within the Department of Climate Change, Energy, the Environment and Water (DCCEEW), aiming to create synergies between ecosystem accounting and nature restoration initiatives.

To support respectful inclusion of First Nations knowledges in ecosystem accounting, this project has a number of objectives. These include:

- co-designing ecosystem accounting methods with Tagalaka and Esperance Tjaltjraak partners
- preparing First Nations-led accounts that reflect connections between people and Country
- exploring how stock, flow, capacity and intervention-benefit accounts can be developed from First Nations perspectives
- exploring relevance of the existing National Ecosystem Accounts (NEA) information to stock, flow, capacity and intervention-benefit accounts developed by our First Nations partners
- identifying common themes, context-specific differences and transferable learnings across partner groups
- developing recommendations to inform future environmental accounting policy and practice.

To achieve these objectives, two explicit research questions have been developed.

1. How can First Nations peoples' knowledges be reflected within (or alongside) SEEA EA?

To address this question, we seek to co-develop a full set of SEEA EA accounting tables and supporting narrative to explore how Indigenous knowledges fit, challenge or require changes to the SEEA EA model.

2. What are appropriate methods for gathering and presenting First Nations peoples' knowledges in relation to SEEA EA?

With this question we seek to determine the right ways of working to incorporate Indigenous knowledges within the SEEA EA model.

Whilst posed as two separate questions, the project seeks to explore and answer both questions simultaneously; as we progressed our exploration of how to reflect First Nations knowledges within SEEA EA, we were simultaneously exploring the appropriate methods for gathering the information required to populate and present within the SEEA EA model.

This project will support inclusive environmental accounting by:

- developing practical methods for reflecting First Nations knowledges and perspectives in ecosystem accounts
- supporting First Nations partners to create accounts that are useful for Caring for Country planning and decision-making

⁴ This program includes, but is not limited to, the Environmental Economic Accounting Dashboard, which is available at <https://www.eeashboard.dcceew.gov.au/>

- assessing the relevance of the existing NEA information to accounts developed by our First Nations partners
- exploring whether accounts developed with our First Nations partners can be integrated into other accounts, including NEA, or whether they should remain stand alone
- identifying transferable lessons to guide future national environmental accounting policy
- strengthening links between ecosystem accounting, nature repair and culturally informed environmental management.

This Report 1: Year 1 methods report seeks to describe the methods that have been co-designed with Wudjari and Tagalaka to meet these project aims. Subsequent outputs from the project will include Report 2: Data Collection Report and Report 3: Final Report.

This report begins, in Chapter 2, by providing an overview of the SEEA EA, and describing work that has previously been undertaken to attempt to bridge conceptualisation differences between that adopted within the SEEA EA and conceptualisations based upon First Nations perspectives and knowledge systems. In Chapter 3 we then provide information on the two First Nations communities who have partnered with researchers for this project, providing some background context on their history and Country. Within Chapter 4, we describe the partnership arrangements adopted for this project, describing how we are working collaboratively together to deliver the desired project outputs. The following chapters each focus on a different component of the SEEA EA framework, with Chapter 5 focusing on Extent Accounts, Chapter 6 on Condition accounts, Chapter 7 focusing on the crosswalk and logic chains linking stock and flow accounts, and Chapter 8 focusing on the flow accounts specifically. Chapter 9 then provides an overview of the co-developed methods, and Chapter 10 sets out the way forward for the second year of the project.

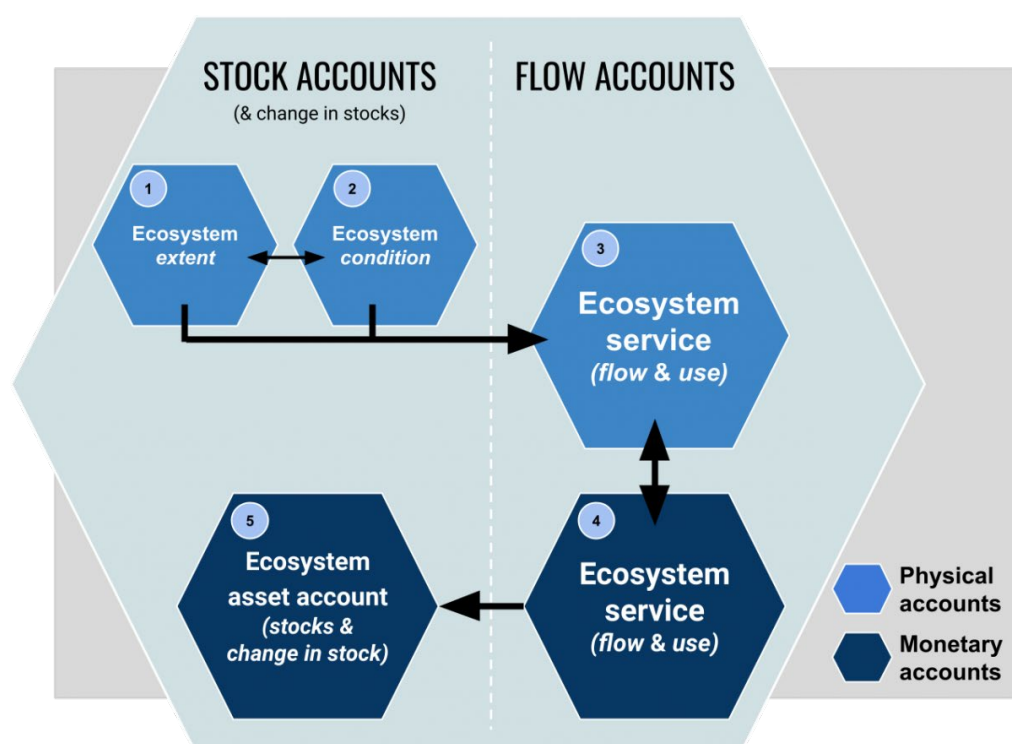
2 SEEA EA and Indigenous peoples

SEEA EA overview

The System of Environmental-Economic Accounting - Ecosystem Accounting (SEEA EA), has been designed by the United Nations as a framework describing the relationship between the environment and the economy, organizing information about ecosystems, measuring ecosystem services, and tracking change⁵. Originally released in 2021 as a white cover version prior to official editing, the final endorsed version was published in 2024 (United Nations, 2024).

The SEEA EA is defined as a “*spatially-based, integrated statistical framework for organizing biophysical information about ecosystems, measuring ecosystem services, tracking changes in ecosystem extent and condition, valuing ecosystem services and assets and linking this information to measures of economic and human activity.... with a focus on making visible the contributions of nature to the economy and people.*” (United Nations, 2024, p. 1).

Figure 1 Ecosystem accounts structure, and relationship between accounts.



Source: <https://seea.un.org/ecosystem-accounting>

⁵ For further information see <https://seea.un.org/ecosystem-accounting>

As illustrated in Figure 1, the SEEA EA provides a framework of accounts tables that compile data linking the various ecosystems that together comprise the environment to the flow of ecosystem services, and complement the information provided in the SEEA Central Framework (United Nations, 2014) and the UN System of National Accounts (United Nations, 2025, United Nations, 2009). It provides an approach to measure and present the extent and condition of the different ecosystems, using the terminology “ecosystem assets”, and to measure and present the ecosystem services that are supplied to beneficiaries, termed “economic units” (e.g. Households, the Government, Industry). Ecosystem services (hereafter, ES) are categorized by SEEA EA into three main categories: provisioning services, regulating and supporting services, and cultural services. Logic chains are a key component of the SEEA EA system, explicitly linking the flow of ES to the ecosystem assets, and the flow of benefits to the economic units.

An important feature of the SEEA EA framework is the modular nature, which enables those developing accounts to decide which accounts to compile based on their motivation (e.g. policy drivers, or management requirements) and the availability of appropriate data. For example, it is valid to use the framework to generate only physical accounts, and not monetary accounts; or to create accounts only for specific regions or specific ecosystem services (United Nations, 2024). The SEEA EA also supports ‘thematic accounting’, whereby additional accounting tables can be provided that organize data around specific themes such as biodiversity, climate change, oceans and urban areas (United Nations, 2024). Such an approach, providing a mix of core SEEA EA accounts with additional thematic and experimental accounts, has been adopted in previous work with First Nations groups (Pearson et al., 2025a, Pearson et al., 2025b).

Bridging Indigenous and SEEA EA conceptualisation

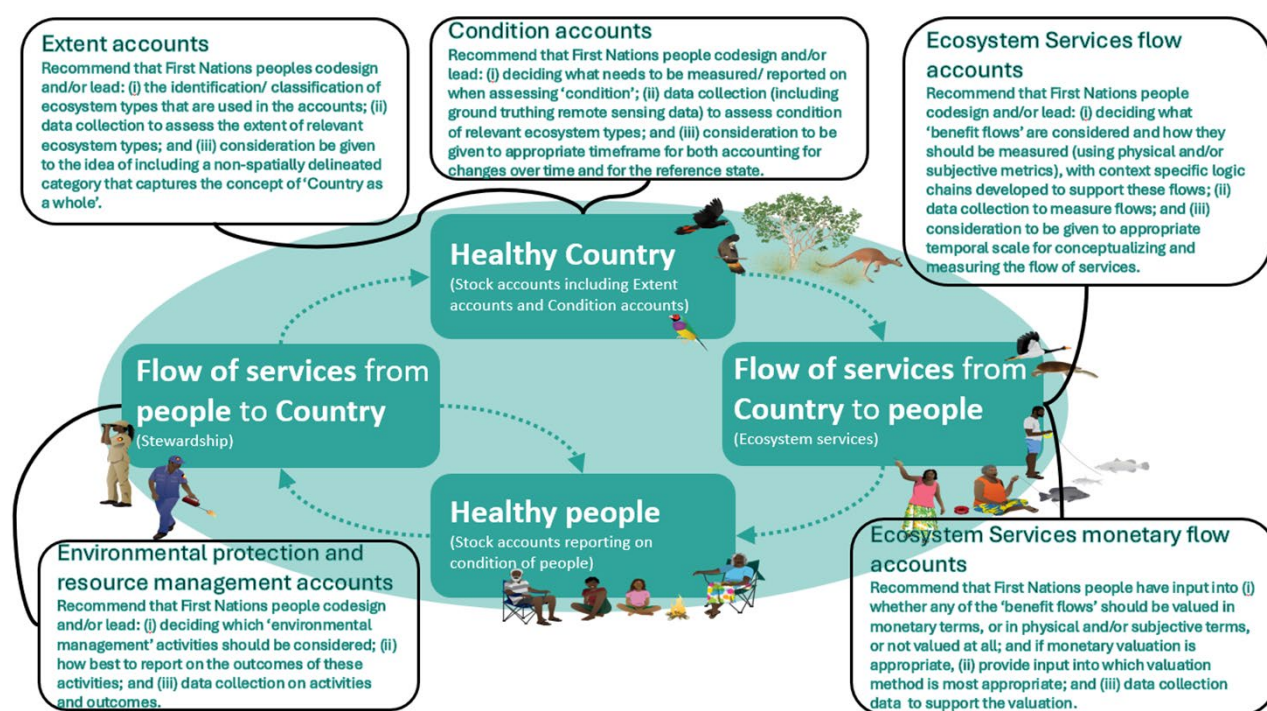
Over the last few years the SEEA EA accounts process has been increasingly widely used and tested in a range of contexts, including on First Nations communities’ lands, and consequently there is also emerging literature on use of the accounts to record the contributions of nature to First Nations peoples (Normyle et al., 2021, Normyle et al., 2022b, Finau et al., 2023, Woodward et al., 2023, Normyle et al., 2024, Normyle et al., 2025, Larson et al., 2026b, Nursey-Bray et al., 2023, Kusdewanti, 2026). Importantly, SEEA EA as a system does not specifically preclude inclusion of First Nations values: it does not, however, provide guidance to their inclusion either (Larson et al., 2026a). Emerging studies however do provide guidance on inclusion of First Nations values into Western systems. For example, Stoeckl et al. (2021) discuss the critical importance of longer timelines, interconnections between and within the human and natural systems, reciprocal values (looking after Country), and the need for direct physical connections with Country to strengthen spiritual connections. Further, the linearity inherent in the SEEA EA model requires careful consideration as can be problematic for First Nations peoples, as illustrated by the quote “We don’t have a word for non-linear in our languages because nobody would consider travelling, thinking or talking in a straight line in the first place” (Yunkaporta, 2019, P.21).

One possible approach to addressing our overarching research question, “*How can First Nations peoples’ knowledges be reflected within (or alongside) SEEA EA?*”, was proposed by Larson et al. (2026), based upon work with a number of different groups and co-authored by Ewamian, Tagalaka and Mungguay First Nations Peoples. They argue that, for SEEA EA accounts to be compliant with Indigenous worldviews, they need to capture the interconnected, non-linear and non-separable conceptualisation of the system. The conceptual model presented by Larson et al. (2026a) is based

on the circular model reported in Stoeckl et al. (2021), extended to align with the components of the SEEA EA, and is shown at Figure 2. The circularity of this model addresses concerns expressed previously regarding the one-directional linearity of the SEEA EA approach (focusing only on the flows from Country to people), as reported in previous work with Indigenous groups (Jarvis et al., 2022, Normyle et al., 2022b, Larson et al., 2023, Normyle et al., 2024, Jarvis et al., 2024).

Larson et al. (2026a) propose that conceptualisation of “Healthy Country” is well aligned with the notion of stock accounts (Figure 2). Partnering with First Nations communities to co-design stock accounts could provide accounting tables that capture the extent and condition of different features/ ecosystems/ aspects of culture and Country that are of relevance to their conceptualisation of their Country. Such work could describe the reference condition for these different assets and also capture extent and condition information at agreed accounting period dates to enable such stock accounts to be populated. Similarly, flow accounts could be co-developed that would depict those key flows (supply and use) between people and Country of relevance/importance to the First Nations communities. Some of these flows may reflect ecosystem services (flow of services from Country to people), as specified by SEEA EA, whilst others may reflect stewardship (flow of services from people to Country) which includes traditional custodianship responsibilities and caring for Country activities, of great importance to First Nations peoples (Figure 2). Both types of flows, ecosystem services and stewardship services, have an impact on the condition, health and wellbeing of people. However, some aspect of these flows may require accounting for within the SEEA Central Framework Environmental protection and resource management accounts (Figure 2), rather than within SEEA EA supply and use of ecosystem services accounts. As for Healthy Country, Healthy People accounts could capture the extent of different features/ aspects of individual and societal wellbeing connected to the culture and country (Figure 2).

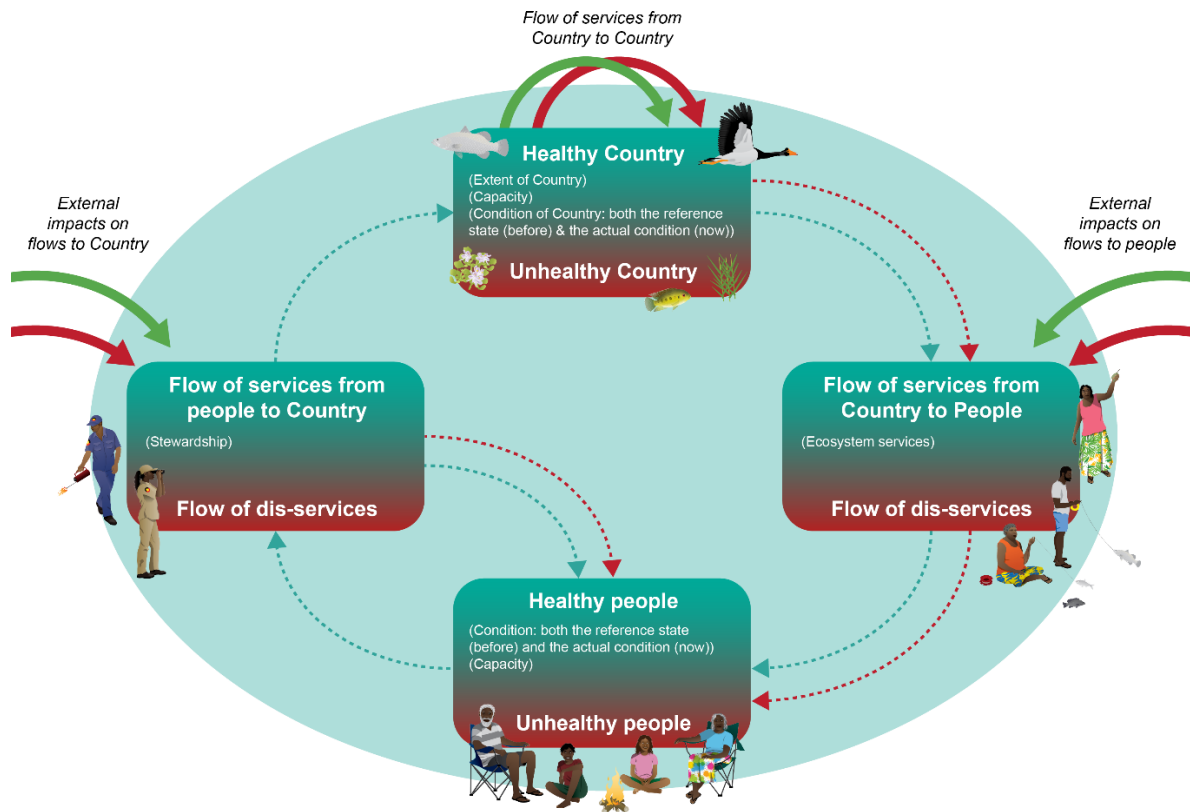
Figure 2 First Nations perspective approach to SEEA EA. Source: Larson et al. (2026a), page 808. Symbols courtesy of the NESP Resilient Landscapes Hub, nesplandscapes.edu.au.



Beyond the theoretical framework presented in Larson et al. (2026a), we also recognise further new concepts relevant to using the SEEA EA model to account for First Nations conceptualisation of service flows, that emerged in work with Nywaigi people of North Queensland (Larson et al., 2026b). This project focused on preparing flow accounts that captured Nywaigi perceptions of the supply and use of services between Nywaigi Country and People. The first additional concept is what Nywaigi referred to as “Ecosystem services flows from Country to Country” (Figure 3), with examples of such benefits including the provision of healthy soils and the provision of space and food for animals (wildlife). Conceptually, these flows very much resemble concepts of supporting and regulating services in SEEA EA, whilst more clearly recognising the Nywaigi perception that the beneficiary of such flows was Country itself. The other additional concept relates to the idea of disservices (Figure 3) which emerged strongly from this work with Nywaigi (Larson et al., 2026b), where the project focused on site level accounting for wetland restoration. For each flow of service between Country and people, there is the potential for a flow of “disservices”, should Country and/or People be in an unhealthy condition. A flow of ecosystem disservices from Country to People was found to be essentially linked to disservices flowing in the opposite direction, from People to Country, stemming from the inability of Nywaigi people to look after Country in the ways they would prefer (creating feelings of deep unhappiness from not fulfilling their Traditional Custodianship role appropriately and thus letting down their ancestors and future generations) – due to capacity, financial and access constraints (Larson et al., 2026b). Thus, both internal (health of the Nywaigi Traditional Owners) and external constraints (financial, access) were found to impact on Nywaigi capacity to look after Country. A third new concept introduced by Larson et al. (2026b) is that of arrows coming from outside this system, and influencing flow of services, both from Country to people and from people to Country. These can be negative influences (red arrows) such as for example restricted access to

parts of Country, or pollution; but can also be positive influences (green arrows), such as funding for Caring for Country activities.

Figure 3 Conceptual approach proposed for this project. Source: Larson et al. (2026b), page 10. Symbols courtesy of the NESP Resilient Landscapes Hub, nesplandscapes.edu.au. Figure attribution to Ella Schirru @science.Graphics.by.ella.



Beyond these additional features, the Nywaigi partners found the circular representation of links between nature and people to closely reflect their conceptualisation of the system (Larson et al., 2026b). Those ES of importance to Nywaigi people were perceived as flows from Country to People and included: Biomass provisioning services (such as wild fish, birds, wild animals and plants for food, natural medicine and materials); Regulating and maintenance services (such as habitat provision, nursery populations etc); and a range of Cultural services (recreation related services, visual amenity, education scientific and research, spiritual artistic and symbolic, ecosystem and species appreciation, and other services). These ES flows created a range of benefits to Nywaigi Traditional Owners (Figure 3, flows on right-hand side towards Healthy People). On the left-hand side of the figure, there are Nywaigi stewardship services – flow of benefits from People to Country. Maintaining healthy Country by monitoring and caring for Country also results in a direct wellbeing benefit to Nywaigi (dotted back-flow to Healthy People in Figure 3), as well as (ecological) benefit to Country.

General spatial and temporal context and principles of the SEEA-EA and their relation to First Nations mental models, values, and connections to land

Spatial issues

The SEEA EA accounting framework represents the biophysical environment as a set of distinct spatial areas, each corresponding to a specific ecosystem type (e.g. forests, grasslands, wetlands, cultivated areas, etc) with each area treated as an ecosystem asset (United Nations, 2024 para. 1.27). Whilst this delineation supports structured accounting requirements, it may conflict with First Nations conceptualisations that understand nature as a holistic, interconnected entity in both biophysical and cultural terms, where this interconnectedness is itself a core value (Stoeckl et al., 2018) within a biocultural landscape (CBD, 2019). Consequently, whole-of-landscape approaches (McKemey et al., 2022), which treat the entire First Nations Country as a single unit, may be required. Importantly, decisions regarding the spatial boundaries to be included in the accounts, which could be all of Country or defined parts of Country, should be made collaboratively with First Nations partners during the accounts design phase (Pearson et al., 2025a, Normyle et al., 2022a, Normyle et al., 2022b).

Consistent with UN guidance, ecosystem accounts can be compiled at varying scales and levels of detail, reflecting a trade-off between geographic coverage and topical specificity, as noted in Para 1.57 United Nations (2024). Accounts can provide highly detailed, spatially-explicit data for relatively small geographic areas, or broader, less detailed overview of larger regions, often using remote sensing data to describe broad trends in key ecosystem types and services. The choice of approach depends on policy priorities, source data availability, and resource constraints, with finer spatial detail generally enhancing the robustness of the resulting accounts (United Nations, 2024. Para. 158).

Accounts are often dominated by relatively cheap to collect remote sensing data (Richards et al., 2023, Richards et al., 2024, Stewart et al., 2023), as the frequently high costs of data collection and compilation are well documented (Pacheco-Romero et al., 2022). Whilst remote sensing is reliable and efficient for monitoring changes in vegetation and ground cover (Cresswell et al., 2021), it cannot detect many aspects of Country of importance for First Nations peoples such as the presence of “right” wildlife, sounds and smells; whether the ecosystem is behaving “as it should”, whether it is following seasonal calendars in the way the First Nations people expect; and the condition of physical cultural and art sites (Larson et al., 2023, Woodward et al., 2023). As it is likely that the primary focus of First Nations peoples seeking to develop SEEA EA accounts will be to monitor changes in their Country over time, a high level of local and culturally nuanced spatial detail is preferred. Further, if any remote sensing data is to be incorporated within these accounts then this data will need to be ground-truthed and supplemented with on ground data, increasing the robustness of the data (Woodward et al., 2023). Furthermore, on ground data collection and validation should be conducted by First Nations people themselves on their own Country (Woodward et al., 2023).

Temporal issues

The SEEA EA framework assumes consistent, comparable, and ongoing measurement. The ecosystem stocks and flows are linked over time by the concept of ecosystem capacity, simplistically referring to the ability of an ecosystem to provide services into the future (United Nations, 2024. Para 2.18). This

requires longitudinal recording of stocks and flows, revealing changes over time. For First Nations peoples, however, time is perceived as interconnected reality in which the past, present, and future coexist, requiring ancestors and future generations to be included alongside current generations (Stoeckl et al., 2021), with the present potentially given less emphasis than either the past or the future compared to the importance assigned by Western perspectives (Woodward et al., 2023). Whilst the present is generally considered as a moment in time, the term ‘long present’ has been coined to recognise that the present can encompass an extended duration, where the present past and future are inseparable (Kim et al., 2019, Xu et al., 2023), which recognises more cyclical rather than linear concept of time (Gould et al., 2026). Further, First Nations conceptualisation of space and time has been described using the term ‘EveryWhen’, which captures the not-linear space-time concept, where time is placed simultaneously in the past, present and future, and understandings are timeless bringing together knowledges of the past stretching back many thousands of years (Bates et al., 2024, Grafton et al., 2026, Stanner, 1979). Other work has found that rather than being a line, time can be both a repeating cycle and a triangle, with past and future having agency (Reid et al., 2020). These various findings raise questions about how such temporal perspectives affect the usefulness of SEEA EA accounting for First Nations communities, particularly regarding the relative values placed on past and future landscapes and human lives (Hakim et al., 2023). To provide a recent example, in the work with Nywaigi reported in Larson et al. (2026b), the temporal dimensions of Nywaigi conceptualisations were considerably longer than those commonly considered by Western scientists: the present was seen as a component of the past (preserving and honouring culture) and the future (with aspirations for future), thus, current time provided a bridge from past to the better future. This echoes the ‘bridge over troubled waters’ conceptualisation described by Ewamian people in prior work (Stoeckl et al., 2021, Jarvis et al., 2022).

One way forward is to incorporate discussions of appropriate timeframes with First Nations in the early stages of the co-design process. This consideration of time is important across accounts; for example, for stock accounts in defining the reference state against which condition is compared and for flow accounts, in shaping both which services are accounted for and how they are measured.

3 First Nations partners

The partnership in this project involved two First Nations groups, the Tagalaka People of northern Queensland, and the Esperance Wudjari People of southern-central Western Australia. A formal partnering agreement was signed between the researchers and the Corporations representing the group's Native Title interests of Tagalaka and Wudjari people: Tagalaka Aboriginal Corporation RNTBC (TAC) and Esperance Tjaltraak Native Title Aboriginal Corporation RNTBC (ETNTAC), respectively. Each agreement included that a Steering Committee be formed to agree and oversee the activities of the project, reporting to the Board and Elders, to ensure appropriate cultural and corporate governance. Further, a part-time research assistant was assigned to the project from each group, to act as knowledge broker and facilitator for the project and to assist with capacity building within the corporation. For both groups, the costs of the project steering committees and the research assistants were funded by the project, along with funding appropriate opportunities for discussions on Country with Elders, knowledge holders, younger people and steering committee members from each group. Summary details of First Nations partners are set out in Table 1, and the location of the Country of each group is shown in Figure 4.

Figure 4 Map indicating location of the Native Title determinations of First Nations partners, Wudjari in Western Australia (Native Title determination in name of The Esperance Nyungars) and Tagalaka in Queensland (Native Title determination in name of Tagalaka People)



Table 1 Summary of First Nations partners for this project

Partner	Tagalaka	Esperance Wudjari
Partner organisation	Tagalaka Aboriginal Corporation RNTBC (TAC)	Esperance Tjaltraak Native Title Aboriginal Corporation RNTBC (ETNTAC)
Organisation website	https://www.tagalaka.com/	https://etntac.com.au/
Geography	Traditional Country located on savannah lands in northern Queensland, including the town of Croydon.	Traditional land and sea Country located on the southern coast of Western Australia, including the town of Esperance.
Native Title determination	Determined in 2012, spanning more than 29,000km ²	Determined in 2016, spanning more than 30,000km ²
Initial reach out to Board regarding participation in this project	11 th April 2024	9 th August 2024
Partnership commenced with signing of contract for formal research agreement	17 th October 2025	24 th October 2025
Steering committee members	Five Tagalaka people, including three TAC board members	Six Wudjari people, including one ETNTAC board member, plus one non-Indigenous member
Research assistants	One Tagalaka female	One Wudjari female (supported by non-Indigenous staff member)
First project co-development meetings (online) with partners	14 th October 2025 – first formal meeting with Tagalaka Research Assistant	9 th December 2025 – first formal Wudjari Steering Committee meeting
First visit by researchers to Country as part of project	1 st to 5 th June 2026	3 rd to 10 th March 2026
Participants in discussions on Country during first visit	14 female and 10 male Tagalaka people	11 female and 9 male Wudjari people

Tagalaka people

“Connection with our ancestral lands, stories and practices is vital to our sense of belonging, peace of heart and overall wellbeing. Land is our beginning, our life and our ending place – it is as important as life itself to us.” (TAC, 2021. P2)

Through their ancestral ties, Tagalaka people are the traditional custodians of savannah Country lying between what are now known as the Norman and Gilbert rivers in the Gulf of Carpentaria. The traditional Country of the Tagalaka people is more than 29,000km² in area. An image of their land and waters is shown at Figure 5, and the location of Tagalaka Country can be seen in the map at Figure 4. A number of local government areas fall across Tagalaka Country with Croydon Shire Council existing wholly within Tagalaka Country and the town of Croydon being the main population centre within Tagalaka Country.

Tagalaka people experienced the full violence of settler-coloniser expansion that facilitated the theft of their lands in the late 19th century during the spread of European settlement across Queensland, as their traditional lands were impacted by the spread of cattle stations and mining operations, and

the influences of government policies⁶. The Tagalaka people were dispossessed of their lands, and significant numbers of Tagalaka peoples were forcibly removed and relocated to areas including Yarrabah, Palm Island, Cherbourg and Woorabinda. Others remained close to their traditional lands, gaining employment on the cattle stations across the region. Consequently, today Tagalaka people reside across Queensland and beyond, with fairly small numbers living on Country around Croydon or relatively close to their Country in Normanton.

The Tagalaka people lodged their first application for native title recognition in 1998, for the area immediately around the settlement of Croydon, and their second in 2001, for almost the full extent of their Country. The applications were determined together by the Federal Court on 10th December 2012, recognising native title rights over an area of more than 29,000 square kilometres, and leading to the establishment of the Tagalaka Aboriginal Corporation RNTBC (TAC) to manage the Native Title rights on behalf of Tagalaka people.

The TAC seeks to provide cultural, social and economic benefits to Tagalaka people and to promote management and caring for their Country. The TAC manages the Tagalaka Rangers program, funded initially through the Northern Gulf Natural Resource Management Group, and since 2018 through the Queensland Government's Indigenous Land and Sea Ranger Program (QILSRP)⁷. In late 2023, TAC successfully applied for funding for four Ranger positions from QILSRP and obtained funding from the National Indigenous Australians Agency that provides additional resources that contribute to improved environmental, cultural and socio-economic outcomes for Tagalaka people and Country. The Tagalaka Rangers program is based in Croydon and currently employs four Rangers and a Ranger Coordinator. In July 2024, Littleton National Park was renamed Tagalaka National Park by the Queensland Government, in recognition of Tagalaka connection to Country⁸. The Park is now jointly managed by Queensland Parks and Wildlife Service (QPWS) and the TAC.

TAC has had prior involvement in research relating to accounting for First Nations perspectives within SEEA EA, having partnered with JCU and CSIRO as part of the Regional Ecosystems Accounting Project (Woodward et al., 2023).

⁶ Derived from a range of sources including workshop discussions, YouTube videos shared by the Board, and general knowledge of Queensland history; and refined during discussions with TAC members.

⁷ Information regarding the Queensland Indigenous Land and Sea Rangers program can be found at <https://www.qld.gov.au/environment/plants-animals/conservation/community/land-sea-rangers/about-rangers>

⁸ See Queensland Government press release for further information <https://statements.qld.gov.au/statements/100757>

Figure 5 Waterhole on Tagalaka Country. Photo credit: Mélanie Hamel.



Esperance Wudjari Nyungars

“We are the Esperance Tjaltjraak. Our title is Traditional Owners of the Esperance region in Western Australia, but we don’t own the land, we belong to it. Our land and sea are part of our identity. As individuals, as families, and collectively as the Esperance Tjaltjraak; we know that it is our responsibility to care for our land and sea. We inherit this responsibility from our ancestors and bequeath it to our children.”
(ETNTAC, 2018. P4)

Esperance Tjaltjraak Native Title Aboriginal Corporation (ETNTAC) was registered by the Federal Court of Australia as the Native Title Body Corporate for the Esperance Nyungars on 6 September 2016. ETNTAC is the first point of contact for government and other parties who want to conduct business with Traditional Owners in Esperance. The Esperance Wudjari Nyungars' ancestral lands span over 30,000 square kilometres of Southern Western Australia. An image of Wudjari Country can be seen at Figure 6, and the location can be seen in the map at Figure 4.

Tjaltjraak comes from the Wudjari name for the Mallee (also known as Tallerack or Blue Mallee *Eucalyptus pleurocarpa*) which Wudjari People believe mark the extent of their boodja (Country). This includes Country traditionally bounded by the Phillips River in the west, Israelite Bay in the east, Kardutjannup (Peak Charles) in the north and the Continental Shelf to the south, extending beyond the area covered by the Esperance Nyungar Native Title Determination.

Kepa Kurl Wudjari people are descended from seven apical ancestors. Today, six family groups are recognised through the Native Title Determination as the direct descendants of those ancestors and the elders of those families have the rights and responsibilities for the practice of Wudjari Nyungar culture and for passing it on to future generations. These six family groups are the Dabb, Boxer-Rogers, Reynolds, Yorkshire/Knapp, Bullen and Tucker. Today, the majority of the Wudjari people live within the Esperance region, though some live elsewhere in the southwest, including Perth, Albany and Norseman.

Extensive farming and broad-scale clearing across Wudjari boodja has impacted significantly on Traditional Owners in terms of access to their ancestral Country. Limited access significantly impacts on ability to actively monitor and care for Country.

As the Registered Native Title Body Corporate for the Wudjari Nyungar people, ETNTAC delivers many cultural projects associated with cultural heritage and land management and manages commercial contracts across Wudjari ancestral lands. Whilst recognition of Native Title was important, Wudjari families continue to be a dispossessed group as so much of their country was taken to support the emerging agricultural industry. Due to the impacts of dispossession and colonisation very few Wudjari families own their homes or have access to intergenerational wealth.

ETNTAC is an Aboriginal Community Controlled Organisation and a registered charity governed by a board of traditional owners elected by its membership comprising representatives from each family group plus two non-member directors. The board pursues strategic objectives that prioritise Wudjari belonging and cultural authority, exemplary custodianship of boodja (land) and wadarn (sea), self-determination and intergenerational wealth of Wudjari people and improved wellbeing of Aboriginal people on Wudjari Country.

A Circle of Elders comprising individuals nominated by each family, guide the board and the organisation in cultural and heritage matters. ETNTAC's inclusive and culturally secure governance structures and processes have united families and provide the foundation for positive change in the Kepa Kurl/Esperance region. Whilst member focused, ETNTAC values inclusivity and offers services to all locally based First Nations people.

Currently ETNTAC's membership is approximately 900, however the wider Native Title group comprises several thousand.

ETNTAC has a strong network of community and research partners and is committed to following cultural protocols that ensure shared decision-making and ownership between our 6 families of Traditional Owners. The Corporation is widely recognised for its work and has collaborated with researchers from around the world to monitor and care for Country.

Figure 6 Coastal Wudjari lands, showing land and sea Country. Yokinup Bay can be seen in the distance and Dolphin Cove in the foreground (taken from the look out at Thomas River/Cape Arid National Park). Photo credit: Diane Jarvis.



4 Working in partnership

Principles

Respectful partnering

An important point raised within the SEEA EA literature is that for ecosystem accounts to be meaningful to First Nations peoples, they must be developed through respectful partnerships and co-design (Normyle et al., 2025, Nursey-Bray et al., 2023, Woodward et al., 2023). This co-design may require adaptations to be made to the SEEA EA system as prescribed in United Nations (2024). Meaningful partnership depends on First Nations peoples perceiving clear benefits from the accounting process and/or its outputs. These benefits may include access to funds for Caring for Country initiatives (Normyle et al., 2023), provision of a means for furthering self-determination (Addison et al., 2019) and/or achieving broader socio-economic, cultural, wellbeing goals for individuals and for the community as a whole (Jarvis et al., 2018, Stoeckl et al., 2019, Larson et al., 2023).

Accordingly, we summarise key principles for respectful partnering and collaboration with First Nations communities for SEEA EA. Many concepts in SEEA EA and in other ecosystem service frameworks align with First Nations values identified in previous work, (Lyver et al., 2017, Stoeckl et al., 2018, Stoeckl et al., 2021, Finau et al., 2023, Jarvis et al., 2022, Normyle et al., 2023). However, acceptable accounting systems are likely to vary across groups, reflecting their histories, priorities, and relationships with Country. These systems must be co-developed with First Nations peoples to ensure relevance and legitimacy (Nursey-Bray et al., 2023, Woodward et al., 2023). This approach responds to critiques of accounting being done “for” rather than “by” First Nations peoples (Buhr, 2011), and recognises the diversity and adaptability of Indigenous perspectives and Indigenous accounting (Finau, 2024). We therefore draw on both SEEA EA guidance and broader best practices for partnering with First Nations peoples in research (Douglas et al., 2026, McKemey et al., 2022, Nursey-Bray et al., 2023, Woodward et al., 2023, Shields et al., 2026).

Ecosystem accounts that incorporate First Nations knowledge must be developed in genuine partnership, with First Nations peoples empowered to lead and their cultural protocols respected (Woodward et al., 2023). This includes identifying the appropriate First Nations group(s) able to speak for Country, and ensuring that the “right” people (those people with relevant cultural knowledge and authority) are nominated by the community to participate in the accounting process (Woodward et al., 2023, Nursey-Bray et al., 2023, Shields et al., 2026). In addition to establishing the right team to be involved in the accounting process it is vital to negotiate and reach (ideally written) agreement about how the partnership will be conducted and the project governed, ensuring cultural protocols are respected (Nursey-Bray et al., 2023; Woodward et al., 2023).

Effective engagement (ensuring desired project outputs/outcomes can be achieved, whilst also delivering benefits to the partners in the relationship) further depends on sufficient and sustained funding and resources, jointly agreed by First Nations and other partners during project planning (Woodward et al., 2023). These must support appropriate participation, allow sufficient time to build trust and co-design processes, and enable First Nations partners to engage meaningfully. Throughout the project, time and resources should support knowledge sharing about SEEA EA, on-Country

engagement where possible, validation of data (including ground-truthing any Western scientific inputs), and community and cultural review of draft outputs prior to finalisation, involving the 'right' people at all stages of the process (Woodward et al., 2023, Nursey-Bray et al., 2023).

Finally, it is essential that knowledge and information shared by First Nations partners be valued and protected during and after the accounts design, development and preparation process, appropriately recognising and acknowledging First Nations peoples' rights to their Indigenous cultural and intellectual property (ICIP). Existing frameworks such as 'Our Knowledge, Our Way' (Woodward et al., 2020), the CARE (Collective benefit, Authority to control, Responsibility, and Ethics)⁹ principles for Indigenous data governance, and the principles of free and prior informed consent (FPIC) and benefit sharing (as laid out within the Nagoya Protocol¹⁰) provide essential guidance for ethical practice throughout the process.

Accounts development process

As noted by Finau et al. (2023), there is a wide diversity of views and priorities surrounding the development of cultural accounts. As a result, the process of creating these accounts can be of greater importance than the final accounting outputs. This reflects ongoing debates in the literature emphasising the need for accounting to engage meaningfully with stakeholders to effect positive change (Finau et al., 2023, Adams and Larrinaga, 2019, Gray, 2002, Twyford et al., 2022). Building on this work, we argue that the views and values of the First Nations partners need be included at every stage of the process, as it is *their* cultural connection to land and sea that we seek to capture (Woodward et al., 2023, Finau et al., 2023, De Valck et al., 2023). By pursuing accounting *by*, rather than accounting *for* First Nations peoples (Buhr, 2011, McNicholas and Barrett, 2005), the process can be empowering (Jacobs, 2000, Norris et al., 2022). This approach enables First Nations people and their communities to determine what should be counted, how it should be measured and how it should be presented, ensuring the focus remains on what matters to them, rather than relying on pre-defined Western science metrics.

Working collaboratively with First Nations peoples to co-develop accounts can provide multiple benefits (Molnár et al., 2023). These benefits span environmental, social, cultural, health and wellbeing, and economic domains, and flow to the environment, to First Nations people and their communities, and to the broader public. These benefits arise from both the initial process of accounts development and from ongoing monitoring, measuring and accounting activities over time.

Figure 7 (reproduced from Woodward et al. (2023)) illustrates the flow of benefits between Country and people that can result from adopting a holistic, partnership-based approach to monitoring, managing, and accounting for Country. This model was developed in Australia by the Tagalaka and Ewamian peoples (represented by Tagalaka Aboriginal Corporation and Ewamian Ltd) in collaboration with partners under the national strategy and action plan for a common approach to

⁹ See <https://www.gida-global.org/care> for further information

¹⁰ See <https://www.cbd.int/abs/default.shtml> for further information

environmental-economic accounting (Woodward et al., 2023). Tagalaka and Ewamian Peoples described the intertwined strands forming the circle in the figure as representing three key elements: (1) the integration of knowledge systems for measuring (including SEEA EA) and managing Country; (2) the holistic and reciprocal relationships between people and nature, encompassing both the mutual care of people and Country and the inseparability of ecosystem services and stewardship; and (3) their recommended approach to engagement between government, scientists, and First Nations peoples, grounded in respectful collaboration and cross-validation (Woodward et al., 2023).

Figure 7 Benefits of ecosystem account development identified by First Nations research partners Tagalaka Aboriginal Corporation and Ewamian Ltd in Australia. Source: Reproduced with permission from Woodward et al. (2023), Figure 18, page 61; provided under a Creative Commons Attribution 4.0 International (CC BY 4.0) license, © Commonwealth Scientific and Industrial Research Organisation.



Consideration of the benefits described in Figure 7 reveal that these contribute to healthy people and healthy Country via diverse routes, all of which can be related to the framework set out at Figure 3. From Figure 7, ‘Monitoring’, ‘Partnering’ and ‘Sustaining/Conserving’ all link to stewardship (the flow of services from people to Country), whilst ‘Maintaining/Preserving’ links to both stewardship and to the back loop from stewardship services to healthy people (Figure 3). ‘Enabling’ links to Ecosystem Services (flow of services from Country to people) as does ‘Reconciling’, as reducing access barriers increasing the opportunities for people to benefit from ES; further ‘Reconciling’ can directly contribute to improving healthy people outside of ES by providing opportunities for economic advancement, health and wellbeing outcomes, and empowerment (Figure 3).

Increasing relevance of SEEA-EA accounts to First Nations

Ecosystem accounting has a number of key features that can be built on. We propose that in addition to accounting in physical terms (e.g., hectares, tonnes) and in monetary terms, accounting in terms of subjective wellbeing and life satisfaction is needed for at least some types of values. Attention to the critical importance of time – and the different time scales considered relevant to Indigenous and

non-Indigenous people, as well as different conceptualisation of space, as discussed above in Section 2.3, need to be addressed. It is also clear that there is a need to make explicit allowance for interconnections in the system. Inter-relationships between various ecosystem services and the inter-relationships between people and Country, need stronger emphasis to properly capture First Nations perspectives. Ecosystem services (ES) (particularly, but not limited to, Cultural ES) are an essential part of the person's identity, belonging and connection, and determine their mental and physical wellbeing (Stoeckl et al., 2018). Not all services are "used" at the individual level: in some cultures, community values matter the most (Graham, 1999, Gould et al., 2019), and different types of goods and services can benefit individuals and communities in different ways (Stoeckl et al., 2018). Further, it is not only the services that nature provides to people that enhance wellbeing, but so too do services that people provide to nature, the act of 'looking after Country' and ensuring that extent and the condition of Country are maintained for future generations (Larson et al., 2023). As Finau et al. (2023) argue, SEEA EA are linear models depicting a one-way direction flow of environmental services to people. However, human-nature relationships in First Nations mental models are not linear but cyclical (Jarvis et al., 2022, Larson et al., 2023, Stoeckl et al., 2021), that is, there are positive bi-directional flows of benefits between people and nature. Looking after Country not only benefits Country but also strengthens connections to Country and creates positive psychological benefits (Larson et al., 2020). Such a way of viewing nature in a relational and interdependent manner, "moves the focus away from what people *have* to what they can *do* or *be*" (Sargiacomo et al., 2014. P667).

In practice (this project)

Relationship to partnership

Both First Nations partners involved in this work, represented by TAC and ETNTAC, were involved in the co-development of the project during 2024, prior to NESP funding being awarded for the work, with engagement on this project with TAC commencing 11th April 2024 and engagement with ETNTAC commencing 9th August 2024. By engaging with partners during the initial discussions, the project governance structure was designed to be culturally appropriate for each group. The initial discussions set out that there would be a committee established within each organisation to co-develop the project methodology and oversee the project activities.

This project being formally approved and contracted by DCCEEW and NESP, during the first half of 2025. The focus then switched to deepening the engagement and co-design between the researchers and First Nations partners, including the development and agreement of formal research agreements, contracted between each group and JCU. As part of this process, researchers visited Tagalaka Country and Wudjari Country in July and June 2025 respectively.

The visit to Esperance in June 2025 was conducted as part of a wider engagement between ETNTAC NESP Resilient Landscape Researchers where researchers from a number of newly funded or proposed projects visited the ETNTAC team to build and strengthen relationships and progress project planning. This visit included discussions between Diane Jarvis (researcher) and ETNTAC staff and Wudjari Elders within the ETNTAC offices and also on Country, including a guided tour along part of the Wudjari coastal lands and also a visit to Kardutjaanup, an ETNTAC owned and operated property towards the north of Wudjari Country, which has been fairly recently acquired with the intention of replanting native species to restore the property and generate carbon credits income for

ETNTAC (see photos from visit at Figure 8). During the visit, Diane Jarvis gave a presentation on the project to ETNTAC staff and Elders, and participated in deeper discussions with key staff, Elders and knowledge holders.

Figure 8 Photographs taken during visit to Kardutjaanup, June 2025. Credits: Diane Jarvis (both left and right).



The visit to Tagalaka Country in July 2025 was conducted alongside research being undertaken between TAC and JCU researchers for another externally funded project. The visit included participating in a camping on Country weekend at Tagalaka National Park, followed by attending the Tagalaka NAIDOC week opening ceremony in Croydon (see photos from visit at Figure 9). During this visit, attended by Diane Jarvis and Melanie Hamel, discussions were held with Tagalaka staff, Elders and knowledge holders and community members, building new and deepening existing relationships between Tagalaka people and the researchers.

Building on these visits, further discussions by phone and online led to formal research agreements being signed between JCU and each First Nations organisation being signed during October 2025. These contracts provided formal protection to the ICIP of First Nations partners, and also set out the arrangements for project governance, based around a Research Assistant and a project committee for each organisation.

Figure 9 Photos taken during visit to Tagalaka National Park, July 2025. Credits: Diane Jarvis (both left and right).



Under the research agreements, ETNTAC determined that two existing staff members would share the position of part time research assistant. This was to allow Candice Smith, a Wudjari Traditional Owner who had not been involved in research before to undertake the role supported by Jane Mulcock (a non-Indigenous employee at ETNTAC), thus the project was able to assist in building research skills and capacity within the Wudjari team. A project Steering Committee was appointed with members drawn from different operating teams within the ETNTAC organisation to ensure a good representation of skills, knowledge and experience. The steering committee comprises Jennel Reynolds (Committee Chair and Healthy Country Program Coordinator), Hayleigh Graham (Senior Ranger), Wanika Close (IPA Support Officer and Board member), Zandy Bonney (Membership Officer), Anna Bonney (Community Development Officer), and the research assistants Candice Smith (Community Development Officer) and Jane Mulcock (Community Development Coordinator). The Steering Committee seek guidance/approval from the Board and from the Circle of Elders as and when the Steering Committee consider appropriate.

For Tagalaka, it was agreed that Alison Quin, a Tagalaka woman serving on the Tagalaka Research Committee would be appointed as the Research Assistant (RA) for this project. Further, Tagalaka chose to appoint a sub-committee from the Tagalaka Research Committee to lead the co-development of the project, seeking guidance/approval from the Research Committee and the Board as and when they considered appropriate. The members of the Tagalaka project committee are Edmund Busch (Ranger Co-ordinator), Allan Douglas (Board member), Mark Owens (Senior Cultural Heritage Monitor) and Carmen Douglas (Board Chair).

Regular meetings were instigated between researchers and the ETNTAC/TAC RAs, held roughly on a weekly basis, with meetings held with the wider steering committees as and when considered necessary – either to discuss arrangements for visits to Country or to progress agreement on methods and accounts design.

It is important for this project that all project partners have sufficient knowledge and understanding of the SEEA EA framework to provide not only input in populating SEEA EA accounts but also to provide a critique of suitability or otherwise of the SEEA EA approach. For this purpose, the researchers and Tagalaka RA designed a SEEA EA training session for the members of Wudjari Steering Committee and Tagalaka Research Committee. Training sessions were designed to be delivered over a two-day workshop, containing both explanatory material on the project and on the SEEA EA as well as activities and discussions on each key aspect of SEEA EA (for an extract from the training slides see Figure 10). The researchers' academic expertise helped to ensure (scientific) accuracy, while Alison Quin's expertise in Indigenous Education helped to ensure the training was relevant, culturally-appropriate and engaging.

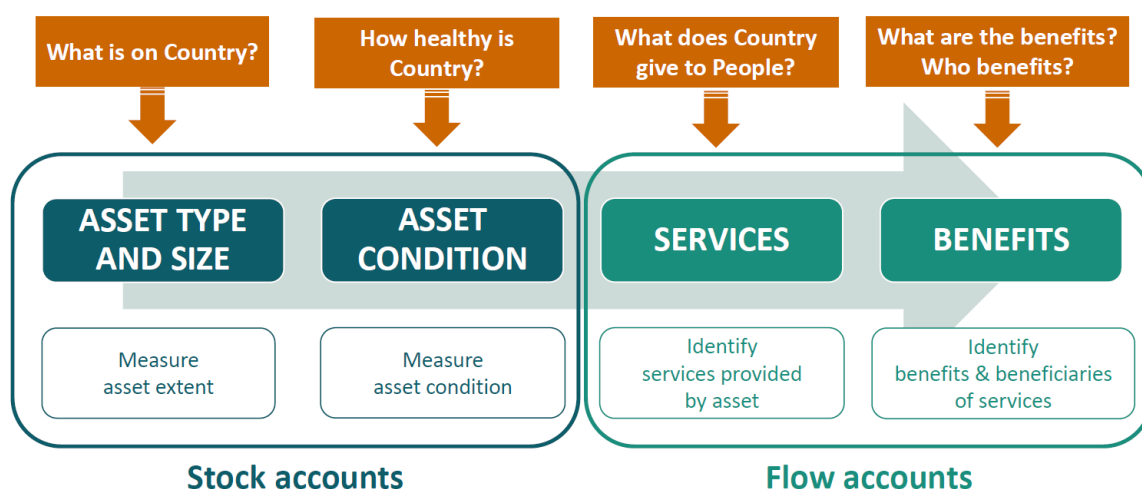
Training of Wudjari Steering Committee members was conducted online using Teams, on 3rd and 10th February 2026, and was attended by most of the Steering Committee members. These training sessions were recorded and videos of the sessions shared with ETNTAC to allow those Steering Committee members, and other interested ETNTAC staff, who had been unable to attend to watch at their own convenience.

For Tagalaka, Alison Quin developed an in-depth understanding of SEEA EA concepts and requirements by her deep involvement in the development of the training slides. She shared these concepts and extracts from the training slides with both the project committee members and the wider Research Committee during online meetings on 13th February 2026 and 11th March 2026. Further, highlights from the training were shared in person with two of the committee members (Edmond Bush and Allan Douglas) on Monday 1st June, as a reminder of the key concepts, prior to the commencement of activities undertaken on Country with the Tagalaka community, Elders, steering committee members and Rangers.

In addition, key SEEA EA concepts including Figure 3 were introduced to and discussed with Elders and Directors attending first set of visits on Country (March 2026 in Esperance and June 2026 in Croydon). This non-linear framework was discussed between researchers and First Nations partners as a potential conceptualisation and bridging between SEEA EA approach and their own conceptualisations, for this work. The circular rather than linear conceptualisation was viewed positively. Further, it was agreed that SEEA EA monetary accounts (accounts 4 and 5, Figure 1) should not be included as the monetarisation of nature, and services it provides, was viewed as unsuitable and culturally inappropriate. This decision is in line with previous reports in the literature, as many benefits that Indigenous people derive from nature are immeasurable in monetary terms: this may be due to them having infinite value, because it is culturally taboo to monetise them (Daw et al., 2015), because environmental values are inextricably linked to other values – as is the case for complex social goods (Stoeckl et al., 2018), or some other reason.

Whilst the discussions with the Steering Committee following the SEEA EA training and capacity building, and during the researchers' initial visits to Wudjari and Tagalaka Country, led to agreement that the conceptualisation in Figure 3 was a suitable starting point for this project, it is important to note that, although critically important, capturing the condition and capacity of people ("Healthy people", Figure 3) is beyond the scope of this project.

Figure 10 Example from the SEEA EA training slides developed by the research team, this example illustrating how key SEEA EA accounts and flow of services and benefits were explained to Steering Committee members by relating the accounting terms to Country and to people.



Document collation and review

A key learning from early engagement with First Nations partners was clear guidance that Elders would not appreciate being asked to share information and stories about matters that have been previously explored in detail as part of other research projects; rather to ensure a respectful and effective relationship researchers were encouraged to review existing literature and reports available from previous work prior to meeting with Elders, knowledge holders and community members on Country. To facilitate this, both ETNTAC and TAC were willing to share documents in their possession with researchers, in addition to encouraging researchers to search academic and grey literature sources.

Accordingly, the first task undertaken by the research team was to conduct a literature review focusing on academic and grey literature, (including journal articles, reports, web pages and newspaper stories) that focused on either ETNTAC and/or Wudjari peoples, and on either TAC and/or Tagalaka peoples. This work was led by Melanie Hamel (focusing on Wudjari literature) supported by the ETNTAC RA/Steering Committee, whilst Alison Quin (Tagalaka RA) focused on the Tagalaka literature.

For this literature review, the focus was on identifying previous work that described, for Wudjari or Tagalaka, any of the following:

- conceptualisations of Country
- species and locations (including maps) on Country considered culturally important
- services that flow between people and Country, either from particular species/locations or from Country more generally.

The insights from the fairly extensive Wudjari literature were checked with the ETNTAC steering committee as required during the period from December 2025 – March 2026 as part of the process of co-developing the activities for the researchers first visit to Esperance in March 2026. For

Tagalaka, Alison Quin shared relevant insights with the research team as the insights emerged from the much smaller set of literature found for review.

Insights from the literature are woven into our discussions within the following sections relating to the various components of the SEEA EA, as and when these insights were determined to be relevant to the methods and/or accounts design process.

5 Extent Accounts

Bridging SEEA EA and Indigenous views on extent accounts

Ecosystem extent accounts (United Nations, 2024, Chapters 3 and 4) focus on the type and extent of different “ecosystems” (for example, forests – 10 hectares, wetlands – 5 hectares, urban areas – 2 hectares). The entire system includes both an opening extent account (hectares of each type at the beginning of a period) and records of changes in extent (additions and reductions in areas), which together allow for the estimation of closing accounts (hectares of each type at end of period).

In their paper on SEEA EA accounting through Australian First Nations peoples lenses, specifically Aboriginal peoples, Larson et al. (2026a) point to the pre-determined classification of “ecosystem types” in the SEEA EA system, as an issue of critical relevance to First Nations peoples. They suggest rather than beginning with western science classifications and attempting to incorporate the views of the First Nations where and if they fit, a better approach would be to co-design the extent accounts with the First Nations peoples themselves determining the types of assets within the environment to be accounted for, based upon their conceptualisation of Country, which may be different to that of ecosystems. Such conceptualisations could be built upon biocultural approaches that emerge from cultural stories and songlines, such as culturally significant entities, landscapes and/or species (Shields et al., 2026, Goolmeer et al., 2024, Pascoe et al., 2024), or some other classification that is culturally appropriate for the First Nations Country being accounted for. We note that the document review of Esperance Tjaltjraak Native Title Aboriginal Corporation Healthy Country Plan (ETNTAC, 2019, ETNTAC, 2018) shows classification of assets on their Country primarily led by geophysical features: Cultural sites; Granites; Coast; Islands; Wetlands, and rivers; Native animals and native plants. From the Tagalaka Country Plan (TAC, 2021), we note the classification chosen was a mix of geographic and socio-cultural features: Landscapes, Water/wetlands, Community wellbeing, Cultural sites and heritage, and Wildlife.

Another important issue discussed in Larson et al. (2026a) relates to the fact that the SEEA-EA system is essentially reductionist, focusing on numerous ‘parcels’ of (implicitly separable) pieces of land – the accounts do not allow connectivity between ecosystems and/or people, so do not consider Country as a whole. For First Nations, Country is more than an assemblage of ecosystems: it is ancestral home, source of identity and belonging (Stoeckl et al., 2018, Stoeckl et al., 2021), and family (Salmón, 2000). In some cases, and for some purposes, it is appropriate to “separate” Country into distinct ecosystem types (for example, when dealing with a specific threat, McKemey et al. (2022), Manero et al. (2022)); but in other circumstances this may not be appropriate. For many Australian First Nations the colonisation trauma of being removed from Country and settler-colonisers exerting ownership over Country, adds to the reality of limited or refused access to parts of, or to the entirety of, their Country. They thus propose adding a holistic variable “Country” with associated variables that consider factors such as “extent of access to Country”, “extent of Country under First Nations management” to the accounts and argue this would provide a much richer picture of changes in extent, over time (Addison et al., 2019).

Of high relevance to First Nations peoples in relation to extent accounts are also general spatial and temporal considerations discussed previously in subsection 2.3.

SEEA EA-aligned approach for extent accounts

Extent accounts methodology consists of the following steps, each of which are expanded upon below:

SEEA EA-aligned approach for extent accounts

Step 1: Collation and review of existing evidence:

- Written documents, audio and video recording and maps previously collated by the partner group about their Country, completed by additional material found online using common search engines and research repositories.
- Maps and associated spatial data from relevant national and regional data providers

Step 2: Joint workshops with researchers and the partner group, co-developing:

- An appropriate typology of ecosystems (names of assets)
- Spatial distribution and extent of individual assets

Step 3: Data analysis and outputs:

- Maps of assets, showing their spatial distribution and extent
- Tables of extent accounts derived from the spatial data
- Analysis of NEA information available and its relevance to extent accounts

Step 4: Review and validation of outputs:

- Meetings with partners discussing and approving outputs created

Step 1 - Collation and review of existing evidence

The objective of **step 1** is to provide researchers/accounts developers with a foundational understanding of 1. how Country is conceptualised from an Indigenous perspective; and 2. information about the biophysical context of Country. This information can then be reviewed together with Indigenous partners, providing a base from which extent (and other) accounts can be developed.

Collation of existing evidence about Country

As introduced in section 4.5, the researchers and partner organisations, TAC and ETNTAC, worked together to collate relevant existing evidence about each Country. Existing evidence was compiled from various sources, including:

- information shared by TAC and ETNTAC;
- information held by the research team from previous collaborative work with TAC;
- materials shared by colleagues within the NESP Resilient Landscapes Hub based on previous engagement with ETNTAC;
- publicly available information

Existing evidence materials included written documents, web pages, audio and video recording and maps about Wudjari and Tagalaka Country.

Publicly available information was identified using Google and Google Scholar with search terms including: 'Wudjari'; 'Tagalaka'; 'Tjaltjraak'. Because the purpose of the review was to develop an initial understanding of how Country is reflected in existing evidence (public and confidential), public sources were selected for their relevance to the study objectives rather than through a systematic or comprehensive literature review.

To support researchers' understanding of how Wudjari and Tagalaka people conceptualise Country (1. above), the following information was collated for both Countries from the multiple sources of existing evidence and recorded into a table:

- Metadata about the source (e.g. type, author(s), date)
- features of Country (e.g. landscapes, specific cultural sites)
- species on Country (e.g. threatened species, culturally-significant species, species mentioned in academic studies)
- any conceptualisation of Country (e.g. from Indigenous-led Healthy Country Plans or non-Indigenous-led academic studies).
- any mention of ecosystem services and benefits, and/or their flows
- any mention of factors enabling or disabling such flows.

To support researchers' preliminary understanding of the environmental and socio-cultural context of each Country (2. Above), maps and associated spatial data were also compiled from the above-mentioned sources, as well as from relevant national and regional data providers. Spatial datasets were primarily sourced from Australian Government agencies (e.g. Digital Atlas, Geoscience Australia, National Native Title Tribunal, DCCEEW), the Government of Western Australia (e.g. DBCA) for Wudjari Country, and Queensland Government for Tagalaka Country. These datasets included spatial data and associated attributes relative to administrative boundaries, hydrology, lithology, vegetation, and land use, sourced from recognised government data providers.

Review of existing evidence

Existing evidence about Wudjari Country was reviewed by Melanie Hamel (non-Indigenous researcher), working closely with ETNTAC Steering Committee members and colleagues to identify representations of Country that most closely reflected Wudjari conceptualisations, including their ontology (understandings of being) and epistemology (ways of knowing). Alison Quin (Tagalaka woman and research assistant) led and interpreted the review of existing evidence about Tagalaka Country.

Both reviews of existing evidence yielded markedly different numbers of sources, with around 35-40 sources identified for Wudjari Country and 9 for Tagalaka Country.

From both groups, Healthy Country Plans (HCP) emerged as key documents articulating Indigenous priorities, values and aspirations for Country:

- Wudjari: “Tjaltjraak Healthy Country & Indigenous Protected Area Plan: A Strategic Plan for Esperance Nyungar Country and the Tjaltjraak Indigenous Protected Area, being the Healthy Country Plan” (ETNTAC, 2018);
- Tagalaka: “Tagalaka Country Plan 2021–2026” (TAC, 2021).

Additionally, for Wudjari, the “Wudjari IPA Management Plan – Draft 3” (ETNTAC, 2025) was an important source for developing the researchers’ foundational understanding of Wudjari’s conceptualisations of Country.

In an additional development, renewal of the Tagalaka Country Plan 2021-2026 commenced in parallel with this project and for efficiency, workshops were devised that enabled an overlapping conversation that informed this project, the next iteration of the Country Plan and the Ranger Strategy that will deliver it.

While HCPs and IPA Management Plans are Indigenous-led documents that articulate Indigenous priorities, values and aspirations for Country, they are nevertheless developed within institutional frameworks that shape their structure, language and intended use. As such, they may not fully capture the depth, relationality and complexity of Indigenous ontologies and epistemologies, particularly aspects of knowledge that are embedded in lived experience, practice, relationships and cultural protocols.

Additional grey literature developed with Wudjari and Tagalaka people provided important context and nuance to the understanding gained from Country plans. Content published on the First Nations partners websites and videos shared of Elders speaking about Country also contributed valuable insights. In contrast, much of the academic literature and reports developed by non-Wudjari or non-Tagalaka authors, were less directly applicable to this project, as they often reflected disciplinary approaches and conceptual frameworks aligned with Western science. For example, such sources frequently focused on discrete species, ecosystems or landscape features rather than the holistic and interconnected understandings of Country expressed by Wudjari and Tagalaka people. Nevertheless, reviewing these sources contributed to a broader understanding of important components of Country, including perspectives informed by both Western science and First Nations knowledge systems.

Limitations and considerations of the approach followed in Step 1

Spatial datasets provided a spatial foundation for discussions with partners but were not intended to define the extent or meaning of Country, which was informed through Indigenous knowledge and engagement processes.

Importantly, the review of existing evidence about Country was not undertaken to enable researchers to independently define or map the (ecosystem) assets present across each of the First Nations partners’ Country. Rather, the purpose of the review was to develop an understanding of the conceptualisations of Country already articulated by each group. This was an important step in

ensuring that the limited and valuable time available from Steering Committee members, Elders, and other knowledge holders was not spent revisiting knowledge and thinking previously documented. Instead, discussions could begin from this existing foundation and focus on collaboratively refining, expanding and adapting these understanding to align with each group's conceptualisations of Country, including traditional ecological and cultural knowledges, within the SEEA EA framework.

Thus, a key outcome of the review was providing researchers with a foundational understanding of each group's perspective on Country, as well as varied articulations of information about Country, which could be further developed through discussions and joint workshops with researchers and First Nations partners, held on Country where possible.

Step 2 - Joint workshops with researchers and the partner group

The objective of **Step 2** is to collaboratively develop key components of the ecosystem accounts through workshops involving researchers (accounts developers) and First Nations partners. Specifically, the workshops sought to:

- identify and agree on an appropriate classification and names of (ecosystem) assets;
- determine the opening and closing time points for the accounts; and
- identify the location and spatial extent of assets on maps.

The workshops built upon the review of existing evidence and spatial datasets undertaken in **Step 1**.

Co-development of workshops

To collaboratively develop an appropriate classification and typology of assets, discussions should be undertaken with representatives of the First Nation group whose Country is being accounted for, preferably on Country. Previous research applying the SEEA EA framework with First Nations groups has emphasised that “talking about Country should happen on Country” (Woodward et al., 2023. P10), while research exploring conceptualisations of nature-people systems has shown that discussions held on Country are more likely to reveal context-specific understandings than those conducted elsewhere (Jones et al., 2014).

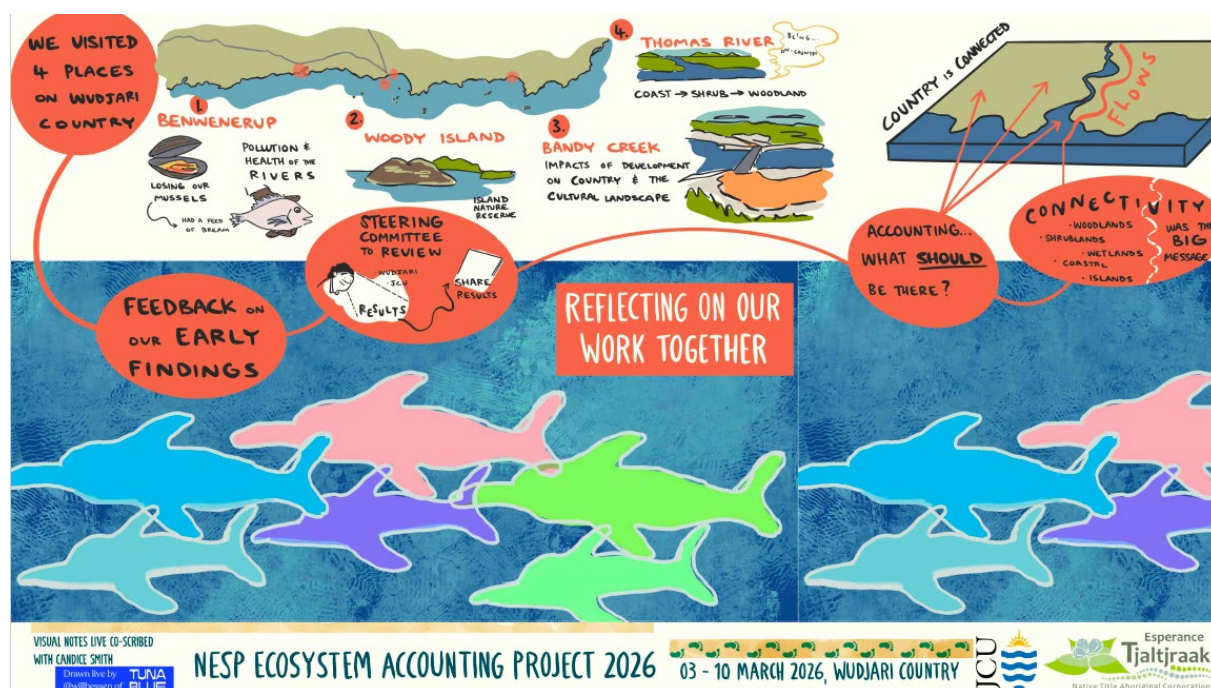
Beyond collaboratively developing an appropriate classification of assets, the opening and closing time points for the accounts need to be agreed with First Nations partners. Maps and visits to different sites on Country can then be used to support discussions about the location and spatial extent of assets.

Following this approach, workshops were held with Steering Committee members, Elders, knowledge holders and community members from each First Nations group over several consecutive days, including visits to different locations on Country. Conducting a series of workshops across multiple days provided several important benefits. Most importantly, these allowed relationships between participants and researchers to develop over time, fostering trust, familiarity and confidence in the discussions. While some participants contributed relatively little during the initial workshop(s), many shared more detailed reflections and perspective as discussions progressed, suggesting that the time spent together helped create a culturally safe and trusting environment for knowledge sharing. A graphic representation of the workshops undertaken with the Wudjari group can be seen in Figure 11.

Visiting different locations on Country also enriched the discussions, as each place prompted new ideas and enabled participants to compare different environments, landscapes and assets on Country. Steering Committee members and/or the Research Assistant participated in each workshop. In addition to sharing their knowledge and perspectives, they provided cultural guidance, playing a key role in relationship building between the community and the researchers during the discussions.

Prior to each workshop, participants completed a free prior informed consent (FPIC) process approved by JCU Human Research Ethics Committee (Approval 25H-0551). With participants' consent, workshop discussions were audio recorded and later transcribed for analysis.

Figure 11 Graphic recording of activities undertaken during first series of joint workshops with researchers and Wudjari during March 2026 Credit: Will Besson of Tuna Blue and Candice Smith, Wudjari Artist and Co-Scribe.



Themes discussed throughout the workshops

With both First Nations partners, discussions around appropriate classifications of assets of Country included discussions of the asset categories described in their HCP. This categorisation provided a useful starting point for discussions as both the First Nations groups were very familiar with the conceptualisation described within their HCP. Modifications for the purposes of developing SEEA EA extent and condition accounts were discussed, with various different options explored prior to the final categorisations for the SEEA EA accounts being agreed.

During the workshops and subsequent discussions with the Steering Committees, the spatial boundaries of assets were identified and delineated on maps. The extent of each asset was further refined through a series of online meetings using live mapping tools and shared printable PDF maps.

Workshop discussions also considered the appropriate opening and closing dates for the SEEA EA accounts. The Healthy Country Plans (HCPs) provided the starting point for these discussions, noting that both plans were developed prior to this project, and are currently under consideration for revision by the partner groups. During discussion, the steering committees and researchers considered whether to align the opening date for the ecosystem accounts with the development

date of each group's most recent HCP: 2018 for Wudjari (ETNTAC, 2018) and 2021 for Tagalaka (TAC, 2021). Aligning the baseline accounts with the HCP appeared to be a logically methodologically choice as the HCP process itself emerged as an integral part of the discussions on stock accounts (including both extent and condition of the assets for the accounts). Further, the HCPs provided a historical record of the situation as at that date. During discussions, the appropriate closing date for the accounts was also deliberated, seeking to select a date that was cognitively simple and convenient for the participants. The current period emerged from the discussions as the clear preference, and thus the closing date for the accounts was set as 2026.

Thus, as part of the methodology of the project, it was determined that extent account tables and maps will be prepared showing the extent of assets across the Ecosystem Accounting Area (EAA) at the date of the last HCP (2018 and 2021 for ETNTAC and TAC respectively) and as of 2026. As a result, the accounts will represent an 8 year accounting period for ETNTAC, and 5 years for TAC.

Limitations and considerations of the approach followed in Step 2

As further explored below, throughout discussions between researchers and the First Nations partners, it was clear that the SEEA EA approach of separating a Country into different parts, that is separate "assets", was conceptually problematic as this does not align well with holistic First Nations worldviews. Whilst sub-dividing Country into different parts is appropriate in some contexts, in others it is considered inappropriate and/or non-sensical. Further discussion of this misalignment of First Nations worldviews and the SEEA EA separable assets on Country approach is discussed in Section 10.2.

Step 3 - Data analysis and outputs

The objective of **Step 3** is to translate the information compiled and collaboratively developed during **Steps 1 and 2** to into a series of agreed (ecosystem) accounting outputs. These included:

- maps showing the agreed (ecosystem) assets and their spatial boundaries;
- extent accounts reporting the surface areas (in ha or km²) of each agreed (ecosystem) asset types
- analysis of NEA information available and its relevance to extent accounts

Once assets have been co-developed and defined with each First Nations partner group, researchers can use relevant existing spatial datasets, together with spatial information identified during the workshops, to represent the extent of each asset on Country. The spatial extent of each asset can then be calculated and expressed as areas (in hectares or square kilometres) to populate extent accounts.

For each First Nations group (Wudjari and Tagalaka), extent accounts will initially present the opening and the closing extent of each of the asset types, as well as the total extent of the Ecosystem Accounting Area (EAA). This tabular presentation is based on Table 3.1 of the SEEA EA documentation (United Nations, 2024. P57). An example of the accounts table format that will be provided is shown in Table 2 below.

In addition, extent accounts will document changes in asset extent during the time from the opening to the closing period, including additions and reductions in extent. This account table follows the approach presented in Table 4.1 of the SEEA EA documentation (United Nations, 2024. P85), adapted

to use asset typology co-developed with each of the First Nations groups rather than the IUCN Global Ecosystem Typology (GET).

Through this approach, the assets represented within the extent accounts are based on the First Nations conceptualisations of the appropriate classification of assets on Country, while the spatial extent measures are derived from the GIS database. Further, extent accounts will be complemented by spatial maps showing the distribution of the different asset types across Country. When aggregated, the extent of all asset types will represent the total extent of Country (the Ecosystem Accounting Area (EAA)) being accounted for.

Table 2 Tabular presentation of spatial units within the Ecosystem Accounting Area (EAA).

Agreed assets to be accounted for	Size (hectares/km2) - Opening	Size (hectares/km2) - Closing
Asset type 1		
Asset type 2		
Asset type 3		
...		
...		
EAA		

Limitations and considerations of the approach followed in Step 3

Within the SEEA EA framework, aggregation of individual asset extents provides a spatial representation of the EAA; however, this does not imply that for First Nations Peoples Country itself is understood as a sum of separable components.

Step 4 - Review and validation of outputs

The objective of **Step 4** of the methodology will be to review and validate the draft accounting outputs developed through the previous phases. This process is proposed for each type of accounts and all outputs produced by the project.

During this Step, draft analyses produced by the research team will be reviewed by the Steering Committee, followed by review by Directors and Elders where appropriate. Three key review criteria have been developed collaboratively with each First Nations partner group:

- **Protection of culturally sensitive information:** Ensuring that the written content, mapped information and account tables do not include any information that should not be publicly shared. Information identified as confidential should be deleted.
- **Representation of key messages and priorities:** ensuring that important information, perspectives or elements of Country identified by partners are not omitted from the outputs.
- **Alignment with discussions and understandings developed throughout the project:** ensuring that written descriptions, mapped information and account outputs accurately represent the discussions, interpretations and decisions reached through project engagement.

Accounting tables, maps and supporting narratives will not be shared beyond the researchers and First Nations partners until the outputs have been agreed and approved.

6 Condition Accounts

Bridging SEEA-EA and Indigenous views on condition accounts

Condition accounts (detailed in Chapter 5 of the United Nations (2024)) aim to record the ‘quality’ of the (ecosystem) assets set out within the extent accounts, with the intention of capturing data relevant to protection, maintenance and restoration of these assets. The SEEA EA Ecosystem Condition Typology describes various metrics that are used to describe condition, derived from using groups of variables intended to describe the abiotic, biotic, and landscape level characteristics of each ecosystem. The relevance (or not) of ‘condition’ accounts to First Nations peoples, is thus critically dependent upon the relevance of selected characteristics and descriptors.

An important step within the measurement process is to report existing conditions relative to a reference condition (United Nations, 2024, para. 5.66), with the expert opinion as one method proposed for identifying and/or setting the reference condition of individual indicators (as set out in Appendix 5.2 United Nations (2024)). Although an expert’s opinion may be expressed semi-quantitatively, qualitative articulation is probably most common (European Commission, 2003), and expert opinion may comprise a narrative statement (United Nations, 2024, Appendix 5.2). Larson et al. (2026a) contend that, from a First Nations perspective, the key issue in developing condition accounts is determining who establishes these reference levels, essentially asking: who is recognised as having the expertise to define them? If condition accounts are to be used as a measure of “healthy Country”, then First Nations peoples are uniquely qualified to identify and describe what “healthy Country” entails on the lands for which they are the traditional custodians. Traditional First Nations expert knowledge can guide narratives and guide the potential quantifications of reference condition levels. Given that the approved SEEA EA methodology permits condition assessments to be informed by expert judgement, our proposal is to acknowledge the First Nations as the true experts of their Country and use their knowledge and expertise for the development of condition accounts.

Following from the First Nations perception of Country as a whole, discussed previously within Section 2.2, SEEA EA does allow for quantifying “how an ecosystem asset is connected to other ecosystem assets of the same ecosystem type” (United Nations, 2024, para. 5.38), enabling consideration of the environmental characteristics at landscape or seascape scale. Condition accounts thus have the potential to go beyond scoring for each ecosystem type, allowing condition scoring for Country as a whole.

SEEA EA accounts include ecosystem condition variables (a characteristic that can be measured) such as the number of bird species or the proportion of tree cover. The criteria for selecting a particular metric (a specific measure) or indicator (a measure or set of measures that help interpret a broader condition, trend or outcome) must be provided (United Nations, 2024, Appendix 5.1), while instrumental relevance (where something is important as a means to an end, rather than important of itself) suggests that the “highest priority services should be favoured”. When partnering with First Nations groups, the variables used to determine condition, and details of how these will be defined, measured and reported within the accounts, should follow the partner groups’ priorities and conceptualisation.

Of high relevance to First Nations peoples in relation to both extent and condition accounts are also general spatial and temporal considerations discussed in section 2.3.

SEEA EA-aligned approach for condition accounts

Condition accounts methodology consists of the following steps, each of which are expanded on below:

SEEA EA-aligned approach for condition accounts

Step 1 – Collation and review of existing evidence:

- Written documents, audio and video recordings and maps previously collated by the partner group about their Country

Step 2 – Joint workshops with researchers and the partner group, co-developing:

- Opening and closing time points for the accounts
- Scoring system for the condition of individual assets and Country as a whole
- Reference condition for Country as a whole
- Opening and closing condition of individual asset and Country as a whole (scores)

Step 3 – Data analysis and creating outputs:

- Narratives and key points from the workshops
- Tables of condition accounts
- Analysis of NEA information available and its relevance to condition accounts

Step 4 – Review and validation of outputs:

- Meetings with partners discussing and approving outputs created

Step 1 - Collation and review of existing evidence

As described in section 5.2.1, a review of existing evidence about Wudjari Country and Tagalaka Country was conducted. The Healthy Country Plans and associated documentation such as IPA planning documents appeared to provide key information for condition accounts. Representatives of each group recommended the use of these documents to provide researchers with a preliminary understanding of how Wudjari and Tagalaka Country have been conceptualised and Country condition rated and measured within information previously publicly reported.

Esperance Tjaltjraak Native Title Aboriginal Corporation Healthy Country Plan (ETNTAC, 2019, ETNTAC, 2018) provides a comprehensive summary of discussions on the condition (health) of various targets (assets) on Wudjari Country. This HCP was a main source of data for the evaluation of the condition of the individual assets on Wudjari Country in 2018, agreed during discussions as the time of the opening accounts, and also for discussion for the scoring of the condition of assets for closing accounts, supported by the draft IPA management plan (ETNTAC, 2025).

The Tagalaka Country Plan (TAC, 2021) provides a comprehensive summary of discussions on the condition (health) of various targets (assets) relating to Tagalaka Country. As for Wudjari, this HCP was a key source of data for the evaluation of the condition of the individual assets on Tagalaka Country in 2021, agreed during discussions as the time of the opening accounts, and also for discussion for the scoring of the condition of assets for closing accounts.

Step 2 - Joint workshops with researchers and the partner group

Researchers were invited by both Indigenous partner groups to discuss together the health of assets on each Country and appropriate ways to measure health during a visit to each Country. The visit to Wudjari Country occurred in the week of Tuesday 3rd to 10th of March 2026, while the visit to Tagalaka Country occurred during the week of 1st to 5th June 2026. Discussions were held at various sites on Country chosen by each group and within the First Nations partners' offices, in Esperance and in Croydon. Each Indigenous group indicated their preferred attendance for different types of discussions:

- discussions about the different assets on Country (described within section 5.2.2) included Steering Committee members, Elders, knowledge holders and community members.
- discussions on Country during these visits would be supplemented by online meetings with Steering Committee members and Research Assistants to check researchers understanding and to allow for refining of concepts and decisions, and for finalising of outputs.

Opening and closing time points for the accounts

Similar to the extent accounts, the opening point for the condition accounts was defined as the condition of the assets when the current HCP was developed: 2018 for Wudjari (ETNTAC, 2018, ETNTAC, 2019) and 2021 for Tagalaka (TAC, 2021). The closing point was set as time of this project: 2026.

Measuring the condition of assets and Country

Throughout discussions between the researchers and the First Nations partners, it became clear that the SEEA EA approach of dividing Country into discrete components, or separate "assets", was conceptually problematic, as this does not align with holistic First Nations worldviews. Instead, partners emphasised the need to recognise Country as a single entity in its own right, acknowledging that measures for individual parts of Country do not necessarily aggregate to represent the condition of Country as a whole. To better reflect this perspective, the condition accounts included an assessment of the condition of Country as a whole alongside the condition of individual assets. The whole-of-Country assessment was treated as a distinct measure rather than as a synthesis of the asset-level assessments.

The broader misalignment between First Nations worldviews and the SEEA EA approach of treating Country as a collection of separable assets is discussed in Section 10.2

Scoring system for the condition of assets and Country

Discussions on the methodology for assessing the condition of Country centred on the use of expert judgement from First Nations partners. Together with partners, researchers first developed a narrative describing the reference condition for Country, which served as the benchmark against which condition was assessed. Based upon this reference condition, partners then assigned a subjective score to represent the condition of Country at each accounting date relative to the reference condition. The scoring of Country was to be undertaken during the second phase of joint workshops with researchers and First Nations partners on Country (27th – 31st July with Wudjari, dates with Tagalaka to be confirmed).

Within Tagalaka and Wudjari's respective HCPs (TAC, 2021. P6, ETNTAC, 2018. P25), the health of various targets was scored using a standard scoring system. The HCP rating system consists of four levels, the lowest level being a "Poor" condition, where the target needs immediate work to protect it from being completely destroyed. Next level is "Fair", where target needs some work to improve it and maintain it in the future; followed by "Good" level, where target is within the acceptable range and only limited work is required for maintenance. The top condition, that of "Very good", is assigned when the target is healthy and only requires monitoring for change. This existing scoring system was used at the starting point to co-develop an appropriate system for this project.

With Wudjari, discussions on the scoring system began during the initial on-Country workshops and continued through subsequent online meetings. These discussions highlighted limitations of the 4 point scoring system used in the HCP. In particular, partners noted that such a broad scale may not be sufficiently sensitive to detect incremental changes in condition over time (a key objective of SEEA EA conditions accounts). For example, an asset may be scored as 'poor' in successive accounting period (HCPs), yet this does not indicate whether Caring for Country activities have led to improvements and/or whether pressures and threats to Country have resulted to further decline. To better support condition accounting, modifications to the HCP scoring system were proposed for use within the SEEA EA accounts.

The discussions presented here focus on the Wudjari partnership. Equivalent discussions with Tagalaka partners are less advanced and have not yet been approved for reporting, as the first on-Country joint workshops with researchers and Tagalaka were held in June 2026, compared with March 2026 for Wudjari.

Initially, Wudjari partners suggested introducing an additional category below "Poor" condition: "Destroyed", to represent assets that had been degraded beyond recovery. However, subsequent discussions concluded that a 12-point Likert scale would provide a more meaningful and sensitive framework by allowing greater nuance in the assessment of condition. The proposed scoring system (Table 3 and Figure 12) is therefore intended for assessing both the condition of individual assets and the condition of Country as a whole. The scale will be trialled during the next phase of joint workshops with researchers and Wudjari during the researchers second visit (27th -31st July 2026).

Figure 12 Scoring of the Condition (health) of individual assets, and Country as a whole, visualised as a scale.

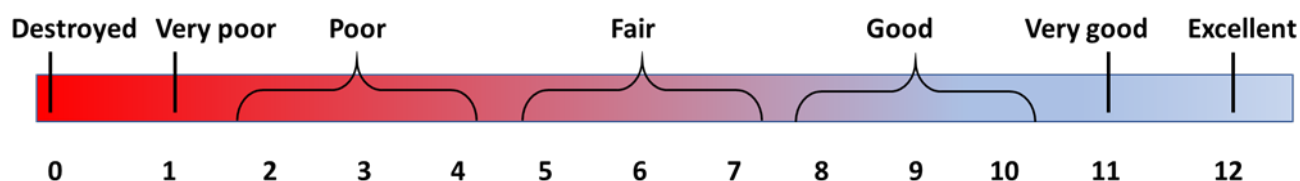


Table 3 Scoring of the Condition (health) of individual assets and Country as a whole, with descriptors, extended from the Healthy Country Plan rating for targets (ETNTAC, 2018. P25).

Condition	Description of the condition (of Country as a whole or an individual asset or target)	Proposed score
Excellent	The target is thriving on its own	12
Very good	The target is healthy and only requires monitoring for change	11
Good	The target is within the acceptable range and only limited work is required for maintenance	10 9 8
Fair	The target needs some work to improve it and maintain it in the future	7 6 5
Poor	The target needs immediate work to protect it from being completely destroyed	4 3 2
Very poor	The target is destroyed but reparable	1
Destroyed	The target is completely destroyed beyond repair	0

Reference condition for Country as a whole

Reference condition for Country as a whole was elicited from discussions with the First Nations Elders, Steering Committee members and other knowledge holders, being the experts able to speak for their Country. Information from the document review informed these discussions as appropriate, noting that for some asset types the HCPs were able to contribute useful information but were silent on other important aspects of Country. Discussions were held during the initial workshops on Country, and further refined through sharing of draft documents and subsequent online discussions. As a result of these methods, the reference condition for Country could be captured as a narrative.

The health of Country as a whole was not described in the documents reviewed for either Wudjari or Tagalaka partners, and therefore needed to be elicited through discussions. Using the Wudjari workshops to illustrate the methodology, this topic formed the focus of a discussion held during the researchers' visit to Wudjari Country on the morning of 10 March 2026. The session was attended by Elders, Directors and Rangers, providing representation across genders and age groups (4 Wudjari men and 7 Wudjari women). The objective was to develop a shared description of the reference condition for Country as a whole. The discussion was initiated with the following prompt:

Prompt: “If you close your eyes and you think about Country in the last few years, what's been happening on Country, and then if you think about Country into the future, what is your vision of what Country, healthy Country, should look like? How will you know when Country is in a Very good condition? What is the picture of Country in your eyes when it's looking “Very good”?”

Based on discussions with First Nations partners, the researchers drafted narrative descriptions of the reference condition. These drafts were iteratively reviewed and refined with the Steering Committee and Research Assistants until agreement was reached on a reference condition narrative. The agreed narrative then served as the benchmark against which the condition of Country could be assessed and scored. These discussions were also captured by the graphic recording shown at Figure 13.

Figure 13 Graphic recording of discussions focusing on the reference state for healthy Country, undertaken during first series of joint workshops with researchers and Wudjari during March 2026 Credit: Will Besson of Tuna Blue and Candice Smith, Wudjari Artist and Co-Scribe.



Opening and closing condition of individual assets and Country as a whole (scores)

The proposed methodology for scoring condition of Country for the SEEA EA accounts require scores to be agreed for the opening and closing accounting date. This will be undertaken based upon the agreed scoring scales described above, and the agreed narrative describing reference condition, with scoring conducted for all of assets and the overall Country. Discussions and scoring will take place during workshops held on Country with Steering Committee members, Elders and other knowledge holders, with First Nations partners determining who are the ‘right’ people to participate in those discussions. These discussions will be undertaken during the researchers’ second visits to the Country of each partner (during 27th – 29th July for ETNTAC, dates for TAC to be confirmed). Scoring will be undertaken using a deliberative Delphi style process (involving group discussion seeking to reach consensus rather than deciding scores by majority vote or averaging of individual scores), during workshop discussions with each group.

Step 3 - Data analysis and outputs

The following outputs are expected for this account:

- Narratives for the reference condition
- Narratives for condition of individual assets and for Country as a whole
- Tables of condition accounts (opening scores in 2018 (ETNTAC) or 2021 (TAC), and closing scores in 2026)
- Analysis of NEA information available and its relevance to condition accounts

It is anticipated that accounting tables depicting the condition of different assets on Country, and of Country as a whole will follow the format set out within Table 5.6 within the SEEA EA guidance documents (United Nations, 2024. P115). An illustrative stylised example of how the condition account may be presented is shown at Table 4.

Table 4 Example presentation for SEEA EA conditions account tables.

	Asset type 1	Asset type 2	Asset type 3	...	Country as a whole
Opening condition score					
Change in condition score*					
Closing condition score					

*Changes in condition to be sub-divided into different classifications if appropriate, as determined from discussion and scoring process

Step 4 - Review and validation of outputs

Meetings will be held with partners to review and agree on outputs, following the process as described in subsection 5.2.4.

7 Crosswalk and logic chains

Bridging SEEA EA and Indigenous views on logic chains

Ecosystem services (ES) flow accounts (discussed in detail within Section 8) record the contributions supplied by ecosystems to society, providing information regarding their use in economic and other human activity (United Nations, 2024, para. 6.9), by economic units, including households, enterprises and government (United Nations, 2024, para. 2.41). A hierarchical classification system is used to categorise various ES, with the highest-level of this categorisation comprising three broad categories of services defined in SEEA EA (United Nations, 2024, para. 6.51) and set out below:

- **provisioning services**, represent contributions to benefits that are extracted or harvested from ecosystems;
- **regulating and maintenance services**, representing those abilities of ecosystems to maintain environmental conditions beneficial to individuals and society; and
- **cultural services**, which are the experiential and intangible services that contribute to a range of cultural benefits.

The SEEA EA recommends the use of “logic chains” to provide the links that explain the flow of services from ecosystem assets to benefits and beneficiaries (United Nations, 2024, section 6.2.6 & para. 6.41). The SEEA EA guidance documentation sets out example logic chains for selected ES in an expansive 4-page table (United Nations, 2024, Appendix A6.1 p.169). Whilst this guidance is invaluable, only three logic chains are provided for cultural services: recreation-related services; amenity and science; and education and research. This compares to six example logic chains presented for provisioning services and 11 presented for regulating and maintenance services. Specifically, no example logic chains are provided for bequest or existence values, spiritual and religious services nor species appreciation, which may be the ES of most importance and relevance to First Nations peoples. The key issue here is that different perspectives, mental models and worldviews will likely provide differing logic chains (Larson et al., 2026a). Further, the linearity and separateness of the standard SEEA EA logic chains may require some adaptation to accommodate the non-linear and holistic view of many First Nations peoples. Importantly, logic chains may vary not only between First Nations and non-First Nations people, but also across different First Nations groups (Woodward et al., 2023, Nursey-Bray et al., 2023, Coggan et al., 2024, Larson et al., 2026a). Consequently, logic chains should be grounded in First Nations perspectives and ways of understanding, to ensure that the benefits of most significance to First Nations people are emphasised (Larson et al., 2026a, Larson et al., 2019, De Valck et al., 2023). The logic chain was explained as part of the training materials developed for use by the ETNTAC and TAC steering committee members, as shown in Figure 14. Noting that the standard SEEA EA logic chain may require adaptation to fit the context and world views of Wudjari and Tagalaka people, we will seek to develop context appropriate logic chains which may, or may not, be like the standard. Table 6 provides an example of how the logic chains may look for this project if adaptation is found not to be required.

Figure 14 Illustration of the logic chain.

- There is a chain for each service identified – column **1** (eg fish for food)
- This is linked to the relevant ecosystem/asset that provides the service – column **2** (eg river)
- Columns **3** and **4** tell the story of how the service is supplied and used, including limitations (eg lack of access, ferals)
- Column **5** shows how this service could be measured (eg satisfaction with fish available, or number of fish caught)
- Column **6** shows the benefits from the service (eg no longer being hungry) and
- Column **7** shows the main beneficiaries (eg households where people have eaten the fish)

1	2	3		4	5		6	7
Ecosystem Service	Common ecosystem types/s	Factors determining supply		Factors determining use	Potential metric(s) for the ecosystem service		Benefits	Main users and beneficiaries
		Ecological	Societal		Subjective	Physical		
What is the service provided?	What type of ecosystem is needed?	Environmental conditions needed for the service to be available	Societal conditions needed for the service to be available	What conditions are needed for the service to be used?	How to measure the amount of the service supplied and used? (Can use subjective Or physical Or mix of both)		What are the benefits from the service?	Who uses and benefits from the service?

The SEEA EA guidance documents describe how indicators from the ecosystem accounts “have the potential to be crosswalked with data from other accounts and socio-economic measures” (United Nations, 2024, para. 14.18), and an example crosswalk for ES is provided¹¹. (See Table 5 for an example of how the crosswalk may look for this project). This crosswalk approach can support discussions among experts by bringing together different classifications and typologies of ecosystem services (Larson et al., 2026b). The concept of a crosswalk was used in previous work reported in Larson et al. (2026b), where, in partnership with Nywaigi people, the crosswalk brought together the Nywaigi classification of services with that of the SEEA EA. Such a crosswalk table (for example see Larson et al., 2026b, Table 1) starts with the prescribed SEEA EA ES categories. For each ES category identified as relevant by the First Nations group, the SEEA EA code and description is provided, with the First Nations group’s wording of the category provided at the right-hand side of the table. Consequently, some of the prescribed SEEA EA ES categories may not be included (if considered to be of no cultural relevance), some ES may correspond to one equivalent service, and some may be considered to provide more than one specific service to the First Nations group.

Beyond those ES flows captured within the SEEA EA categories, previous work with First Nations groups have found additional categories of services to be of importance (Carnell et al., 2023, Nursey-Bray et al., 2023, Normyle et al., 2024, Larson et al., 2026b, Hill et al., 2026). Specific examples from the work with Nywaigi described in Larson et al. (2026b) include: Stewardship services (practices involving sustainable management of Country, relating specifically to upholding caring responsibilities for future generations); Services from nature to nature (conceptually similar to intermediate services in SEEA EA); and Ecosystem disservices (to include those disservices that directly negatively impact human wellbeing from the presence of species such as pests and weeds, and other happenings on Country that provide disservices), (Larson et al., 2026b, Figure 3). It is

¹¹ Ecosystem services reference list crosswalk spreadsheet can be downloaded from <https://seea.un.org/ecosystem-accounting>

important to note that disservices caused by the pests and weeds go beyond conceptualisation of “threats” in pressures/threats accounts of SEEA EA; beyond these issues, the presence of such species directly provides a spiritual disservice to First Nations groups, being the feelings of sadness and frustration that Country is unhealthy (Larson et al., 2026b). The category of stewardship services has also been proposed in accounts development work with other Australian First Nations groups (Nurse-Bray et al., 2023, Normyle et al., 2024, Hill et al., 2026).

SEEA EA-aligned approach for crosswalk and logic chains

The methodology for the development of crosswalk and logic chain tables, focusing on services to First Nations partners, consists of the following steps, each of which is expanded on below:

SEEA EA-aligned approach for crosswalk and logic chains

Step 1 - Joint workshops with researchers and the partner group, co-developing:

- Narrative of how services flow between the environment (Country) and people
- A list of ecosystem services they receive from nature
- A list of other services of importance to them (i.e. stewardship services) and disservices, if any

Step 2 - Data analysis and creating outputs:

- Analysis of services elicited from partner group discussions against SEEA EA types of ES, enabling development of Crosswalk table of elicited vs SEEA EA ES
- Analysis of the narratives of service flows enabling the development of the logic chain tables, which may or may not be similar in format to the standard SEEA EA logic chains

Step 3 - Review and validation of outputs:

- Meetings with partners discussing and approving outputs created

Step 1 - Joint workshops with researchers and partner groups

Alongside the discussions of the different assets on Country and the health of these assets (described in sections 5.2.2 and 6.2.2), discussions would also include the service flows between these assets, people and Country as a whole during the first visits to Country. These discussions took place on Country and at the First Nations partners offices in Esperance and in Croydon, from 3-10 March 2026 with Wudjari and from 1-5 June 2026 with Tagalaka. As with the other discussions held during the first visits to Country, participants included Steering Committee members, Elders, knowledge holders

and community members. Discussions held during these visits were supplemented by online meetings with Steering Committee members and Research Assistants to check researchers' understanding, refine concepts and decisions, and finalise outputs. Discussions were recorded with the free, prior and informed consent of participants in accordance with the JCU Human Ethics Research Committee-approved research protocol.

The discussions explored how services flow between people and nature, the ecosystem services people receive from nature, and other services of importance to participants, including stewardship services, and, where relevant, disservices. Participants were invited to describe the activities they undertook on Country and the ways in which Country contributed to wellbeing for themselves, their families, and their communities. Discussions also explored relationships between Country, people and community, including how people and communities contributed to service flows, factors that enabled or constrained these flows, and service flows that had changed, declined or disappeared over time as the features or health of Country changed. Participants were encouraged to discuss a range of places on Country, including locations visited with researchers and other areas of personal significance.

The discussions followed a flexible and responsive approach rather than a predetermined set of questions. Topics and prompts varied according to the context of each discussion, including where the conversation took place, who was present, and topics that had already been discussed. Researchers responded to participants' contributions and used follow-up prompts where appropriate to explore issues in greater depth or clarify points raised. Participants were not directed towards particular types or directions of service flows, or particular beneficiaries, allowing them to introduce services, relationships and impact that may not have been anticipated by the researchers, including services flows that were not necessarily perceived as beneficial.

Discussions with Wudjari and Tagalaka participants explored activities that take place on Country and how they feel when spending time out on Country. Where appropriate, researchers followed up on these discussions to explore how these activities were undertaken (e.g., for work, recreation, or cultural and ceremonial purposes), who was involved (e.g., family members, Rangers, or others), and the associated benefits and beneficiaries. For participants employed by ETNTAC or TAC, discussions also included activities undertaken through their work, including as Rangers or in other roles, in addition to activities outside of work. This allowed exploring different dimensions of people's relationships with Country.

Together, these discussions provided information on service flows in both directions (between nature and people and between people and nature), and on the relationships between Country, people and broader social and environmental factors that influence those flows. This informed the development of the ecosystem service crosswalk and logic chains, as well as the identification of services for inclusion in the flow accounts (section 8).

Step 2 - Data analysis and creating outputs:

The analyses required to produce the crosswalk table and the logic chains is intrinsically linked to, and thus needs to take place alongside, the analysis of ES (and any other services or disservices) revealed during discussions as being of importance to First Nations partners.

Identifying services and producing the crosswalk table

Following the workshops, the research team will analyse notes and transcripts of audio recordings against the SEEA EA ES typology to create a list of services discussed. Researchers will also attempt to map the services described to those prescribed by SEEA EA. The draft services and related mappings will be presented in **Crosswalk tables** specific to each partner, Wudjari and Tagalaka, and researchers and Steering Committee members will work together to refine and finalise these as described in sections 7.2.3. The crosswalk table is anticipated to follow the example format shown in Table 5.

Table 5 Example of a crosswalk table for this project. Each row represents the SEEA EA name and description and the First Nation name and description corresponding to a given service.

SEEA EA Main Classification	SEEA EA Sub-classification	SEEA EA code	Brief summary of service described by Wudjari/ Tagalaka participant	Wudjari/ Tagalaka service name
Service 1 e.g. Biomass provisioning service	e.g. Wild fish and other natural aquatic products provisioning services	e.g. 1.6	Short narrative explaining service from discussions	Appropriate name for service that resonates with First Nations partner
Service 2				
Service 3				
Etc.				

Identifying service flows and producing the Logic chain tables

Alongside eliciting the list of services itself, for each service the analysis will capture the asset on Country that contributes to the service provision, alongside any factors (environmental or societal) that are required for, or act as barriers to, the flow of services. Further, the beneficiary described in the discussions for that service will also be captured in the analysis. From this analysis of workshop discussions, researchers will attempt to draft the first version of the **logic chains** for each service. It is possible that the final logic chain tables will follow the format shown in Table 6. This is based upon the logic chain format recommended by SEEA EA (United Nations, 2024, Table 6.2, p.142). However, some adaptation may be required to the format of the co-developed logic chains to recognise the project context, as the world view of the Wudjari and Tagalaka people may not fit well with the linearity and separateness of the standard SEEA EA logic chain format.

Table 6 Example of a logic chain table that may be developed for this project. Each row represents a logic chain for a given service, from the asset providing the service to the main users and beneficiaries of that service. Due to the linearity and separateness inherent in the logic chain presented here, some adaptation may be required to fit the context of this project.

Wudjari/ Tagalaka service name	Asset	Factors determining supply		Factors determining use	Metric for measuring service	Benefits	Main users and beneficiaries
		Ecological	Societal				
<i>Appropriate name for service that resonates with partner</i>	<i>Asset on Country, or all of Country, that is needed for service</i>	<i>Conditions identified as required for service to be supplied</i>	<i>Conditions identified as required for service to be used</i>	<i>Agreed approach for measuring the service supplied and used</i>	<i>The benefits that result from the service flow</i>	<i>Who uses and benefits from the service</i>	
Service 1							
Service 2							
Service 3							
Etc.							

Step 3 - Review and validation of outputs:

Review and validation of the list of services of interest, and how these map to SEEA EA will be a collaborative exercise between researchers and First Nations partners, with drafts being shared, discussed and refined until the Wudjari and Tagalaka people are satisfied with both the list of services and the crosswalk to SEEA EA.

Similarly, the process of finalising the co-developed logic chains will also be a collaborative exercise, with drafts being shared, discussed and refined until the Wudjari and Tagalaka people are satisfied with the logic presented.

Meetings will be held with partners to review and finalise outputs, following the process as described in subsection 5.2.4.

8 Flow of services

Bridging SEEA-EA and Indigenous views on flow of services

As described within section 7, the objective of ecosystem services (ES) flow accounts is to record and present the contributions made by ecosystems to society, providing information on the supply of services, and the use of these services within economic and other human activity (United Nations, 2024, para. 6.9), by economic units, which include households, enterprises and government (United Nations, 2024, para. 2.41). As also described in section 7, these ES are categorised using a hierarchical classification system based around three broad categories of services, being provisioning services (such as food, fresh water, wood), regulating and maintenance services (such as natural processes that control flood, purify water, and store carbon), and cultural services (including passive enjoyment, in situ and remote interactions) (Larson et al., 2026a).

We described in earlier sections that it is important to ensure that First Nations peoples have the opportunity to determine the ‘types’ of ecosystems (assets) used within extent and condition accounts. Similarly, it is also important that they should be able to define and categorise the flow of services in ways that are meaningful to them (Larson et al., 2026a) since the literature suggests that several ES categories used in western science contexts appear to have limited relevance to First Nations people (Stoeckl et al., 2021, Jarvis et al., 2022). As previously explained in section 7, this may mean extending the services typology of provisioning, regulating and maintenance, and cultural services to also include categories such as stewardship services (Larson et al., 2026b, Hill et al., 2026, Nursey-Bray et al., 2023, Pearson et al., 2025a, Normyle et al., 2024), wellbeing services (Nursey-Bray et al., 2023, Hill et al., 2026), and ecosystem disservices (Larson et al., 2026b, Pearson et al., 2025a).

Beyond potential extensions to the services typology, there are also some important differences in conceptualisations and worldviews that need to be taken into account when aiming to include First Nations knowledges and perspectives within SEEA EA. One such point was argued by Hakim et al. (2023) who identified that the sub-categories of provisioning services (as identified in many ES accounting systems including SEEA EA) are reductionist, and focus primarily on instrumental values, such as need for shelter or need for food and water. For First Nations peoples, ES need to go beyond purely instrumental values and seek to capture relational values of nature that are addressing higher-level self-actualising type requirements for human wellbeing (Larson et al., 2026a). Literature exploring First Nations peoples’ values describe their strong relational and spiritual values, and a sense of place for people who live in, from, with, and/or as nature (Hakim et al., 2023, Kenter and O’Connor, 2022). Relational thinking is important to many First Nations worldviews, for example, considering nature as kin, a part of human society (Salmón, 2000), and viewing humans and nature as non-separable (Eyster et al., 2023). Recent literature exploring relational thinking encourages that humans and non-humans should be considered as interdependent agents whose interactions co-create each other and their wider environment (Gould et al., 2026, Eyster et al., 2023). Accordingly, extensions or adjustments may be required to the SEEA EA framework to fully reflect knowledge systems built around concepts on non-separation of nature and people, founded on relationships between different actors in the system rather than on separate static entities.

Another important point relates to non-use values. SEEA EA states that non-use values should not be classified within the provisioning, regulating and maintenance, or cultural services classifications of ES, as for non-use values there is no direct or indirect interaction with the environment, and hence such a transaction is not considered to have taken place (United Nations, 2024, para. 6.72). Whilst not recognising non-use values as ES, SEEA EA does recognise the importance of these values, and therefore states in the guidance documents that “a separate type of flow has been included in the ecosystem services reference list: ecosystem and species appreciation. This is to allow compilers to record data that can be directly associated with non-use values” (United Nations, 2024, para. 6.73 p.151). Two key non-use values, bequest value where the value is based on ensuring the ecosystem is available to future generations; and existence value where the value is based on the knowledge that the ecosystem is present now, are of high importance to First Nations (Larson et al., 2026a). Whilst SEEA EA recognises these two types of non-use values, for both the benefit of the non-use value is described as accruing to individuals in the present time (United Nations, 2024, para. 6.70); such an instrumental conceptualisation may not necessarily align with First Nations worldviews, where relational and intrinsic values (Chan et al., 2016) are of potentially greater importance to First Nations groups (Larson et al., 2026a).

A further important conceptual point to highlight relates to the cultural benefits arising from sharing knowledge, stories and practices about Country (Jarvis et al., 2021). The SEEA EA reference list of ES (United Nations, 2024, Table 6.3, p.148) includes “Education, scientific and research services”, described in this table as “ecosystem contributions, in particular through their biophysical characteristics and qualities, that enable people to use the environment through intellectual interactions with it”. This description may not fully align with First Nations conceptualisation around sharing traditional ecological and cultural knowledge whilst Elders and other community members walk on, and care for, their Country (Larson et al., 2023).

Finally, western-defined ES flows are derived from a combination of natural, manufactured (e.g., cars, access roads, equipment) and social/institutional assets (see, for example, Fig 1. Costanza et al. (2021). Different cultures will have different ‘assets’ available to them, so one should expect to observe interactions, interdependencies and service flows that are context specific.

Several approaches to elicitation of important, relevant ES have been trialled in the work with First Nations. These include approaches based around developing mental models of connections to and values of Country (Larson et al., 2026b), based around important or culturally significant species (Larson et al., 2026b), and based around storytelling (Hill et al., 2026). Approaches generally require discussions to be held, either in groups or individually, where researchers can build an understanding of cultural connections to, and values for, Country (Normyle et al., 2024, Larson et al., 2026b, Nursey-Bray et al., 2023, Hill et al., 2026). However, there remains a need to determine the most suitable ways of recording, measuring and monitoring those services determined to be relevant and important to First Nations group.

ES flows are recorded in physical terms (e.g., the tonnes of wood harvested from a particular area) and also using monetary estimates of the ‘value’ of those flows, when data are available. The monetary values reported in SEEA EA accounts are exchange values, consistent with the principles of the System of National Accounts (SNA)(United Nations, 2025). That is, accounts prepared using SEEA EA thus report on the per unit (exchange) price of the ES, valued at the price at which they are

exchanged or would be exchanged if a market existed (United Nations, 2024). This is in contrast to the environmental values reported on within cost-benefit-analysis, or other economic environmental valuations, which instead measure the welfare benefits (De Valck et al., 2023). Whilst using prices (exchange values) to measure ES values makes it easy to compare environmental values with other values, not all ES are readily described by exchange values.

For example, many provisioning services have readily observable prices; and related prices can be readily identified for many regulating services (e.g., the ‘price’ of purified water can be used to estimate water purification values), but for many/most cultural values, there are no observable prices. Moreover, First Nations people may have identified context-specific service flows that cannot be readily classified as a type of (western) ES. Whilst there are numerous techniques for generating estimates of ES and other environmental values, some goods and services are simply not amenable to valuation (Stoeckl et al., 2018) and are thus not fully or even partially reflected in accounts. Therefore, the SEEA EA monetary values should not be considered to provide, and do not intend to estimate, a complete “value of nature” (United Nations, 2024, para. 1.30).

This is a key issue for First Nations peoples since many of the benefits that First Nations peoples derive from nature are immeasurable in monetary terms: this may be due to them being considered to have infinite value, because it is culturally taboo to monetise them (Daw et al., 2015), because environmental values are inextricably linked to other values (such as with complex social goods (Stoeckl et al., 2018)), or for some other reason. This prompts a key question regarding whether much of the total wellbeing that First Nations peoples derive from the environment can be appropriately captured by monetary values. Indeed, even in work that does not relate to First Nations, focusing on western science determined ES, it has been seen that only a small number of ES can be appropriately measured using exchange values and presented in SEEA EA accounts. For example, at a national level, the latest SEEA EA flow accounts for Australia, released in 2026 for the accounting period 2022-2023, only account for three ES within the monetary ES supply and use tables. These are carbon retention, classified as a global climate regulation service within the terrestrial EA, surface water for drinking, classified as a water supply service within the rivers and streams accounts, and wild fish provisioning services provided by a number of fish species within the marine ecosystem accounts¹². Given the practical difficulties around presenting monetary ES values within SEEA EA, particularly within a First Nations context, the researchers agreed that this project would not focus on monetary values (although would consider including these if the information was readily available and considered to be of use by First Nations partners).

This project therefore focuses on accounting for ES using non-monetary methods. The SEEA EA framework includes both ES physical accounts and ES monetary accounts (Figure 1), and the modular nature of the SEEA EA approach enables accounts to be presented in physical terms only, rather than

¹² National Ecosystem Accounts for Australia 2022-23 are available from the ABS, for further information see <https://www.abs.gov.au/statistics/environment/environmental-accounts/national-ecosystem-accounts-experimental-estimates/latest-release#key-statistics>

as an accompaniment to monetary accounts (United Nations, 2024, para. 1.12). Many more First Nations peoples' values are suitable for recording in physical terms than can be expressed in monetary terms, thus focusing on the non-monetary accounts increases the coverage, and likely usefulness, of the ES accounts produced.

To further increase the relevance of the accounts to First Nations peoples, beyond monetary and physical accounts, it has been proposed that “spiritual accounts” could be included, since a number of values expressed by First Nations peoples are neither monetary nor physical (Larson et al., 2026a). Outside of SEEA-EA, spiritually important factors and subjective connections have been successfully measured and expressed in terms of levels of satisfaction using Likert scales (Larson et al., 2019, Larson et al., 2020, Jarvis et al., 2021), shown to be suitable for longitudinal measure (Klemm, 2022). Thus, in addition to accounts presenting measures of worth in monetary units and in physical measures (based on a mix of the biophysical metrics such as numbers, tonnes, km² etc.), there is room for measures of “spiritual worth”, being subjective measures potentially expressed on Likert scales. The literature reveals an example where subjective measures were successfully used to measure service flows and populate flow account supply and use tables (Pearson et al., 2025a). In that project, as part of developing SEEA EA aligned flow account tables, a survey was conducted with members of the Nywaigi community which included a list of services previously determined through a mental models approach based upon discussions with Elders and knowledge holders within workshops (Larson et al., 2026b, Pearson et al., 2025a). Survey participants were asked to select the services of most importance to them, then for the selected services provide scores on a 0 (don't focus on this) to 10 (my top priority) importance scale, followed by a score on a 0 (very unsatisfied) to 10 (very satisfied) satisfaction scale (Pearson et al., 2025a). The frequency with which different services were selected as most important were combined with importance and satisfaction scores to provide an overall score for each service on a calculated scale of 0 to 100, with these scores being used to populate the supply and use tables (Pearson et al., 2025a). The combining of importance and satisfaction scores from surveys to provide an overall measure has also been successfully used in other circumstances (Larson et al., 2019, Larson et al., 2020). Alternately, such scores for importance and/or satisfaction could be elicited using a deliberative approach within small group discussions, using a Delphi style approach; an example of which is provided by Jarvis et al. (2022) to elicit importance scores when working with Ewamian and with Mungguy peoples.

We note that SEEA EA talks about both ecosystem services and ecosystem “disservices” (United Nations, 2024, Section 6.3.5); essentially two different sides of the same coin. These are relevant to a concept commonly voiced by First Nations of “Healthy Country – Healthy People” (Garnett et al., 2009), where the health of people is interlinked with the health (condition) of Country. This concept is another example of relational thinking described above, driven by relational values, where people are not separate from, but part of, nature (Chan et al., 2016, Gould et al., 2026). Not only is improvement in physical and mental health linked to both being on Country and Country being in a good condition; current high levels of social ills and poor mental and physical health of First Nations people are linked to the trauma of removal from Country and destruction of Country (in an accounting sense, a concept similar to health issues arising from environmental pollution). Improved health of Country would therefore reduce ecosystem disservices and lead to improved health of people. This suggests that indicators (objective and/or subjective) of both the physical and mental health of people might be reliably used to monitor the ‘value’ of ecosystem (dis)services that are

available – and accessible – to people on Country, as the health of Country and health of people is inherently interlinked as people are part of, and not separate from, nature.

SEEA EA-aligned approach for flow of services

The methodology for the development of the flow accounts to present the supply and use of ES, focusing on services to First Nations partners, consists of the following steps, each of which is expanded on below:

SEEA EA-aligned approach for flow of services

Step 1 - Collation and review of existing evidence:

- Written documents, audio and video recording previously collated by the partner group about their Country

Step 2 - Workshops (and potentially survey activities) with the partner group, co-developing:

- A list of ecosystem services they receive from nature and a list of other services of importance to them (i.e. stewardship services) and disservices, if any (from discussions during first data collection visits)
- Agreed subjectively measured scores for satisfaction with each service flow (from discussions during second data collection visits, and/or using data from surveys with First Nations community members)

Step 3 - Data analysis and creating outputs:

- Analysis of services elicited from partner group discussions during first data collection visits
- Analysis of scoring provided during discussions and/or from surveys during second data collection visits to populate the flow account supply and use tables
- Analysis of NEA information available and its relevance to flow accounts

Step 4 - Review and validation of outputs:

- Meetings with partners discussing and approving outputs created

Step 1 - Collation and review of existing evidence

The objective of this stage of the methodology is to provide researchers/accounts developers with a foundational understanding of how each group conceptualises the services provided to/from Country, providing a base from which discussions around services of relevance to each group could take place. This stage was completed alongside the collation and review of documentation relevant to the stock accounts as described in sections 5.2.1 and 6.2.1.

Notably, whilst the HCPs of each group (TAC, 2021, ETNTAC, 2018) were of great use in providing information for the stock accounts, the information was less foundational to the flow accounts, as HCPs focus on the assets on Country, and the threats faced by those assets, rather than the provision of services. However, document review provided useful background information.

Importantly, the review of existing evidence about Country was not undertaken to enable researchers to independently determine, on behalf of Wudjari or Tagalaka People, the different services of importance to First Nations partners. Rather, this review was to provide researchers with an understanding of the conceptualisations previously shared by each group. This was an important step in ensuring that the valuable and limited time that could be devoted to the project by Steering Committee members, Elders, and other knowledge holders was not spent sharing their previous thinking; rather we were able to begin project discussions with researchers fully aware of the previously reported work. Thus, a key outcome from the review was providing the researchers with a foundational understanding to build upon in discussions during the joint workshops with researchers and First Nations partners, held on Country where possible.

Step 2 - Joint workshops with researchers and the partner groups

Step 2 (a) – Identifying flows of services between people and nature

As described in section 7.2.1, the researchers and partner organisations agreed that during the first data collection visits (March 2026 with Wudjari and June 2026 with Tagalaka) discussions would be held with Steering Committee members, Elders, knowledge holders and community members, with the same discussions informing the development of the cross-walk and logic chains (described in section 7) and the development of the flow accounts setting out the supply and use of services.

In discussions, researchers sought to encourage participants to share narratives around how services flow from people to nature and from nature to people, about the ES they receive from nature, and about other services of importance to them (i.e. stewardship services) and disservices, if any. The discussions were loosely structured with participants encouraged to talk freely about services, benefits and beneficiaries, and how these related to different assets on Country and to Country as a whole, as part of a free-flowing conversation.

As for the logic chain and cross-walk (explained in more detail in 7.2.1), during workshop discussions participants were invited to describe the activities they undertook on Country (at places visited with researchers and elsewhere, and whether through work as Rangers or in other positions, or in activities outside of work) and the ways in which Country contributed to wellbeing for themselves, their families, and their communities. Participants were also encouraged to share stories about service flows that were more prominent in the past but have declined or disappeared due to changes in the features on, or health of, Country over time. Participants were also encouraged to discuss all types of service flows between people and Country, without the prompt questions being prescriptive

regarding the direction of flow, or the beneficiaries of the service (people, community or the environment); such open-ended questions allowed participants to speak freely about all types of services flows, including any that were not thought to be beneficial (potentially disservices).

The desired outcome from discussions was co-developed list of service flows (flowing both from people to nature and nature to people) and explanations of how Country, people and societal factors contributed to those flows. Such discussions can inform the development of the crosswalk and the logic chain (section 7), and also the development of the agreed list of services for inclusion within the flow account supply and use tables themselves.

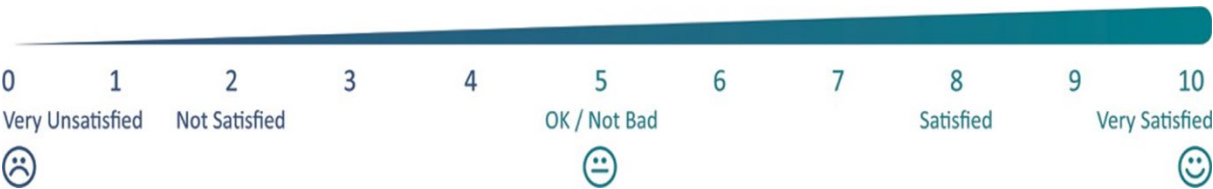
Step 2 (b) – Identifying the importance of services and scoring service flows satisfaction

Building on the collaborative discussions undertaken throughout the project, Wudjari partners agreed that a **deliberative scoring approach** would be used, during a workshop to be held during the researchers second data collection visit to Wudjari Country during July 2026. Discussions will be held with Elders, steering committee members, other knowledge holders and community members. During this discussion, each of the final agreed list of services would be discussed and a score agreed for the importance of services (if some services thought to be of more importance than others), and for how satisfied Wudjari people are with those service flows now in 2026, with these scores being used to populate the Ecosystem Accounts. Deliberations in workshops is considered to be an appropriate approach for this case study as most Wudjari people live on or close to Country and thus have similar opportunities to personally experience the flows of these services in situ on Country (similar to Mungguy people where deliberative scoring within workshops has worked successfully in previous research (Jarvis et al., 2022)). Examples of scales that could be used for scoring these services are provided below, with an example importance scale shown at Figure 15 and an example satisfaction scale shown at Figure 16.

Figure 15 Example scale for scoring importance of services.



Figure 16 Example scale for scoring satisfaction with flow of services.



Building on the collaborative discussions undertaken throughout the project, Tagalaka partners agreed that a **scoring approach based on surveys** would be used. This approach was considered appropriate due to the wide dispersion of Tagalaka people, who reside in many different locations including Croydon, Normanton, Mount Isa, Cairns and Tablelands, Townsville and Brisbane. By

collecting surveys from Tagalaka community members, seeking to include Elders, knowledge holders and community members, drawn across all the locations where Tagalaka people are based, the responses will reflect both the views of those who live on or close to Country and thus experience services in situ on a regular basis, and the views of those who are able to experience services on a less regular basis but still have close spiritual and cultural connections to Country. This rationale is similar to that which underpinned the previously described work with Nywaigi, who are also widely dispersed across Queensland and the continent (Pearson et al., 2025a). The surveys will present the list of services determined as part of **Step 1** (data collection process), and will ask participants to provide importance and satisfaction scores using scales as shown in Figure 15 and Figure 16. Surveys will be administered by a small number of Tagalaka people who will be appointed as enumerators and provided with training by the researchers (again similar to the process adopted with Nywaigi, (Pearson et al., 2025a). Whilst the timing for this activity is still to be finalised, this is expected to take place during August 2026. Aggregated scores from the surveys will be presented, discussed and finalised in discussion with Elders, steering committee members, and other knowledge holders during a workshop to be held during the researchers second data collection visit to Tagalaka Country, date for which is still to be determined.

Step 3 - Data analysis and creating outputs

From the analysis of information from the first data collections visits, the key output is, for each group, a list of ecosystem services they receive from nature and a list of other services of importance to them (i.e. stewardship services) and disservices, if any. This will be supported by analysis of NEA information available and its relevance to flow accounts.

From the information collected during the second data collection visits, and surveys collected from community members for Tagalaka, a list of scores indicating the satisfaction with each service flow will be compiled. These scores will be used to populate the flow account tables. Draft tables will be shared, discussed and refined to ensure the flow accounts appropriately reflect the views of the Wudjari and Tagalaka communities. The final version of the flow accounts supply and use table is anticipated to follow the example presented in Table 7. Importantly, the tables will only present those services supplied to and used by Tagalaka or Wudjari Peoples; whilst some of these services may also flow to non-Indigenous households or other economic units, accounting for these is beyond the scope of this project.

Table 7 Example of flow account supply and use tables respectfully including the perspective of First Nations partners.

Supply table	Measurement method	Supply from asset class 1	Supply from asset class 2	Supply from other asset classes ...	Supply from whole of Country	Total supply from assets/ whole of Country
Provisioning services						
Service 1	X	Y	Y	Y	Y	Y
Service 2 etc	X	Y	Y	Y	Y	Y
Regulating and maintenance services						
Service 1	X	Y	Y	Y	Y	Y
Other service types and services as agreed						
Services ...	X	y	y	y	y	Y
Use table	Measurement method	Use by Wudjari/ Tagalaka households	Use by Wudjari/ Tagalaka businesses	Total use by resident economic units	Use by Country	Total Use
Provisioning services	X	Z	Z	Z	Z	Z
Service 1	X	Z	Z	Z	Z	Z
And other rows as for supply table ...	X	Z	Z	Z	Z	Z

Notes to table: X indicates measurement method used, to be (i) subjective score derived from deliberative discussions in workshop or (ii) subjective score derived from surveys with community members; Y indicates score on 0-10 scale indicating satisfaction with service supplied by asset or whole of Country; Z indicates score on 0.10 scale indicating satisfaction with use of service supplied.

Step 4 - Review and validation of outputs

Meetings will be held with partners to review and finalise outputs at each stage of the process (that is after development of list of services, and then again after collation of scores and population of tables) following the process as described in subsection 5.2.4.

9 Summary overview of the methods proposed

This project seeks to co-develop ecosystem accounts with Wudjari and Tagalaka people, focusing on services to First Nations people. Services provided to non-Indigenous people are out of scope for this work. After having developed the suite of stock and flow accounts, the project team will explore whether these services can be integrated into other accounts or are better presented as stand-alone accounts providing additional and complementary information.

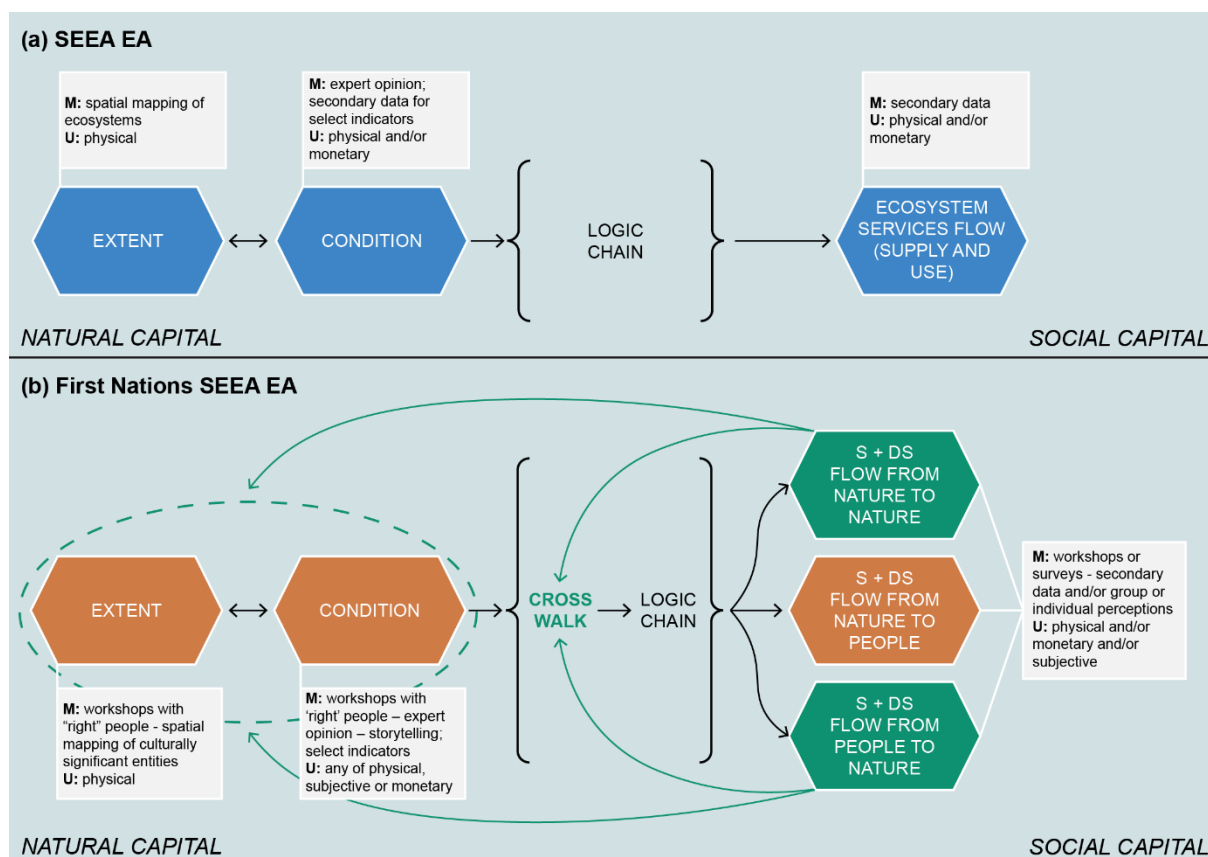
Stock accounts

Collaborative discussions undertaken throughout the project with Wudjari and Tagalaka people, suggest that stock accounts for Indigenous SEEA EA explorations (extent and condition accounts, Figure 17 panel B) can remain in a similar form to SEEA EA (Figure 17 panel A). For the extent accounts, relevant assets are first defined by the First Nations groups, and then populated using spatial mapping approaches, translated into physical measures (i.e. hectares or km² of a certain asset). For the condition accounts, the reference condition can be presented as a story of the “ideal” condition of Country told by each First Nation group, and relevant condition accounts can be populated using either physical measures, subjective measures, or monetary measures (if considered appropriate and in ways considered appropriate), or a mix of different types of measures. However, it is important to note that whilst it appears that stock accounts can be developed following this approach, it will not be clear until after these accounts have been developed whether this is the most appropriate way of capturing First Nations’ conceptualisations of Country, and how healthy Country is. It may be that further modifications may emerge from the collaborative work between researchers and Wudjari and Tagalaka People, and form part of the final results and recommendations from this project.

Flow accounts

Literature suggests that supply and use of ES (flows accounts) as described in SEEA EA (based around provisioning, regulating and maintaining, and cultural services) may be insufficient to capture First Nations’ conceptualisations of flows of services between nature and people. Thus, considerations of three types of flow (supply and use) accounts are proposed: services and disservices (S+DS in Figure 17) that flow (i) from nature to nature; (ii) from nature to people; and (iii) from people to nature. The specific types of services included will depend on results of the crosswalk and logic chain, developed collaboratively based upon discussions with Elders, steering committee members and other knowledge holders from each First Nations community. The flow accounts can then be populated using either physical, monetary measures and/or subjective measures, determined from discussions and/or use of surveys with each First Nations group. Again, as with stock accounts, as this collaborative project progresses it is possible that further modifications may emerge.

Figure 17 First Nations SEEA EA framework developed for this project. Source: Panel (a) based upon United Nations, 2024, Fig 2.2, p.36. Panel (b) authors own.



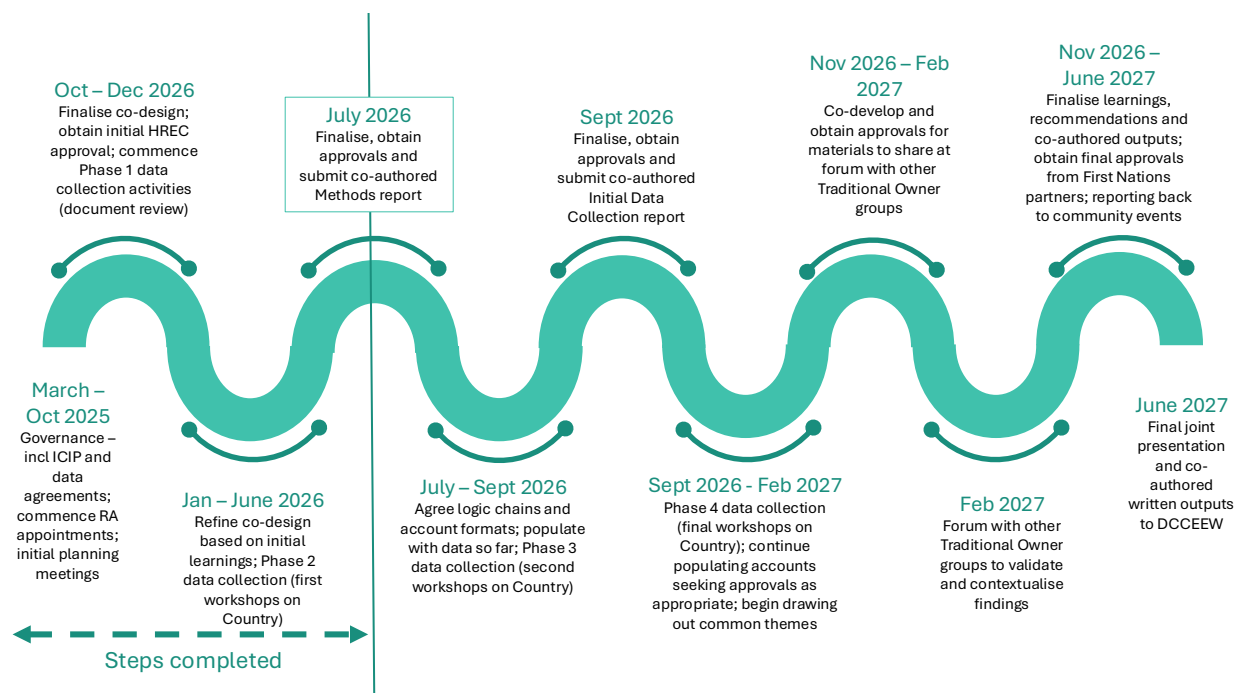
Way forward

Timelines and Planned outputs

The key activities and milestones for this project are set out in Figure 16. As at the date of this report, July 2026, the initial phases relating to project governance, co-design and ethics approvals, alongside data collection phase 1 (document review) and phase 2 (initial workshops on Country) are all complete. This report itself is the project output required to be finalised and submitted by the project by July 2026, as indicated in Figure 18.

Accordingly, this report provides evidence to support that the project is in compliance with the project milestones required to be reported to NESP RS Hub by 15th July 2026, being that we have completed phases 1 and 2 of data collection (relating to perspectives of extent, condition and Ecosystem services flows) and have completed (subject to approvals) the co-authored Methods report.

Figure 18 Project timeline.



Critique of the SEEA EA approach, including misalignments with First Nations worldviews

From the work of this project to date, comprising co-design of methods for the production of SEEA EA accounting outputs for Wudjari and for Tagalaka Country (as presented in this report), and from initial data collection exercises (to be reported separately in Report 2) some key learnings and important prompts for further work have emerged.

From our collaborative discussions with Wudjari and Tagalaka, it is clear that the process of separating and evaluating Country as a collection of different assets, rather than considering Country

as a whole, was problematic for both Wudjari and Tagalaka partners as this doesn't align well with their perspectives and worldviews. Both partners were able to conceptualise their Country into separate assets (described as targets) within their HCPs, as in this context they were focusing on the type and extent of specific threats facing different parts of Country, which aligns strongly with the need for appropriate, context specific, caring for Country activities to be undertaken by the First Nations groups, including the workplans undertaken by their Rangers teams. From initial discussions with Wudjari it emerged that the concept of 'threats' to Country as a whole and to specific assets, and what that might mean to Country as a whole and assets, may be a more suitable conceptualisation than that of focusing on measuring the actual condition of the assets or Country as a whole at a point in time. In practice, this may mean that the condition of the asset is determined not only by what is present, and in what numbers (i.e. birds); rather, condition is likely determined by the extent of threats to that asset. Such an approach is conceptually different to the way condition is determined in SEEA EA, where condition of the ecosystem as a capacity to produce services is of interest. Here, in this alternate conceptualisation, condition of the assets as a potential of negative impacts to reduce its capacity to provide services, is of interest. Conversely, it is the cost associated with keeping Country in a good condition, and not the benefit that Country provides, which is of importance.

The important discussions around the difficulty of conceptualising Country in parts, and the importance of threats to Country, resulted in the researchers and First Nations partners co-designing a methodical approach for exploring these issues in more depth, and for, potentially, creating an alternate approach for condition measurement that better aligns with their worldviews. The development of alternate approaches as required to appropriately reflect the knowledge systems of Wudjari people and Tagalaka people will form a key component of the later phases of this project (following phase 2 data collection through to and including the Forum with other First Nations groups). Whilst not yet fully finalised, it is anticipated that this approach will involve the following:

- Joint workshops with researchers, the Elders and key knowledge holders from the First Nations partner groups to discussing and agreeing on:
 - Narrative of how SEEA EA conceptualisation of separable assets aligns or not with First Nations worldviews – seeking understanding of circumstances and contexts when and how this conceptualisation is useful and appropriate, and when it is inappropriate.
 - Narrative of what NEA information was available and its relevance to the accounts co-developed from First Nations worldviews.
 - Narrative of alternate approach that better aligns with First Nations worldviews in those contexts where SEEA EA is less or not appropriate.
- Data analysis and creating outputs:
 - Depending on the discussions and narratives developed above, qualitative data will be analysed and relevant quantitative data, as available, will be collated and outputs presented based upon this alternate approach.
- Agreeing on outputs:
 - As with all other project outputs, meetings will be held with First Nations partners, online and face to face, to discuss and approve outputs created.

Preparing for the online forum due quarter 1 2027

As part of the final phase of this project, the researchers and First Nations partners will hold a forum with other First Nations groups. This forum is to test the methodological approach and the findings from this work with other groups, exploring whether the concepts and approaches developed could be applicable to other groups or whether the approach and findings appear context specific.

Detailed planning and co-design for this forum is not yet finalised as the focus to date has been on co-designing the approach for the accounts with the researchers and First Nations partners, and completing initial data collection. Detailed planning and co-design for the forum will begin during the next visits by researchers to Wudjari and to Tagalaka Country and will be one of the main activities during November 2026 to February 2027 time period (Figure 17). However, current expectations are that this forum is to be held online, and will be attended by both partner groups, Wudjari and Tagalaka, who will present their experiences. It is anticipated that they will be joined by representatives of at least three other groups drawn from across the continent; the focus being on having both geographic and contextual coverage rather than purely large numbers, with guidance on appropriate invitees and assistance with coordination to be provided by the NESP Indigenous facilitation team led by Professor Stephen van Leeuwen.

A likely agenda for the forum is as follows, noting that this is expected to evolve as the detailed co-design and planning process continues:

- Welcome to Country
- Partners introduce project
- Researchers present findings (from both work with partners and from analysis of NEA information available and its relevance to the stock and flow accounts)
- Partners comment on process and usefulness, and their recommended modifications to the SEEA EA process
- Open discussion to include relevance, potential usefulness of “original” and “amended” approaches and potential applications

It is anticipated that the forum proceeding will be written up as a formal record of the event, with feedback and accuracy checking sought from forum attendees.

Glossary

Term	Definition
CARE	Collective benefit, authority to control, responsibility and ethics
CBD	Convention on Biological Diversity
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EAA	Ecosystem accounting area
ES	Ecosystem services
ETNTAC	Esperance Tjaltraak Native Title Aboriginal Corporation RNTBC
FPIC	Free, Prior and Informed Consent
GIS	Geographic Information System
HCP	Healthy Country Plan
HREC	Human Research Ethics Committee
ICIP	Indigenous Cultural and Intellectual Property
ILSMPs	Indigenous Land and Sea Management Programs
IPA	Indigenous Protected Area
IUCN GET	International Union for Conservation of Nature Global Ecosystem Typology
JCU	James Cook University
NESP	National Environmental Science Program
NESP RS Hub	National Environmental Science Program Resilient Landscapes Hub
NEA	National Environmental Accounts
NEAP	National Environmental Accounts Program
QILSRP	Queensland Indigenous Land and Sea Ranger Program
QPWS	Queensland Parks and Wildlife Service
RA	Research Assistant
RNTBC	Registered Native Title Body Corporate
SEEA CF	System of Environmental Economic Accounting – Central Framework
SEEA EA	System of Environmental Economic Accounting – Ecosystem Accounting
TAC	Tagalaka Aboriginal Corporation RNTBC
UN	United Nations

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