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CRCNA DEVELOPING NORTHERN AUSTRALIA

STRENGTHENING REGIONAL PLANNING AND DEVELOPMENT ASSESSMENT IN THE DOUGLAS DALY REGION OF THE NORTHERN TERRITORY

Analysis Report

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Disclaimer

The views and opinions expressed in this publication are those of the authors and do not necessarily reflect those of the Cairns Institute or James Cook University, WABSI, the RRRC or the CRCNA. For disclosure purposes, the lead author, Allan Dale, is the Chair of the annual Developing Northern Australia Conference, recently appointed Chair of the RRRC, and Chief Scientist for the CRCNA.

Cover images

Front: Cattle grazing in leucaena, Douglas Daly Research Farm. Credit Dr. Ian Biggs, CRCNA.

Back: Brolgas in peanut crop, Douglas Daly Research Farm. Credit Dr. Ian Biggs, CRCNA.

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Acknowledgement

We acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present.

Executive summary

Our nation's current northern Australian development policy settings actively encourage the ecologically sustainable development (ESD) of the north. The highly contested nature of northern development, however, together with operational challenges facing the north's regional planning and development assessment system, currently hinder economic development in rural, remote and Aboriginal communities. At the same time, these factors contribute to a failure to secure internationally significant biological and cultural values within the landscape.

These problems are deeply evident in the Douglas Daly catchment in the Top End of the Northern Territory (NT). Here, conservation, cultural and development tensions suggest that a more regionalised, cooperative, engaged and evidence-based approach is needed to support planning, development assessment and nature positive investment decisions.

The Douglas Daly region has been considered particularly worthy of new and innovative approaches to regional planning and development assessment improvements because:

- (i) there is currently substantial allocated water available that is under-utilised, as well as potential for additional surface water allocations;
- (ii) there is substantial cleared land available for more value-rich development (some 32,000 ha), including a potential shift from plantation forestry to higher value crops (potentially up to an additional 10,000 ha);
- (iii) the region has outstanding terrestrial, aquatic biodiversity and cultural values; and
- (iv) the region presents significant opportunities for Aboriginal-led development of water and land resources.

This **Analysis Report** explores opportunities for improving the prevailing system of regional planning and development assessment across the NT, and more particularly within the Douglas Daly catchment. Findings from this work will lead to a series of recommended next steps focused on the design of potential solutions for strengthening the current governance system (the **Solutions Report**). This report has been developed closely with the NT Department of Industry, Tourism and Trade (DITT), the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW), the National Environmental Sciences Program (NESP) Marine and Coastal Hub and the Collaborative Research Centre for Developing Northern Australia (CRCNA).

Our analysis of the current regional planning and development assessment system of the Douglas Daly involves a preliminary governance systems analysis of the key decision-making activities that influence catchment-based outcomes important to sustainable development within the catchment and community. This is based on a literature analysis of ten important governance system sub-domains. The work is further supported by the consideration of detailed interviews with eight important government stakeholders and less formalised, preliminary dialogue with other critical stakeholders with strong interests in the

catchment. From this governance systems analysis, several key pre-conditions of success for new approaches to integrated planning and development assessment within the Douglas Daly catchment have been identified to underpin the design of new approaches.

1 Background and context

As part of an ongoing process of policy and planning activities to derisk new development, the NT Government, in partnership with the CRCNA, has sought to consider priority regional planning and development assessment issues facing key agricultural development areas. This means prioritising and focusing on places where development pressures most intensely intersect with the Commonwealth's *Environment Protection and Biodiversity Conservation (EPBC) Act* whilst also considering new directions that emerge from the review of the existing National Water Initiative (NWI).

This work has focused on areas of known development interest, agricultural development potential, and where it is important to minimise the risks to the important natural and cultural values that are also a feature of developments throughout the NT. Ultimately, such development will require the free prior and informed consent (FPIC) of the region's Traditional Owners, who are increasingly and justifiably seeing themselves as the leaders of, or financial equity partners in, such development.

Supported by the CRCNA, the NT Department of Industry, Tourism and Trade (DITT) has recently identified 11 potential agricultural development areas worthy of further consideration for staged development (DITT 2022). These are areas where agricultural development may be possible, and indeed highly desirable if, but only if, effective trade-offs can be reasonably negotiated across multiple landscape values and competing stakeholder interests.

Within this process, by considering a range of multi-criteria analysis factors (DITT 2022), the Douglas Daly region has been identified as a high priority region of great potential value for exploring revitalised and new approaches to bioregional planning, water planning and development assessment. Further consideration of these issues has been seen to be particularly important in the context of emerging Commonwealth policy interests related to the reform of the *EPBC Act* and drought policy, as well as current processes related to the review and further development of the NWI.

This potential agricultural development area consists of extensive existing cropping and pastoral development with a mix of land tenures, including freehold, pastoral leases and Aboriginal Land Trust areas (DITT 2022a). The region provides numerous competitive advantages for more intensive pastoralism, plant-based agriculture and horticulture. There is also potential for new brownfield cropping development where existing and successful cattle and hay production farming enterprises exist in alignment with significant Traditional Owner economic interests in land and water resources. The region has an extensive and complex development history and is perhaps one of the best understood catchments in the NT from a scientific viewpoint. Despite all of these factors, some gaps remain in environmental and development-related information.

This high development potential within a complex social and biophysical environment means that the region has been considered particularly worthy of the development and application of new and innovative approaches to regional planning and development assessment for the following reasons:

- (i) there is substantial allocated water available that is currently under-utilised, as well as the potential for new surface water allocations;
- (ii) there is substantial existing cleared land available for development (some 32,000 ha), including a significant potential to shift from plantation forestry to higher value crops (up to 10,000 ha);
- (iii) the region has outstanding terrestrial and aquatic biodiversity and cultural values; and
- (iv) the region presents significant opportunities for Aboriginal-led development of water resources.

The economic imperative for agricultural development and diversification in the NT is clear, as articulated in the NT Agribusiness Strategy (DITT 2022). Importantly, however, the high biodiversity value of land in the NT often correlates strongly with high land productivity, creating the potential for conflict between agricultural development opportunities and cultural and biodiversity values. Over the last decade, however, despite high prioritisation of development in the NT and awareness of potential risks, little attention has been given to improving planning and trade-off analysis to support improved decision-making within the region.

This analysis stage of our project addresses this shortfall by seeking to understand the strengths and weaknesses associated with the current system of regional planning and development decision-making related to the Douglas Daly region. It explores the current health of this system with the view of recommending potential new approaches that could help to ensure the achievement of genuine sustainable development outcomes in the region.

Conservation, Aboriginal interests and development tensions within the region suggest that a regionalised, engaged and evidence-based approach is required to support sustainable development decision-making, including development assessment and offsetting. This preliminary scan of the governance system concerning regional planning and development assessment decision-making has involved comprehensive input from key agencies with expertise in and experience dealing with these complex issues within this important NT development area and catchment.

Building on the findings and analytical foundations outlined in this **Analysis Report**, our resultant **Solutions Report**, will enable progress towards the establishment of recommendations that can strengthen the regional planning and development assessment system affecting landscape-scale outcomes in the Douglas Daly catchment. This will provide a basis for future negotiations regarding the further progression of such improvements in the catchment. Finally, this process should enable shared decision-making to prioritise future stages of research collaboration and support via the NT Government and the CRCNA, beyond June 2024.

2 Contextualising the Douglas Daly Region

In a cultural sense, we acknowledge the Douglas Daly region's cultural foundations as an Aboriginal domain; one deeply affected by several disturbing phases of recent colonial history. A respectful, ground-up articulation of the history of lower parts of the catchment is provided in the recently published works of Morris et al. (2023). The wider Douglas Daly catchment is home to many cultures, towards the lower catchment; Morris, et al. (2003) eloquently describe how the wider region is comprised of nine languages and fifteen dialects. More specifically, the Ooloo-Dolleston aquifer water planning areas, which drive agricultural water use in the region, lie under land which has been home for centuries to the Larbaunyun, Wagiman South, Wagiman North, Dagoman (Wujalawun), Wardaman (Wungayatiawun) and Wardaman (Yubulyawun) peoples (NT Government 2019).

Two major Aboriginal Land Trusts are embedded within the Douglas Daly agricultural development area; the Upper Daly and Wagiman (No. 2) Aboriginal Land Trusts. From the outset, any new and emerging approaches to dialogue around the future of the catchment must empower inform, and support the region's Traditional Owners leaders and include them in discussions and debates.

Also, of importance in future dialogue about the region are old and new pastoral, agricultural and forestry-based producers, who have worked hard to establish a viable and highly prospective agricultural economy within the region.

Building on these combined foundations, we finally acknowledge the deep, good-willed and scientifically informed cross-sector and community dialogue that has previously existed through the region's Daly River Management Advisory Committee (or DRMAC) deliberation processes. The Northern Territory Government established the DRMAC in 2006 to develop options for the sustainable use and conservation of natural resources within the catchment. Its goal was to promote the highest standards of management of land, water and other resources in the region 'so that the important values people associate with the Daly River are protected' (DRMAC 2009). It advised on the development of an adaptive management decision-making framework to allow balancing of the needs of catchment development and conservation, with a particular focus on vegetation clearing and water resource management. The membership of DRMAC included representatives from traditional land owners, production, tourism, recreation and conservation sectors and government (DR MAC 2009). DRMAC was strongly supported by a range of innovative and integrated science projects from the Tropical Rivers and Catchments Knowledge research consortium (TRaCK).

Finally, we acknowledge that much background material provided in this case study below has previously been drawn together from related research supplied by DITT (2022b). This work has progressed over the last two years as part of the Department's, the CRCNA's and NESP MaC Hub's separate investments in landscape-scale de-risking for agricultural development in the north, all related to improved planning and program delivery in defined sustainable development areas. Much of this work has been progressed jointly between the CRCNA and DITT. Other inputs have been drawn from publicly available literature about agency and stakeholder views about the region. In a geographic sense, we are interested in supporting better decision-making with respect to agricultural development and nature positive thinking within the more confined Douglas Daly Agriculture Development Area. This area, and the associated tenures, are best demarked through Figure 1. For the purposes of this work, however, we recognise that decisions of relevance to biodiversity and wider cultural interests in land need to be contextualised within the wider Douglas Daly Bioregion, while decisions related to water need to relate to the wider Douglas Daly Catchment (see Figure 2). This also means ensuring the consideration of a cultural lens that accommodates the aspirations of all Traditional Owners with an interest in this wider bioregional and catchment scale context.



Figure 1: Map of the Douglas Daly Agricultural Development Area and associated tenures. (Source: NT DITT).

2.1 The history of agricultural development in the Douglas Daly Region

The Douglas Daly region is well known for its agricultural diversity. The region has experienced significant change since the area was first developed for horticulture in the 1980s (DITT 2022a). From the early cropping era to cattle grazing and assorted horticulture, the district has progressed to become a valuable region of agricultural production. With the Douglas Daly Research Farm facility established in the 1960s, early research was focused on peanuts and cotton as potential crops for the Katherine-Daly basin (DITT 2022a). Various crops followed, such as sorghum, safflower, guar, soybean, maize, and sesame as well as introduced pasture species sown into cleared and non-cleared areas.

Figure 2: Map of the wider Douglas Daly catchment area (Source: TropWATER, JCU).

Cattle management, breeding, nutrition, reproduction, market requirements, and grazing and carrying capacity trials have been assessed over the years to identify best management practices for growth and value-adding in the cattle industry. With the region showing agricultural potential, Stage 1 of Douglas Daly was developed by the Agricultural Development and Marketing Authority (ADMA) in 1980 (DITT 2022b). ADMA established project farms on land excised from the Douglas and Oolloo pastoral leases. The limited marketing opportunities for the grains that were being produced, coupled with the use of southern farming practices and remote living conditions, saw many of the original farmers leave the district after a few years. Improved cattle farming has been emerging more recently, and now fodder crop production has become an important industry in the region; it has strong potential to supply high quality fodder and fodder cubes for cattle during shipment to Asian markets (DITT 2022b).

Stage 2 of the Douglas Daly land release, known as Stray Creek, included seven freehold land parcels in the early 2000s, which were excised from the Stray Creek pastoral lease. To ensure future growth, Stray Creek properties were sold with development lease conditions attached, requiring purchasers to make certain improvements before receiving freehold titles (DITT 2022b). In the mid-2000s, the introduction of Managed Investment Schemes (MIS) in plantation forestry resulted in the development of a plantation estate of African mahogany in the region, with investment companies purchasing numerous properties (DITT 2022b). These non-irrigated forestry plantations were developed predominately on freehold land previously cleared for improved pastures, and many of these integrated cattle operations. Although cattle production is still the prominent industry in the Douglas Daly, the region has become a more diversified agricultural region with other emergent enterprises. Pastoral leases surrounding the freehold area have expanded operations beyond cattle grazing. Tipperary Station, for example, has been the site of a wide range of agricultural and horticulture trials and projects over 40 years. It was also the first pastoral lease in the NT to apply for a non-pastoral use permit, allowing pastoral properties to diversify tenure on 30 % of their land for up to 30 years (DITT 2022b). The Station was also granted the first NT license to commercially grow opium poppies. Finn 2019, it conducted the first commercial cotton trial in the NT in 15 years, and an orchard of 3,500 lemon trees was also planted, with plans to expand to 10,000 trees (DITT 2022b).

2.2 Agricultural development resources and values

The Douglas Daly Agricultural Development region is well situated for potential agricultural and other development opportunities through its direct but problematic access by road, rail, and sea freight networks with Darwin. Darwin is located approximately 200 kilometres to the north of the region, and Katherine is 200 kilometres to the south. The region is an attractive area for the migration of families as it has existing public infrastructure, including a primary school and other community facilities (DITT 2022b). A community health centre is located in the nearby town of Adelaide River, and the closest police station is in the nearby Daly River community. The NT Government's Douglas Daly Research Farm is centrally situated right in the heart of the region. It provides an important mixed farming research and demonstration facility, which has been pivotal in exploring the potential of the area and in carrying out trials that assist the region's emerging agriculture industries (DITT 2022b).

The majority of land systems in the Douglas Daly Agricultural Development Area are Blain soils of various sub-classifications. Blain soils are typically deep sandy red Kandosols. They are characterised by being highly siliceous at the surface, earthy, increasing to clay loams at depth (1.0 - 1.5 m) of low fertility, moderate acidity and with low water holding capacity. The soils, however, are well drained and suited for overhead irrigated farming systems. They have proved to be highly productive for annual agricultural/horticultural and other broad-acre cropping systems in the Top End (DITT 2022b).

While there is a steady progression of agricultural intensification and alternative crops, new economic work is currently being planned to test various market/commodity opportunities within the limits of the significant water and soil resources and cleared land available for agricultural development and associated value-adding activities. DITT is currently planning this work in partnership with the CRCNA. Market limitations, factors related to the long-term

sustainability of Douglas Daly soils, and potent biosecurity risks such as progressive nematode problems, all need to be factored into such analyses. Either way, the Douglas Daly, with appropriate planning and support, is already on a pathway to developing a deeper and more value rich agricultural economy; one that could be managed to also contribute to improved environmental outcomes and Aboriginal-led development opportunities.

2.3 The region's water resources

Perennial rivers throughout the Douglas Daly Agricultural Development Area support irrigation development and domestic stock use. The Daly River is one of only a few large perennial river systems in northern Australia, and is well recognised for its natural and cultural values (Erskine 2003). The Oolloo Dolostone aquifer which underlies the region's productivity, represents the uppermost formation of the Daly groundwater basin, which is located just north of the Douglas and Daly River confluence, extending south-east to beyond the Katherine River (DITT 2022b). It is an important karstic aquifer that discharges groundwater into the Daly River, maintains flow throughout the dry season, and supports important associated riverine ecosystems. It currently provides reliable, good quality, low salinity water supply, making its use attractive as a resource for agricultural development.

Water resources in the Katherine section of the Basin are already fully allocated, and there has recently been management action to resolve potential allocation issues. Within the Douglas Daly Agricultural Development Area, however, there remains allocated water that is under-utilised. On top of this, there may be significant opportunity to improve the efficiency of water that is currently utilised. Newly established Aboriginal Strategic Reserves are also available for consumptive use if desired by Traditional Owners. Emerging policy work in the NT will also further consider the potential to allocate additional surface water opportunities within the Douglas Daly catchment.

2.4 The region's water resources

Extensive natural resource and environmental studies have been completed within the Douglas Daly Agricultural Development Area including soil, water, flora and fauna (DITT 2022b). The region's conservation areas also contribute to the protection of sections of the Douglas and Daly's riverine systems. These include: the Douglas River/Daly River Esplanade, Stray Creek, Tjuwaliyn (Douglas) Hot Springs, Butterfly Gorge Nature Park, and the Umbrawarra Gorge Nature Park. The Daly River middle reaches have been declared a conservation site of national significance (DITT 2022b). Questions remain about whether these protection mechanisms are sufficient and whether they retain and protect the landscape ecological processes required to retain and conserve the region's biodiversity.

Diverse flora and fauna have been studied, with a range of threatened species present. Eight of the nine species of freshwater turtles found in the NT are present in the Daly River (Price *et al.* 2002). The high-profile pig-nosed turtle *(Carettochelys insculpta)* is a flagship species because it is of considerable international concern as the sole remaining member of a once widespread Family and because the best Australian populations of the species are found in the Daly River (Georges et al. 2002). If poorly managed, increased agricultural development has the potential to threaten these values. DITT (2022b) suggests that at least two nationally threatened species of elasmobranchs, the Freshwater whipray (*Himantura chaophraya*) and the Freshwater sawfish (*Pristis microdon*) are also present. According to Pogonoski *et al.* (2002), these species are critically endangered and vulnerable, respectively. The Daly River is also an important recreational fishery for Barramundi (*Lates calcarifer*). NT declared Heritage sites include the Fenton Airfield, a B24-D Liberator wreck, and a range of gold mining heritage sites at Douglas Station. Within the greater area is the Commonwealth heritage-listed Adelaide River War Cemetery (World War II) (DITT 2022b).

3 Identified development opportunities

Through improved regional prioritisation and planning practice, as suggested by DITT (2022b) it is likely there will be opportunities to progress sustainable development, including those outlined below.

- Horticulture and cotton: High-value cropping systems are now emerging in the Douglas Daly (e.g. melons), and this will increase demand for local water resources. Through a general shift to higher value cropping systems, including the new development through the establishment of the NT's first cotton gin some 35 kilometres north of Katherine, Douglas Daly cotton growers will no longer be required to send their product to the Queensland for processing;
- **Pastoralism:** Building on the shift to more intensive fodder cropping and with the growth of additional cropping opportunities and more integrated systems (e.g. such as cotton seed protein for animal consumption), there will be continued intensification of grazing in the pastoral estate;
- **Tourism:** Building on proximity to Darwin, the flora and fauna of the region and extensive conservation areas provide significant tourism and recreational potential, including four-wheel driving, fishing safaris, wildlife watching, camping, and agritourism farm experiences;
- **Emerging industries:** The development of a broad-scale industrial hemp opportunity is possible as hemp is expected to have competitive farm gate return in comparison to other broad acre crops such as cotton, sorghum and soybean;
- **Forest rotations:** These are currently ending, but they could be expanded with emerging opportunities for value adding efforts;
- Aboriginal-led development: The Wagaman and Upper Daly Land Trusts and the establishment of an Aboriginal Water Reserve, enable opportunities for Aboriginal participation in a water-based economy, either directly through agriculture, water leasing opportunities, or through providing emerging water-based ecosystem service markets; and
- **Ecosystem service economy**: The strategic revegetation of nature corridors to support biodiversity and management of the regions cultural and environmental values through direct investments and emerging nature positive markets.

3.1 Additional infrastructure development plans

A number of additional infrastructure projects are planned to provide leverage for new opportunities and to encourage future regional growth. This creates a foundation for more informed investment decisions, along with certainty in business planning and workforce development.

The Department of Infrastructure, Planning and Logistics' 10 Year Infrastructure Plan 2018–2027 has allocated \$60 million to work on the Douglas Daly connector road (DITT 2022b). A public weighbridge on Oolloo Road may be returned to service following an expressions of interest process undertaken in early 2022 for the redevelopment of a Crown land site to support the agricultural and cattle industry. The community of Daly River is receiving \$4.35 million in upgrades to the public boat ramp and works are now completed (DITT 2022b). These upgrades will provide improved access and additional amenities for the fishing tourism sector.

The Katherine Logistics and Agribusiness Hub, a new land release to support agricultural industries and service surrounding communities, is being developed. The Hub will also support the growth of the resource, defence, transport and tourism sectors. It is strategically located near the intersection of the Katherine railway terminal, Victoria Highway, and a proposed heavy vehicle bypass route, within Manbulloo Station. Telecommunications infrastructure is also improving in the region (DITT 2022b).

3.2 Conflicting and aligned development visions

At a policy scale, there are two explicit and conflicting non-government visions for the Douglas Daly catchment.

On the agricultural production side, both the Agribusiness Development Strategy (DITT 2021) and NT Farmers (and peak agricultural industry body) have an expansive vision for the growth of irrigated agriculture in the NT, and specifically in the Douglas Daly. NT Farmers consider that the 'plant-based agricultural and horticultural industry presents the NT agricultural sector with a significant opportunity to diversify crop production and enhance farm gate returns' (NT Farmers 2020). They particularly consider that, in this context, the Douglas Daly region has key competitive advantages such as proximity to key markets, suitable climate, and sufficient land and water for development. This vision encompasses a wide range of broadacre and more intensive horticultural crops, including cotton.

The wider conservation sector has deeply conflicting views, and has published a number of reports articulating significant concerns about water development in the NT overall, as well as specifically in the Douglas Daly. These are frequently focused on the potential for the cotton farm expansion, and concern regarding the abundance of cotton production proposals that are currently focused on the Daly River, an area they value for its environmental and cultural values and economic activities that depend on healthy rivers (Beaumont et al. 2022).

Within the published literature, it is clear that traditional owners (individuals and groups) within the region have a more nuanced view about the future of water use within the catchment (see Jackson 2024). These views range from the cultural and environmental protection of the catchment, in alignment with the conservation sector, to strong aspirations

for economic development utilising the water within the region. To date, traditional owners have had limited opportunity to undertake deeply engaged country-based mapping and planning processes to determine a cohesive Traditional Owner-led vision for these resources.

3.3 A summary of implications

Regional social and economic benefits are the goal of the progression of development opportunities. The general increase in development pressure to recognise these benefits, alongside conflicting and/or potentially aligned visions for the development of the region, both signal the need for a more place-based approach to managing the region's values. This particularly includes the region's agricultural potential, its surface and groundwater resources, and its natural and cultural values.

Agricultural and other development will need to take particular care of several of both the NT's regulated environmental values as well as the EPBC relevant values listed. Strong social and cultural values also contribute to the need to protect key riparian and aquatic ecosystem values within the catchment. In addition to strong Aboriginal cultural values, the region is important to recreational fishers and campers from both within and outside the region.

4 Methods and approach

A preliminary analysis of the complex governance system underpinning sustainable development outcomes in the Douglas Daly Agricultural Development Area has been applied to focus attention on systemic changes that could deliver better economic, social, cultural and environmental outcomes for the region. This analysis was undertaken by applying two primary methodological steps:

The first step involved a simplified application of the Governance Systems Analysis (GSA) approach developed by Dale et al., as outlined in three papers. The approach is firmly based on previous theoretical and empirical approaches applicable to this sort of complex systems analysis for societal decision-making. References to these theoretical and empirical foundations are: (i) for a theoretical background to GSA (Dale et al. 2013a); (ii) early empirical application and refinement of GSA (Dale et al. 2013b); and (iii) approaches to the detailed application of GSA. (Dale et al. (2016).

Dale et al. (2013a) suggest that governance systems concern social, economic and environmental themes across our society at any scale, and that these themes cannot be viewed in isolation from one another. Poor economic well-being, for example, often underpins and drives social dysfunction within society. Social and cultural factors can alternatively drive natural resource degradation. Natural resource degradation is also a wellknown pre-cursor to economic decline in key industries. Sustainable development seeks to find the right trade-offs between these themes at local, regional, provincial and national scales. Failure to get the balance right can damage all three societal values.

Within social, economic and environmental themes at particular scales (for example, within the Douglas Daly), major governance activities can also be defined. These tend to represent distinct overarching, policy-driven activities that draw on particular expertise sets and have their own distinct stakeholder communities. Consequently, key structures operating within particular governance activities tend to build their own cultures and can operate as activity silos within the wider governance system. The key implication of importance here is that in undertaking governance analysis in complex governance systems, we must be aware that different governance activities need to be highly inter-connected, both between and within particular spatial and time scales.

In short, under this GSA inspired approach, we have identified the ten most significant regionally-oriented governance sub-domains or activities that influence sustainable development outcomes of relevance to the Douglas Daly Agricultural Development Area and more widely.

The second methodological step was an assessment of the governance health of each of those governance activities or 'sub-domains'. The ten activities identified as substantial policy areas that are important to sustainable development outcomes within the region. These include those decision-making systems driven by the following policy or legislative foundations:

- land use planning policy and the NT Planning Act (1999);
- water allocation policy and NT Water Act (1992);
- water quality planning in the NT;
- environmental protection policy and the NT Environment Protection Act (2019);
- policy related to the national protection of environmental values and the Commonwealth Environment Protection and Biodiversity Conservation Act (1999);
- cultural heritage protection policy and the NT Sacred Sites Act;
- the Commonwealth/NT Regional Natural Resource Management (NRM) System;
- agricultural development policy and the NT Agribusiness Development Strategy;
- land tenure and management policy through the NT Crown Lands Act (1992) and Pastoral Lands Act (1992); and
- the Commonwealth's Aboriginal Land Rights Act (1976) and Native Title Act (1993).

For each major governance activity, we considered simple analysis based on:

- 1. a simple activity description and an outline of its intended outcomes;
- 2. the activity's policy and legislative foundations;
- 3. the current state of operation of the activity in the Douglas Daly;
- 4. known governance activity successes and challenges; and
- 5. priorities for governance activity improvement.

The results of this analysis are summarised later in this report.

4.1 Targeted interviews of key development agencies

To enable additional depth to this literature analysis, we interviewed 8 key governmentoriented agencies involved in regional planning and development decision-making relevant to the Douglas Daly Agricultural Development Area, and the wider bio-region and catchment. This preliminary focus on government agencies was essential to ensure a tentative first step towards building a strong government commitment for doing things differently. Formal ethics approval was sought and received as part of the research process. These interviews, however, were contextualised through more informal dialogue with a range of community, industry and Traditional owner institutions.

The government-oriented agencies or organisations targeted for consultation, had a specific interest in regional level decision-making and represented a diversity of the most relevant interests. Higher-level strategic actors within each organisation were selected for interview.

The interviewee recruitment process considered the scope and objectives of the proposed research, and the relationship of the participants to the current and past systems of development decision-making across the Douglas Daly. Interviews were conducted in person or via online meeting platforms; they were not recorded to protect privacy. A short, non-identified and confidential summary synthesis of key points was collated for each interview. A thematic analysis of the interview materials was then undertaken, applying key aspects of the GSA framework.

The eight government-oriented agencies were asked the following questions.

- What do you think are the key features of the regional planning and development assessment system in the Douglas Daly region?
- What role do you and your institution play in that system?
- What aspects of regional planning and development assessment system in the Douglas Daly region are currently working well?
- What parts of the system need improvement?
- What are your priority views about how the system can be strengthened?

The literature-based governance systems analysis and interview data were integrated, allowing effective identification of the key system-wide governance problems and facilitating early thinking about potential solutions. These are developed more fully in our subsequent **Solutions Report**.

5 Key components of the Douglas Daly governance system

As a key step in GSA, instead of looking at the more complex domains and sub-domains of governance influencing sustainable development outcomes in the region, we have taken a simplified approach based on looking at the context surrounding each major legislative and/or programmatic effort of relevance to regional planning and development decision-making in the region. More detailed GSA approaches would be worth pursuing as time and resources become available. This task, however, has also been made substantively easier because of broader NT-wide work conducted in partnership between the CRCNA and the NT Government that previously explored the wider system of prioritising, planning for and development decision-making associated with new agricultural development. This work was conducted in 2019 and was largely carried out by NAJA Business Consulting Services (2020).

Combined with input from other literature and web-based sources, the following is an overview of the main legislative and programmatic activities contributing to regional planning and development decision-making in the wider Douglas Daly region. Table 1 summarises these activities.

Instrument	Jurisdiction	Туре	Purpose
Planning Act (1999) and Major Projects	NT	Land Use Planning and Development	Provides for appropriate and orderly planning and control of the use and development of land.
Water Act (1992)	NT	Water Planning and Allocation	Provides for the investigation, allocation, use, control, protection, management and administration of water resources.
Water Quality and the Waste Management and Pollution Control Act (1998)	NT/Common- wealth	Planning and Action to Maintain and Improve Water Quality	Supports regulation, programs and efforts aimed at maintaining and improving water quality in surface and groundwaters.
Environment Protection Act (2019)	NT	Environmental Decision Making	Under the Act, projects with significant environmental impacts need assessment by the NT Environmental Protection Authority (EPA).

Table 1: The key legislative and programmatic governance activities influencing regional planning and development-related decision-making in the Douglas Daly region (based on NAJA 2020).

Environment Protection and Biodiversity Conservation Act (1999)	Common- wealth	Biodiversity Protection	Provides for the protection of the environment and the conservation of biodiversity.
NT Heritage Act (2011) and NT Sacred Sites Act (1989)	NT	Cultural Heritage Protection	Under the Heritage Act, it is an offence to knowingly damage a heritage place, to remove something from such places or damage or remove a heritage object, unless one of the exemptions applies. Of most relevance, these exemptions include when the activity is carried out under a work approval issued, or heritage agreement under the Act.
Regional NRM System	NT/Common- wealth	Natural Resource Management	A bilateral (Commonwealth/Territory) system to manage natural resource management issues and funding at regional scales.
NT Agribusiness Development Strategy (2022)	NT	Agribusiness Development	A NT Government strategy to develop agribusiness across the NT to 2030.
Crown Lands Act (1992) and Pastoral Lands Act (1992)	NT	Crown Land Administration and Pastoral Land Management	Legislation and program efforts that provides for the administration of crown and pastoral lands.
Aboriginal Land Rights (NT) Act 1976	Common- wealth	Land Rights in the NT and Native Title Resolution and Management	Legislation and other systems that provides for the granting of Traditional Aboriginal Land and support for Aboriginal development in the NT for the benefit of Aboriginal people.

5.1 NT Planning Act, regional growth management planning and Major Projects

The primary purpose of the NT *Planning Act (1999)* is to provide for appropriate and orderly planning and control of the use and development of land across the NT. Within the regional planning frameworks established by the Act, the Douglas Daly has the potential to be considered as an important sub-region, but it currently isn't. Importantly, it is also unincorporated as a Local Government area, meaning it has limited local and sub-regional planning capacity and control.

Regional and local land use planning in the NT is regulated by the Act, the *Planning Regulations (2000)* (NT), and the NT Planning Scheme 2020. Unlike WA and Queensland, the NT Government is solely responsible for land use planning, resulting in comparatively streamlined and simplified land use arrangements, but more limited local input and influence. Local governments may be notified of development proposals, but the *Planning Act's* object is to 'plan for, and provide a framework of controls for, the orderly use and development of land'. Its criteria for achieving its objectives are based on themes of sustainable development and use of resources, environmental protection, and community consultation. However, these themes are not defined under the Act, and Ecologically Sustainable Development (ESD) is not referenced. Based on Dale et al. (2022), Table 2 summarises key entities and functions of prescribed consent authorities who make development decisions within the wider NT planning framework.

Entity	Function			
	Under the Planning Act, the minister has various powers including:			
	 making, amending and/or repealing planning schemes 			
Minister for Infrastructure,	issuing exceptional development permits and interim development control orders			
Planning and	revoking or modifying development permits			
LOGISTICS	delegating decision-making power			
	• generally directing the Development Consent Authority (DCA) and making development decisions outside of DCA division areas.			
Development Consent Authority (DCA)	Under the <i>Planning Act</i> , the DCA 'has the powers that are necessaryto [enable] the performance of its functions or the exercise of its powers' including making development decisions, enforcing planning rules, holding public hearings, and reporting to the minister on development applications, planning scheme amendments and exceptional development permits as they relate to the divisions of Darwin, Palmerston, Litchfield, Batchelor, Alice Springs, Katherine, and Tennant Creek. The DCA's chairperson, each division's local council representative, and two community members meet monthly.			
Northern Territory Planning Commission	 Under the <i>Planning Act</i>, the Planning Commission has functions relating to the Planning Scheme including: conducting regular reviews consulting the community prior to preparing integrated strategic plans, guidelines, and assessment criteria 			

Table 2: Key entities and functions within the Northern Territory's planning framework (Source: Dale et al. 2022).

Entity	Function		
	• providing advice to the minister about matters within the objects of the Act, significant development proposals, and future land use and development.		
	The Planning Commission comprises of a chairperson, the DCA's chairperson, the Heritage Council, the Northern Territory Environment Protection Authority, a Local Government Authority representative and five other minister appointed members.		
Department of Infrastructure, Planning and Logistics	The Department's planning division comprises of the Development Assessment Services and the Lands Planning branches which support the minister and consent authorities by assessing applications and planning scheme amendments, providing professional and technical support, developing strategies and plans, supporting proponents and the public on the Northern Territory's planning framework and enforcing the <i>Planning Act</i> .		

The NT's Statutory Planning Scheme promotes the objectives of the Planning Act by establishing land use planning arrangements to control development occurring on zoned land. Notably, Darwin, Katherine, Tennant Creek, Alice Springs, and some 23 remote towns, which have strategic land use plans, are excluded from this Scheme. Most of the NT, however, including the Douglas Daly, is un-zoned. Regions such as the Douglas Daly, therefore, are largely unplanned in a land use context, due to small, sparsely populated settlements and large areas covered by Aboriginal land. For zoned areas, the Planning Scheme establishes a strategic framework for strategic planning policies and land use plans, including:

- zoning requirements for residential, commercial, industrial, recreational, rural, infrastructural, and other zones, in addition to guidance on suitable development types;
- overlays where specific development requirements must be met due to proximity or exposure factors;
- assessment tables detailing applicable assessment categories, overlays, and general/specific development requirements;
- subdivision and consolidation processes for zoned and un-zoned land; and
- Aboriginal Community Living Area requirements for land use planning.

Dale et al. (2022) outline the detail and relevance of the NT's planning system to regional planning. Consent for development occurring on un-zoned land is required under the Planning Act only for proposed subdivisions or clearing of more than one hectare of native vegetation. Consequently, most development on un-zoned land is not controlled by the Planning Act, but may require approval under other environmental statutes, such as

development proposals assessed under the Environmental Protection Act 2019 (NT), or proposed subdivisions of pastoral land under the Pastoral Land Act 1992 (NT). Moreover, the only strategic planning policy developed for the NT is the NT Compact Urban Growth Policy, which must be considered by the planning minister and the DCA in making decisions.

Under the Act, development consent is separated into four categories: permitted, merit assessable, impact assessable, and prohibited. Development consent is not required for permitted development and may only be granted to prohibited development if its ancillary purpose is listed in the Planning Scheme's Schedule or if it relates to a heritage place and has received approval under the Heritage Act 2011 (NT). Development assessment and approval from a consent authority is required for merit assessable and impact assessable development applications. The Planning Act sets out the decision-making process that consent authorities must follow when assessing development applications. Importantly, for applicable development applications, consent authorities must act in accordance with decisions made by the NT EPA on environmental assessments and approvals. Further, consent authorities may consider any matter deemed relevant.

Following assessment, consent authorities may approve or alter the development conditionally or unconditionally or refuse consent. Consent authorities must immediately supply a development permit to the proponent, which may include conditions. The proponent and persons who made submissions (including local councils) must be notified of all decisions with detailed reasons and explanation of rights of review. Further, significant developments are declared for proposed development which may have a significant impact on the natural environment or the existing amenity of the land and require special assessment and approval. Here, the planning minister may request a report from the NTPC prior to determining the application or referring it to a consent authority.

Within the context of the operation of this legislation, the general policy framework supporting agriculture and aquaculture development in the NT also includes the 'Major Projects' framework, and the activity of agencies, non-government organisations (NGOs), local governments and statutory bodies for which policy, planning, assessment and decision-making processes impact upon development outcomes (NAJA 2020). The NT Government's Major Project Status Policy Framework and associated support team has been established to assist major project proponents to navigate through government approval requirements. Under the policy, major project status is awarded to developments by the NT Government having regard to six main criteria:

- project significance (e.g. capital expenditure, employment);
- strategic impact (e.g. flow on benefits to other industries);
- complexity (government approval requirements and environmental, economic and social impacts beyond the project footprint);
- project feasibility;
- the proponent's capacity to deliver the project; and
- ancillary issues, such as the need for government support and local industry participation, local workforce development and social impacts on the community (NT Government, 2017).

NAJA (2020) suggested that while these criteria are used as a guide, ultimately, decisions on major project status are made at the discretion of the NT Government. If major project status is awarded to major development, the proponent, which could be the NT Government, receives: assistance with the identification of relevant approval processes; whole of government coordination and facilitation of the project related government approvals; and a dedicated government project case manager who works as a single point of contact on the project.

Seafarms Group Limited's Project Sea Dragon is the only agricultural or aquacultural project that has received major project status at this point in time.

5.2 NT Water Act and associated water planning

The NT *Water Act* provides for the investigation, allocation, use, control, protection, management and administration of water resources across the Territory. Under the auspices of the Act, a Water Allocation Plan exists for the Oolloo Dolostone Aquifer (2019-2029), but not for the wider Douglas Daly catchment. This Plan was developed to ensure water resources are managed to protect and maintain environmental and cultural values while providing a sustainable volume of water for consumptive beneficial use. In the NT, water entitlements have historically been allocated on a first in, first served basis, with each decision based on its merits along with consideration of the cumulative impact on the water resource and other users of the resource. As per the *Water Act*, licences are generally issued for a maximum 10-year period, with an option of renewal (DITT 2022b).

Groundwater planning has been well institutionalised in the region for some time, though there is currently some concern about potential over-allocation in the upper catchment (i.e. around the Katherine agricultural development areas. This tension has been eased recently through the application of processes aimed at re-allocating water that is not being used (i.e. a use it or lose it approach to licensing). There is, however, industry concern about these arrangements.

Consequently, in situations where future demand exceeds supply and as a resource nears full allocation, there is a need to look at other alternative sources to ensure that water is being optimally managed to encourage the highest value and efficient use. There is an opportunity to increase water resource availability and to improve water distribution efficiency within the limitations of the Water Allocation Plan. Indeed, the development of policy mechanisms such as the better management of under-utilised water, and encouraging trading and water markets, may provide new opportunities into the future. Surface water development is yet to be explored in detail due to the reliance on groundwater in the region.

The provision for water trading is enabled by the Trading Licensed Water Entitlements Policy which allows all or part of a water licence to be transferred within a Water Allocation Plan area (DITT 2022b). The NT Water Trade Register suggests that, to date, there have been three water trades within the southern zone of the Oolloo Dolostone Aquifer.

A reserved percentage of water exists within the consumptive pool of the Plan that is accessible exclusively by eligible Aboriginal people, to use or trade. The total area of the Groundwater Management Zone (GMZ) is 527,687 hectares, of which 125,609 hectares is eligible Aboriginal land. The accessible Strategic Aboriginal Water Reserve (SAWR)

available in the Water Allocation Plan as of August 2019 was 9,825 megalitres per year. Some 4,078 megalitres per year is within the Southern GMZ and 6,737 megalitres per year is in the Central GMZ, making both relevant to the Douglas Daly Agricultural Development Area.

Further water provision may become available to the SAWR in the future through surrendered, amended or cancelled licences or via changes to the estimated sustainable yield following a review of the Water Allocation Plan. In line with the SAWR Policy Framework, however, water required for public water supply, rural stock and domestic use must be made before a SAWR is allocated. If the status of Aboriginal land changes, then the SAWR is also re-considered in the allocation plan review (DITT 2022b). While a reasonable SAWR is available to Traditional Owners in the Douglas Daly, these reserves have not yet been used.

Under the NT Government's new surface water allocation policies, additional surface water allocations may be made available within the region into the near future. No doubt, if this occurs, it will trigger highly contested discussions between conservation, Traditional Owner and agricultural industry interests. New water trading policies are also currently emerging within the Northern Territory.

To help better understand the water allocation system in the NT system, a new CRCNAfunded Water Security Alliance is starting to resolve key knowledge gaps related to water allocation and use. In the context of the Douglas Daly, this work will focus on:

- (i) review of water values at catchment scale (including a focus on EPBC listed species of significance);
- (ii) a social review of emerging water development interests;
- (iii) work within the Department of Environment, Parks and Water Security (DEPAWS) to account for climate change in the hydrological models;
- (iv) hydrological and water quality knowledge relevant to the Oolloo Dolostone planning area, with a focus on determining where the water is actually coming from; and
- (v) looking at the actual impact of proposed surface water take (including the mapping of floodplains and wetlands).

Underpinning some of these issues at the Territory scale is the new NT Water Plan. There is also early thinking about potential future legislative water reforms within the NT. A review of the Douglas Daly Water Plan is also likely to ramp up in future years. This process will need to better account for cultural values related to water, crop water demand, and the potential impact of climate change on water resources. Water allocation planning activities tend to operate with little connection to more integrated approaches to facilitating the development of the catchment. In particular, there is no clear or integrated regional planning effort guiding emerging development.

5.3 Water quality planning and regulation

Under the NT Waste Management and Pollution Control Act (1998), water pollution and waste discharge are regulated. Certain types of water-related developments could require approval under this Act. There is not a clear line of site between these legislative requirements and the Douglas Daly. Key factors currently of relevance to the operation of the Act in the NT include:

- Waste Water Discharge Arrangements There is currently an increased focus on tailwater recycling with consideration of such arrangements;
- Water Quality Management There is currently an increasing focus on more practice planning for water quality (i.e. the development of Water Quality Management Strategies in places such as the Adelaide River); and
- Water Quality Monitoring There are few water quality monitoring efforts across the NT; most monitoring is passive and could be substantively increased.

Relative to the above policy settings, there are currently no cohesive arrangements for monitoring water quality changes within the Douglas Daly region.

5.4 Thematic analysis emerging from the interviews

The relatively new NT *Environment Protection Act 2019* superseded previous legislation aimed at protecting key environmental values in the NT and establishing an Environmental Protection Authority. This is the key legislative foundation for the coordination of development assessment in the NT, with well-developed triggers triggering impact assessment requirements and referral to the NT Environment Protection Authority (NTEPA). Biodiversity and conservation planning is also sponsored under this piece of NT legislation. In parts of the NT, more detailed biodiversity mapping work is increasingly occurring in support of improved decision-making (e.g. through Mapping for the Future programs at places like the Beetaloo and Gunn Point). While there are strong biodiversity sciences based within the Douglas Daly region through previous DRMAC arrangements, there remains a strong need to review and revisit biodiversity mapping in more detail. This sort of work is quite important in supporting the role of agencies such as the NT Department of Infrastructure, Planning and Logistics (DIPL) in considering development applications under Land Clearing Guidelines.

Interestingly, with anticipated development pressures in the early 2000's, under previous DR MAC arrangements, some more detailed and well engaged work was undertaken in the Douglas Daly, including threshold-based approaches to the consideration of applications. This work was subsequently written into the NT Land Clearing Guidelines, but was then removed in more recent iterations due to limited development pressure. An NT Offsets framework has also now been developed. It consists of 2 policies; one for Biodiversity and one for greenhouse gas emissions (DEPAWS, 2024). In this context, offsetting considerations for tree clearing are also under further development, with an offsetting policy currently under development but not yet practically applied.

5.5 Environment Protection and Biodiversity Conservation Act

In the national context, biodiversity considerations related to development decision-making in the Douglas Daly region are managed through both the Commonwealth's EPBC Act and bi-laterally related NT statutes. Again, the EPBC Act aims to balance the protection of the region's crucial environmental and cultural values by creating a legal framework and decision-making process based on the guiding principles of ecologically sustainable development (DAW & E 2020).

The EPBC Act is the Australian Government's central piece of environmental protection legislation (Dale and Marshall 2020). It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. These are defined in the Act as matters of national environmental significance (MNES). These include world heritage properties, national heritage places, wetlands of international importance, nationally threatened species and ecological communities and migratory species (Dale and Marshall 2020). The Act aims to balance the protection of these crucial environmental and cultural values with our society's economic and social needs by creating a legal framework and decision-making process based on the guiding principles of ecologically sustainable development. Specifically, the EPBC Act aims to:

- provide for the protection of the environment, especially MNES;
- conserve Australia's biodiversity;
- protect biodiversity internationally by controlling the international movement of wildlife;
- provide a streamlined environmental assessment and approvals process for MNES;
- protect Australia's world and national heritage; and
- promote ecologically sustainable development.

If developers conclude that they might have a significant impact on any MNES, then they need to apply for approval to proceed under the Act. This approval process is in addition to NT Government approvals that might be required. When a proponent wants an action assessed for environmental impacts under the EPBC Act, they must refer the project to the Department of Climate Change, Environment, Energy and Water (DCCEEW). This 'referral' is then released to the public, as well as relevant State, territory and Commonwealth ministers, for comment on whether the project will have a significant MNES impact (DAW&E 2020). The minister (or delegate) then decides whether the likely environmental impacts of the project are such that it should be assessed under the EPBC Act.

There are five different levels of assessment, depending on the significance of the project. Each level involves considering technical information assembled by the proponent and comments made by the public. Once a project has been assessed by the Department, it makes a recommendation to the minister or delegate on whether the project should be approved. In addition to considering potential impacts on MNES, in making a decision, the minister also considers the socio-economic impact of projects (DAW&E 2020). A major problem facing the operation of the EPBC Act in the NT, however, has been the lack of regional context within which development decisions are made. Dale et al. (2022) show that an increasingly significant national driver of more regional approaches to planning in the north has arisen through the 2020 independent review of the EPBC Act (the Samuel Review). The review recommended the development of whole-of-government regional plans aligned to a proposed strengthening of national environmental outcome standards, inclusive of:

- regional recovery plans to coordinate the management of cumulative impacts for multiple threatening processes in regions, while identifying areas of current and future critical habitat and suitable offset obligations; and
- ecologically sustainable development plans to address environmental, economic, Aboriginal and social priorities in regions of significant development pressure, by balancing competing land uses and establishing suitable development zones.

Further, the Samuel review (2020) acknowledged that Strategic Environmental Assessments (SEAs) under the EPBC Act might also provide greater development certainty for proponents within regional approaches by offering streamlined approval for multiple actions. The review noted that any prospective regional planning efforts would require the integration of statutory roles and responsibilities of the Commonwealth with State, Territory and local government planning and development approval processes. An overarching objective would be to identify where development could, and should not occur, in addition to priority restoration and recovery areas, providing decision-making certainty and offset market guidance. A sense of community ownership and the adaptability of regional plans through design, implementation, monitoring and evaluation phases was stressed. This emerging policy agenda presents great opportunities for the north, as well as significant risks if such processes are not well conceptualised and executed (Dale et al. 2022).

Some of the opportunities and challenges for implementing these reforms in northern Australian catchments like the Douglas Daly, and to agricultural development in particular, include the potential to see more regionalised approaches to trade-off analysis. The challenges and opportunities Dale et al. (2020a) consider important include those outlined below:

- An Important Focus on Accreditation of State/Territory Systems There is a need for reform to enable broader and comprehensive accreditation of State/Territory processes of development planning, assessment, and compliance. This needs to be a system based on active partnerships with the Territory. This could include a strong scale-based focus on shared decision-making, implementation, monitoring and review. These scales include:
 - (i) National Threat Abatement and Asset Management Planning;
 - (ii) Territory Environmental Protection and Biodiversity Conservation Planning;
 - (iii) Integrated Regional Land Use Planning (including EPBC/NRM Plans);
 - (iv) Development Precinct Planning; and
 - (v) 'Whole of Life-Cycle' Planning and Impact Assessment.

Dale et. al (2020a) consider that, without these subsidiary layers operating well, all of the focus on securing EPBC outcomes will come at the end of the development assessment process, creating unknown levels of development assessment uncertainty and risk for project proponents and communities, and leaving the DCCEEW exposed to localised conflict.

- The Risk of Delivery Failure in Applying National Outcome Standards While Dale et al. (2020a) considered that the Outcome Standards approach proposed by the Interim Report is sound, the strongest risk ahead would likely be 'implementation failure' following completion of the review. As such, they considered it important that Process Standards be negotiated that set shared expectations between the Commonwealth, the Territory, local government, industry and the community about planning/decision-making at various scales.
- Increased Attention to Aboriginal Interests in Land and Sea Country The Interim Report's focus on increasing Traditional Owner engagement in the business of environmental and cultural heritage protection will require:
 - (i) Traditional Owner input into the development of national Process and Outcome Standards;
 - (ii) the integration of socio-economic and cultural heritage assessment within Process and Outcome Standards;
 - (iii) the full engagement of Traditional Owners across all scales of planning and project assessment; and
 - (iv) the creation of significant ecosystem service market opportunities for Traditional Owners.
- Creation of a National Ecosystem Service Policy Framework Dale et al. (2020a) considered that Traditional Owners, farmers and other land and sea managers across the landscape are the stewards of our nation's ecological and cultural assets. Through the Interim Report and the emerging Nature Positive agenda, the Australian Government is increasingly starting to recognise the potential of land and sea stewards to provide/trade high value products in emerging ecosystem services markets. This could be shaped by effective offsetting from EPBC decision-making and project assessment processes in places like the Douglas Daly.

Of importance to this governance system analysis, however, are the self-assessment and referral project guidelines used to trigger EPBC considerations of land clearing.

5.6 Sacred site protection and cultural heritage planning

Within the NT and across the north, there is an increasing level of focus on the protection of both spiritual, historical and physical cultural heritage. An example of this is significant conflict over the proposed extraction of water at Singleton Station in the NT. Planning

frameworks have traditionally been quite weak in considering landscape-scale cultural values, including regional land use planning, biodiversity and water planning frameworks. The NT *Sacred Sites Act* has been a long-standing foundation for the identification and protection of cultural heritage in the Territory.

Under the *Sacred Sites Act*, a sacred site is a place sacred to Aboriginal people, or of other significance according to Aboriginal tradition, and includes any land that, under a law of the NT, is declared to be sacred to Aboriginal people or of significance according to Aboriginal tradition. Custodians must be in agreement before a recorded site proceeds to registration. For this to happen, a custodian has to divulge a certain level of public information about the site to demonstrate that it meets the requirements of registration and placement on the public register.

The registration of sacred sites is the highest level of protection that can be afforded to a site. Registration of a site also enables land users to have the best possible information regarding the site's location and extent. For Aboriginal custodians, registration of a sacred site means that it will be accepted by a court as prima facie evidence that a place is a sacred site. The Act prohibits entry onto sacred sites, the carrying out of work on or use of sacred sites, and the desecration of sacred sites, other than in accordance with certificates issued by the Aboriginal Areas Protection Authority.

In relation to wider cultural heritage considerations, the NT *Heritage Act* protects both natural and cultural heritage places and objects. Cultural heritage places protected by the Act include buildings, a range of structures and places associated with European settlement and maritime heritage. In addition, all Aboriginal and Macassan archaeological sites are protected.

In short, the NT cultural heritage legislation operates more as a site-specific protection mechanism. There is little, if any, focus on considering cultural heritage protection and management at the regional scale or on effectively integrating cultural heritage considerations in regional planning. Cultural values are only broadly integrated into water planning processes at this point in time. There is, however, an increasing focus on modelling cultural values by proxy within water planning.

5.7 Regional NRM planning and delivery system

In support of sustainable natural resource management across the NT, the Commonwealth and the NT governments support the operation of the NT (NRM) Board. Across Australia, community-based regional NRM bodies were formalised to develop regional NRM plans to guide more local action on landscape-scale NRM issues from 2000 onwards. Within these modified or new structures, consequent projects (devised at cross-regional, regional, catchment and local levels) have been delivered through local community-based groups and other capable parties.

Territory Natural Resource Management (TNRM) is the regional, community-based organisation responsible for planning, coordinating and facilitating natural resource management activities across the NT. The NT Natural Resource Management (NRM) plan developed by TNRM with Commonwealth and NT government support, 'provides an overarching five year strategy for maintaining and enhancing the condition of our land and water resources, the productivity of our soils and the health of our natural habitats and biodiversity' (TNRM n.d). The Territory NRM Plan has been drafted following broad Territory-wide consultation combined with the latest science. The Plan is broadly structured to cover four regions to reflect the diversity of the Territory, including the Gulf Savanna region that is inclusive of the Douglas Daly catchment. It builds the foundations for planning action and priorities in these regions over the five years, 2021–2025.

5.8 NT agribusiness development strategy

As a result of the parlous state of the NT economy, and particularly following the impact of COVID 19, the NT Government has been focused on expanding the role of agriculture in the growth and diversification of the NT economy. This has been most clearly represented through the development of the NT's Agribusiness Strategy (DITT 2022). The Strategy was facilitated by DITT through a series of industry forums across the NT during the COVID pandemic. The Strategy 'provides a shared framework to deliver growth across multiple primary industry sectors and was a key recommendation of the Territory Economic Reconstruction Commission (TERC) report in 2020' (DITT 2021).

The Strategy seeks to help the NT 'achieve a sustainable and diverse \$40 billion economy by 2030, leading to more jobs and higher living standards'. Agriculture's targeted contribution to this would be \$2 billion per annum across the NT. The primary calls to action from the Strategy include:

- establishing key sustainable development precincts;
- identifying integrated commercialisation opportunities across the supply chain;
- supporting Aboriginal-led industry development opportunities; and
- facilitating sustainable pastoral and Aboriginal land development.

Of great relevance to the implementation of the NT Agribusiness Strategy was an important piece of economic analysis undertaken by North Australian Agribusiness Management (2016). With significant implications for agricultural precinct development in the Douglas Daly, the study's main findings were:

- 1. There is strong potential for economically viable, irrigated multi-crop/year options for existing local farmers with existing farm infrastructure, but not for greenfield development;
- Depending on the level of existing capital investment, the required net cash flow/year from the cropping system to sustain economic viability, ranges from \$2,000/ha/pa (where existing farms require fencing, clearing, specialised land preparation, pumps and pivot installation), to around \$2,500/ha/pa (where existing farms also require bores);
- 3. This net cash flow requires a multiple crop/year system for broadacre crop development. Under current farming systems, no large scale single broad acre crop can currently meet this requirement;

- 4. Several crops show potential for incorporation into a multi crop/year, cropping system that generates the net cash flow needed to support brownfield developments in the Douglas Daly. These include aromatic rice, peanuts, mung beans and fodder;
- 5. Multi crop/year cropping systems have not yet been successfully deployed in the NT and in northern Australia. There is a critical need to commercially test the proposed cropping systems in Douglas Daly growing conditions, in order to de-risk the investment opportunity. Crop cycle times and yields in the Douglas Daly conditions will be an important determinant of success. Genetic development and selection may be required;
- 6. A fodder-based cropping system could be easier to implement in the region in the shorter term. A fodder/mung bean system would be technically easy to implement, meet economic imperatives, and has no minimum scale required for post farm gate processing and handling. The size of the NT market for fodder may be a constraint, but there are also potential market opportunities in better quality fodder and possible export feed pellets;
- 7. There are attractive climatic conditions and sufficient suitable soils and water in the Douglas Daly for the minimum scale required to support post farm gate supply chain processing and handling requirements for these crops. There are also sufficient soil and water resources to support considerable expansion of these crops past the minimum supply chain needs;
- 8. There are sizable domestic and international markets and reliable prices for the proposed crops;
- 9. The current focus on land and water resource mapping which focuses on light sandy soils over ground water resources does not recognise the higher capital cost of this cropping system when compared with furrow irrigation from surface water catchments on heavier soils. This suggests that more focus and research effort should be directed to cropping systems and economics of surface water capture and furrow irrigation on heavier soils, in the north; and
- 10. This study has identified a potential international market opportunity in feed pellets that would significantly compliment any implemented Douglas Daly cropping system. Further assessment of this market opportunity was recommended.

The study considered that a grower and industry collaboration opportunity exists for the commercial trialling of a multi crop/year system using grower land and capital, and this could be progressed if appropriate support could be secured from supply chain partners and relevant research organisations. It was recommended that this opportunity be further developed with a view to fast tracking and complimenting research efforts in this area. It also particularly demonstrated that the process of reverse engineering development strategies from the starting point of economics and markets was more important than starting from the land and water resources available. The study was particularly useful in suggesting that a four-step iterative process was required that involves:

- determining capital development costs and defining the required net cash flow pa/ha to support these costs;
- selecting crops and markets and developing cropping systems to meet the required cash flow targets;
- considering post farm gate supply chain handling and processing requirements to determine required production scale; and
- selecting land, water, climatic and infrastructure resources needed to meet the crop system requirements.

The North Australian Agribusiness Management (2016) research is important in suggesting that, once the economics of cropping development opportunities becomes clearer, then some strong retrofitting of land and water availability could be considered to enable a wider range of medium to larger scale investors. This could then be followed up with more significant district wide planning and approvals. The report poses the following questions that will support decision logic:

- what is the capital expenditure required to develop a 100 ha irrigation farm (assuming this is a minimum farm area) on sandy soils of Douglas Daly;
- what net revenue is required to justify the capital expenditure?;
- what crops and cropping systems could generate the net revenue required?;
- how much soil and water resources are available in the Douglas Daly to generate the scale required for the supply chain for these crops (e.g. post farm gate processing)?;
- what are the market and supply chain factors of the selected crops that could drive development?;
- what are the technology research gaps that need to be addressed to make the opportunity a reality?; and
- what infrastructure or policy constraints or limitations in capital/finance/supply chains need to be resolved to develop the scale required?

The report found that the total freehold land area in the Douglas Daly is 92,130 ha, of which 32,148 ha is cleared land. There are 41,541 ha of suitable soils (Cat A & B) for cropping, made up of 25,558 ha of Cat A soils (rice, mung bean) and 15,783 of Cat B soils (peanut based crop systems). There are 9,881 ha of forestry (mahogany and sandalwood) on good soils (Cat. A & B) in the Douglas Daly. The total land of suitable soils (Cat A & B), not used by forestry, is 31,660ha. There are 5,330 ha of Cat A & B soils (not already used for forestry) that are within 3km of existing 50+lt/sec bores (this area includes cleared and uncleared land).

Once specified that the areas need to be of sufficient size to accommodate a 50 ha pivot, the available Cat A & B soils within 3 km of existing bores were considered to drop to 4,413 ha (including cleared and uncleared land). This is made up of only 894 ha of Cat B soils suitable for peanut-based crop systems. It also included 3,519 ha of Cat A soils suitable for an aromatic rice/mung bean cropping system. The report considered that using a minimum

area of 30 ha of contiguous good soils for smaller pivots increases the potential development area significantly.

It is also considered that a 1,200 ha irrigated development is likely to require around 12-15,000 ML/year of water allocation, based on estimates around 10-12 ML/ha for a two crop system North (Australian Agribusiness Management 2016). At the time, the NT Department of Land Resource Management advised North Australian Agribusiness Management there was 60,000 ML/year of water available in the Douglas Daly ground water system.

It is estimated that the projected use for current developments, including irrigated sandalwood, is unlikely to exceed 20,000ML/year. North Australian Agribusiness Management (2016), therefore, considers that the Douglas Daly has sufficient water for a minimum 1,200 ha irrigated cropping development requiring around 10,000-15,000 ML and allowance for expansion. The report also did not investigate the possible use of on-farm surface dams to supply water for pivots and suggested that these could reduce the irrigation capital cost. The report showed that the drilling of bores is a major cost, estimated at around \$5000/ha. On-farm surface water dams, however, require investigation of suitable sites with the right topography, a clay base to hold water, catchment rainfall studies to estimate water yields and appropriate water catchment and use policies.

5.9 Crown Lands Act and Pastoral Land Act

Land tenure in the Douglas Daly is a mix of freehold, crown and Aboriginal tenures under both the Commonwealth *Aboriginal Land Rights Act* and the *Native Title Act* (see Map 1). Four main types of land tenure are in place in the NT. The NT *Crown Lands Act* provides for decision-making about and the administration of crown lands across the NT. Crown land in the NT can be made up of a mix of reserves, unallocated crown land, and, more importantly, pastoral leasehold. At the broader NT level, most land in the Territory, outside of formal townships, is either Aboriginal freehold or pastoral leasehold land over which native title rights can exist.

The NT *Pastoral Lands Act* more generally provides for the conversion and granting of title to pastoral land and the administration, management and conservation of pastoral land. It facilitates the sustainable use of land for pastoral purposes and the economic viability of the pastoral industry. On pastoral leases, under the more specific NT *Pastoral Lands Act*, non-pastoral use (NPU) permits are required to conduct agricultural, horticultural, aquacultural or other non-pastoral grazing activity on pastoral stations. NPU decisions need to consider the environmental factors associated with changing land use from broadscale pastoralism.

5.10 Aboriginal Land Rights Act and Native Title Act

The Commonwealth *Aboriginal Land Rights Act* provides for the granting of Traditional Aboriginal Land in the NT for the benefit of Aboriginal people. The NT's Four Aboriginal Land Councils were also established under the Act. In the context of the Douglas Daly, the Northern Land Council is a statutory authority established to express the wishes and protect the interests of Traditional Owners, and other Aboriginal people in that Land Council's region. As mentioned previously, a number of Aboriginal Land Trusts exist in the Douglas Daly Agricultural Development Area.

Complementing the *Aboriginal Land Rights Act* is the Commonwealth's *Native Title Act*. This Act provides for native title in relation to land or waters and for related purposes. Once Native Title is determined, Prescribed Body Corporates (PBCs) are established to achieve the aspirations of native title holders and to deliver land use agreements to external parties.

Australia's national policy attention in relation to Aboriginal land rights is slowly seeking to improve the efficiency of current land rights processes, including the need to support traditional owners in using these rights, drawing benefits from them, and meeting the completely new challenges facing Traditional Owners post-determination (COAGSOWG, 2015; JCU & CSIRO, 2013). Consequently, on 10 October 2014, the Council of Australian Governments (COAG) announced an urgent 'investigation into Indigenous land administration and use, to enable traditional owners to readily attract private sector investment and finance to develop their own land with new industries and businesses in order to provide jobs and economic advancement for Indigenous people' (COAGSOWG, 2015).

Key findings included recommendations to support Aboriginal peoples' use of their land and water rights for economic development. The group identified five key areas where governments should focus their efforts (COAGSOWG, 2015, p1):

- gaining efficiencies and improving effectiveness in the process of recognising rights;
- supporting bankable interests in land;
- improving the process for doing business on Aboriginal land and land subject to native title;
- investing in the building blocks of land administration; and
- building capable and accountable land holding and representative bodies.

Linked with this work, COAGSOWG (2015) also identified several parallel Commonwealth processes that could influence this agenda. These included:

- a report by the Australian Law Reform Commission (ALRC) reporting on a two year inquiry into the connection, joinder and authorisation aspects of the Native Title Act 1993 (Australian Law Reform Commission, 2015);
- the Australian Human Rights Commission (Australian Human Rights Commission, 2015) facilitated Indigenous Leaders Roundtable on Property Rights in Broome on enabling economic development within the Indigenous estate (Aboriginal and Torres Strait Islander Social Justice Commissioner, 2015);
- the Forrest Review considered improvements that could be made to help create parity between Indigenous and other Australians, including through development on Indigenous land and land subject to native title (Forrest, 2014); and
- the Deloitte Access Economics' Review of roles and functions of native title organisations (Deloitte Access Economics, 2014).

6 Research results: Perceptions of system health

6.1 Preliminary issues identified by the NAJA Report

As a prelude to this more focused work in the Douglas Daly region, NAJA Business Consulting was engaged by the CRCNA, in partnership with the NT Government, to undertake a study into prioritising, derisking and brokering agricultural and aquacultural development in the NT. The report provided a roadmap for further sustainable agricultural development to realise the vision behind the Developing Northern Australia White Paper (Australian Government 2015). This was based on the consideration that, five years after the release of the White Paper, there remained unmet opportunities, and concerns continued over the environmental impacts of some development options.

This NT-focused work was part of a wider collaboration between the CRCNA and all three northern Australian jurisdictions (WA, NT and Queensland). The project explored the issues at hand and proposed innovative and NT-specific policy, regulatory and other solutions to facilitate sustainable agricultural development that balances economic, environmental and social outcomes.

The NAJA report specifically explored constraints identified that inhibit planning and assessment for sustainable agricultural development in the NT, reflecting broadly upon the:

- (i) complex land tenure arrangements;
- (ii) limited understanding of water availability and soil suitability;
- (iii) security of water rights and water infrastructure;
- (iv) transport and communications infrastructure;
- (v) development of a supportive regulatory environment; and
- (vi) fostering of a supportive investment environment.

Extensive stakeholder engagement informed the report. The report stressed that securing private sector investment in the development of the NT would still require serious collaboration between the Commonwealth and the NT Government. NAJA considered that opportunities for both governments to assist in brokering and derisking agricultural development could generally be grouped as follows:

- more effective soil and water resource assessment, allocation and supply (including targeted land use planning);
- refinement of approval processes;
- the strategic planning and delivery of supporting infrastructure (particularly transport and telecommunications);
- targeted research and development;

- market development and support;
- investment in lifting Aboriginal capacity to undertake agricultural development;
- investment support (such as Northern Australian Infrastructure Facility); and
- the development of more trust between all stakeholder sectors, industry, government agencies and investment.

Of great relevance to the Douglas Daly were the key recommendations relating to each of the themes proposed. These particularly included the development of orderly pathways for the transition of pastoral leases to more secure forms of tenure and the targeted derisking of prioritised agricultural development areas. Many of these recommendations are now being pursued through the NT Agribusiness Development Strategy (DITT 2022). The Strategy provides a shared framework to deliver growth across multiple primary industry sectors. It was a key recommendation of the Territory Economic Reconstruction Commission (TERC) report in 2020.

6.2 Thematic analysis emerging from the interviews

Some eight targeted interviews were conducted, and these particularly focused on government-related institutions involved in the assessment of planning and development. While there was preliminary communication with key regional stakeholders in the community, industry and traditional owner sectors, the issues and concerns of all sectors are well articulated in the public domain.

Some of the key themes that emerged from the agency-based interviews regarding the strengths of the current system are listed below, with the number of times each issue was raised in brackets:

- the capacity of the natural asset to enable sustainable agricultural development (3);
- DCCEEW and the National Water Grid Authority (NWGA) now have a stronger local presence and linkages within the NT (2);
- reasonable, deliberative and consistent regulatory frameworks are in place (2);
- the region is highly accessible (1);
- there is easy access to politicians and decision-makers (1);
- there are increasingly strong community expectations to deal with climate change and cultural values (1);
- the high potential capacity of Aboriginal, industry and conservation delivery sectors, if well supported (1);
- the existence of a northern Australian policy that is supportive of sustainable agriculture (1);
- a legacy of enthusiastic and informed collaboration arising from DR MAC (1); and
- a great legacy of scientific knowledge (e.g. TRaCK) (1).

Some of the key themes that emerged from people's expressed views of the weaknesses of the current system include:

- the planning and development assessment system is complex and poorly integrated (7);
- insufficient science behind planning and development decisions (4);
- limited system workforce capacity, and particularly community engagement (3);
- tenure and regulatory complexity (3);
- poor access and communications infrastructure in the region (2);
- fears of the past failure of collective action (2);
- limited local government capacity within the Douglas Daly (2);
- development assessment timeframes might be too short (1);
- the limited number of public spokespeople for collective action (1);
- limited professional development capacity among planners (1);
- dysfunctional offset frameworks (1);
- development of the economy without plans, infrastructure and at-scale supply chains (1);
- lack of clear delivery systems for complex national and NT policies (1);
- traditional finance being hard to attract (1); and
- government capacity for Traditional Owner engagement (1).

Some of the key themes that emerged from people's expressed views of priorities for system improvement include:

- visionary and early approaches to collaborative decision making (6);
- capacity investments in Traditional Owner governance and support (5);
- ongoing programs of mapping, scientific works and model improvement (5);
- capacity investments in government planning and engagement (4);
- opportunities for place-based approaches to biodiversity and carbon offsets (3);
- whole of catchment water planning, bio-regional planning and strategic assessment (2);
- investment in industry and community capacity locally (2);
- greater attention to the social and economic benefits of development (2);
- positive place-based approaches that can influence legislative and policy reform (2);
- the need to demonstrate and recognise sustainable farming systems (2);

- strategic investment in road and communications infrastructure (1);
- third party facilitative support to help broker trade-offs (1);
- the need to map resource demand (1); and
- government standing firm on agreed policy frameworks (1).

6.3 Implications from the results

This section has brought together the results from the broad GSA and more detailed interviews exploring the health of the governance system for regional planning and decision-making in the Douglas Daly catchment. From this work, clear points are emerging regarding strengths and weaknesses within the system, as well as potential areas that might be ripe for practical reform.

Based on these results, the following section dives more deeply and synthesises the key governance system problems that, if addressed, would influence better decision-making and sustainable development outcomes within the catchment. It also unpacks discussion related to potential and practical system reforms to guide further efforts.

7 Discussion: A preliminary systems analysis

Through this GSA work, we have identified several higher level and significant regional planning and development assessment system problems that, if left lingering, will continue to result in the continued slow decline of environmental, cultural and economic values in the region.

Competing and fragmented visions for the Douglas Daly

The analysis above exposes a significant policy tension within the Douglas Daly catchment between:

- a strong industry desire to expand the levels of production and value contributed by agriculture within the catchment, taking full advantage of available water resources and cleared land (best represented through the NT Farmers Report 2020);
- conservation sector and traditional owner concerns about the maintenance of aquatic and estuarine ecosystem services, recreational fishing and cultural values within the catchment (best represented by Beaumont et al. 2020); and
- Traditional Owner aspirations for nation-building at appropriate cultural scales to achieve greater economic self-determination (as articulated in DITT 2021).

Perhaps underpinning all this, however, is a somewhat common aspiration across sectors, which is the need to improve economic livelihoods, services and infrastructure in the region.

These conflicting visions are often played out in national and Territory-scale arenas, but within the Douglas Daly, there are no firm mechanisms to mediate between these conflicting visions. It is not so much individual regulatory frameworks that prevent effective development, but instead a lack of agreed and well-articulated vision and associated strategies required to fulfil such visions.

No cohesive framework for regional planning and trade-off analysis

The above findings suggest that there is a significant need for more knowledge-based and engaged trade-off analysis over these key tensions between development, water availability, cultural values, vegetation management and estuarine and marine health.

Trade-off analysis thinking, however, has been previously attempted through the auspices of previous DRMAC arrangements in the Douglas Daly. Several interview participants deeply valued the opportunity for science-based, whole of community and inter-sectoral dialogue during the period that DRMAC was in operation. However, others lamented a lack of mechanisms to keep the member parties accountable to outcomes of the process. Others suggested the process may have been unsustainable, as it was instituted for a relatively narrow advisory purpose.

Overwhelmingly, however, most participants independently suggested the need for visionary and early approaches to reinvigorating collaborative decision-making for sustainable development in the catchment. This suggests there is a strong appetite for the establishment of a durable, well facilitated and evidence-based collaborative planning framework to both determine a shared vision and the key strategic interventions needed to secure this vision over time.

7.1 Poorly conceptualised ecosystem service offset and market frameworks

One of the key reasons the Douglas Daly region faces continuing biodiversity risks, productivity and social decline is that there is no clear framework for effective alignment of multiple government ecosystem service markets, as well as social and governance (ESG) efforts that could be directed towards targeted improvement of biodiversity, water quality and socio-cultural values within the region. This signals the need for significant reforms in the current regional NRM system locally. If well fostered for the long-term, the system could provide a strong framework for:

- planning (spatially) the long-term priorities and actions for protecting, maintaining or improving important environmental and cultural values;
- establishing long-term delivery frameworks regionally, through capable delivery institutions, including pastoral stations and emerging Traditional Owner ranger groups; and
- regional mechanisms for aggregating, guiding and delivering effectively on market options.

Unfortunately, there is evidence that, at the national scale, the original intended bilateral and community-based design of the regional NRM system began deteriorating at least a decade ago (see Dale et al. 2020b). The regional NRM system has generally been relegated to a role focused on providing a government-service delivery model. At the same time, the wider range of potential investment options that could service delivery into the region has expanded and will continue to grow. These options include some of the varied government programs, and regulated and voluntary ecosystem service markets, including:

- the Federal National Landcare Program;
- Federal Farm Stewardship Programs;
- NT Regional NRM investment Programs;
- the Federal Emission's Reduction Fund (ERF);
- regulated offsets under the EPBC;
- emerging global community and biodiversity-based standard-based offset markets;
- global and national philanthropic investment markets;
- emerging corporate ESG obligations (globally to locally); and
- the voluntary efforts of local landholders (recognising the economic value of biodiversity).

Three critical factors will contribute to have extremely limited alignment of these investment markets towards the long-term and capable delivery of landscape-scale management. These include:

- a lack of a clear, landscape-scale plan prioritising those parts of the landscape where long-term and cohesive management action is required. This includes the progression of the government service, market and offset-based investment mechanisms outlined above in ways that integrate the intent of multiple-species based recovery plans;
- the lack of integrated systems for the mobilisation and brokerage of both the supply and demand sides of these investment opportunities within the catchment;
- the lack of stable investment in capable landscape scale-management delivery mechanisms, either through Aboriginal ranger groups, capable landscape-scale restorative ecology delivery-teams, or empowered pastoral land managers; and
- capable regional scale condition and trend reporting of progress made with investment.

7.2 Capacity limitations across multiple sectors

Sector capacity issues were consistently raised as a weakness within the current regional planning and development assessment system. Particular attention was drawn specifically to Aboriginal institutions, local government capacities, industry and landholder capabilities, consultancy sector capacities, and even the decision-making capacities of regulatory agencies. Across the Douglas Daly, there is no cohesive approach to lifting these capacities. This means there is a major barrier for all sectors to engage meaningfully in new and innovative regional approaches to planning, improved development assessment, and ecosystem service markets.

In particular, with Traditional Owners in the region having well defined Aboriginal Land Rights Act Land Trusts, as well as relevant native title determinations and water allocations, the opportunity now exists for substantive social, economic and cultural revival within the region, including further agricultural development with associated water allocations. Despite strong aspirations for nation building, there are few cohesive mechanisms to support such approaches. This leaves Traditional Owners in a weaker position to manage the country, where they have firm rights to resources. It also diminishes their capacity to be engaged in the management of the wider landscape.

8 Next steps and conclusions

This project has explored priorities for more regionally-based approaches to improving the system of planning and development decision-making in the Douglas Daly catchment. We have paid collective attention to the Douglas Daly because it remains one of the most prospective regions for agricultural development, primarily due to the availability of water, relatively secure land tenures, and the high availability of cleared or plantation land for development. Despite this, the region also retains high biodiversity and cultural values. While development could happen with relatively low environmental and cultural impacts, if poorly managed, it could result in very poor environmental, cultural, social and economic outcomes for the region.

Key government-based Douglas Daly agencies were brought together to consider the emerging outcomes from this **Analysis Report** in early 2024 and to further explore potential pathways for sustainable development of the region. Some of the strategies emerging from this are outlined in our subsequent **Solutions Report**.

It is hoped that the steps considered above will enable a strong, long-term, and collaborative approach to resolving these problems through growing partnerships between the Commonwealth, the NT Government, and key actors interested in Douglas Daly.

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