Above the line - unleashing the North’s potential

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Land and water investigations and targeted capital investment underpin economic growth for development in Northern Western Australia

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Land and water investigations and targeted capital investment underpin economic growth for development in Northern Western Australia

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Abstract

The Department of Agriculture and Food (DAFWA) is finalising four years and over $44m of investigations and capital works in northern Western Australia. This work is part of the State’s goal of doubling the value of irrigated agriculture by 2025. To achieve this goal, we identified over 85,000 ha of new land with suitable water in four (4) primary development zones. The most prospective areas are in the East and West Kimberley, Pilbara and Gascoyne. This report focusses on three targeted land and water investigations ($19m; Kununurra – Cockatoo Sands, La Grange, Pilbara) and one specific ($25m; Carnarvon) investigation and capital works project.

Land and water outcomes are:

- Ord Stage 3 - 8000 ha of Cockatoo sands ready for the use or market (in addition to proponents now developing 20,000 ha of black soils de-risked in Ord Stage 1),
- La Grange - identification of 50,000 ha of highly suitable land with at least 50 GL/a of water allocated for 5000 ha (10ML per hectare) to support emerging proposals
- Pilbara - identification of at least 3,000 ha at six development nodes, crop assessment and market analysis, with up to 60 GL of available water from four source types in the Pilbara ready for investigation, with ~100 GL/a addition dewater opportunities,
- Carnarvon - capital works being finalised to deliver 4 GL/a and bring at least 400 ha into horticultural production and a further 2 GL/a identified for growth or increased reliability,
In the process of undertaking these projects, DAFWA and their partners have learnt some key lessons for Government and Industry. Specifically,

- Investing ≈ 1% of development costs in land and water assessment improves the chance of success of projects and diminishes risks to developers and Government.

- Developers often work with impatient capital and are managing multiple government and non-government processes; accruing upfront costs and lengthening timeframes. Thus a pre-emptive approach based on prior investigation of resources, engagement and analysis, is a key principle for the State that also enables proponents to succeed.

- Fit-for-purpose science is critical to the success of projects by reducing approval issues due to poor site choice and both local and cumulative regional impacts.

- Engaging with the existing landholders, Native Title holders and key stakeholders early in the process is critical. This requires dedicated time and resources to boost capacity to participate in, fairly assess and benefit from development opportunities and approval processes.

- Focusing investors on the least risky and most suitable location, lowest development cost water and guiding proponents on the most appropriate irrigation options and development pathway, is critical to securing viable economic sustainable agriculture.

**Keywords**
Irrigation, groundwater, resources, infrastructure, Western Australia.

**Introduction**

George et al (2014) describe the recent history of large-scale irrigated agriculture developments in the north of Western Australia and potential land and water available. In terms of natural resources, they identify large areas of capable land (over 85,000 ha of black soils and sands, Figure 1) with access to about 1600 GL/a of accessible water. Of the water, ~70% is contained in Lake Argyle or is potentially accessible from the Fitzroy River, and ~30% is groundwater; in areas with variable levels of security.

The largest existing irrigation project in northern WA is Ord Stage 1, built on 14,500 ha of black soils near Kununurra and with decades of public and private investment in various forms of infrastructure. There are also smaller private irrigation projects (<30-900 ha), growing
fodder and horticultural crops, across the Kimberley and Gascoyne on Pastoral land and integrated with iron-ore mine dewatering in the Pilbara.

However in the last 40-years, the northwest also has seen some notable, but failed private development projects: the 25 000 ha Australian Land and Cattle Company (ALCCO) project at Camballin (Fletcher 2009), and the attempt to initiate a 20,000 – 200,000 ha cotton project by Western Agricultural Industries (WAI) near Broome (La Grange) and in the western Fitzroy Catchment. In addition, the transition from Ord Stage 1 to Ord Stage 2 stalled by several decades, and exemplifies the difficulties of development – even when backed by Government.

On review, George et al (2014) notes that the primary issues for irrigated agriculture included: community concern over foreign investment, uncertainty of tenure and native title approvals, inability to progress and finance large developments in a remote region, and a lack of security of returns of most commercial crops. A lack of social licence due to poor engagement and proceeding too quickly for stakeholders to comprehend is a common factor. Of note, the lack of suitable land or water was not a primary reason for failure; although poor site choice and inadequate science can be. This was also the conclusion of a review of other irrigation developments across the North (Ash et al 2012). Other impediments and opportunities to irrigation are defined in the WA State Water Strategy (Anon 2005).

Support for a new phase of irrigated agricultural expansion in Northern Australia has been promoted by State and Federal Government interest in food supply chains, geosecurity and community development. Growth has stimulated Government reviews (Anon 2009 and others), assessments (e.g. CSIRO Flinders-Gilbert and recent National Water Infrastructure) and research (proposed Cooperative Research Centre) concerning developing northern Australia. It has also been stimulated by rising beef prices, an influx of foreign capital and understanding by Governments that improved physical, financial and governance systems are required to attract growth.
Growing the North

Prior to 2010, as part of its engagement in the development process, DAFWA initiated several pre-feasibility assessments to look for prospective land, or to support private driven opportunities for irrigated agricultural expansion. Many areas within the East and West Kimberley, Pilbara and Gascoyne were identified. These included large areas of Cockatoo Sands near Kununurra and discreet developments on the black soils on the Fitzroy, Pindan soils near Derby, La Grange and Port Hedland (Pardoo to Wallal), and varied soils in the Pilbara, near mine dewater areas. It also identified pastoral lands in the Gascoyne adjacent to the existing Carnarvon Irrigation area where capable soils and low salinity groundwater was known to be available. Working with Government and proponents, we identified a number of issues that informed these projects. Importantly the work highlighted the need for regional level baseline assessment, local engagement and a clear development pathway as key factors in achieving transformational change. Areas were rated by opportunity and risk, and planning
work initiated — for example centre pivot trials at Wooramal, south of Carnarvon, as a precedent to the Pilbara based Rio Tinto, Hammersley Agriculture project.

However not until recently, with the availability of Royalties for Regions funding, could most of these opportunities be explored. Within this context, DAFWA established it’s ~$44m ‘Growing the North’ program (2012-2016), whose goal it was to undertake a mix of investigations, research, industry engagement and deliver capital works. These included:

- Cockatoo sands ($1.3m) – investigation of two expansion areas, including soil capability, surface and groundwater baseline data collection, resource risk and infrastructure assessments required to bring up to 8000 ha near Kununurra to market.
- La Grange ($5m) – reengage traditional owners in land and water research (after the failed WAI project) to expand on existing developments on the Pindan soils south of Broome. To include assessment of development options, soil capability, baseline water and economic analysis for 5000 ha forecast expansion.
- Pilbara ($12.5m) - integrated systems research on food, feed and fodder crops, development regulatory pathways and water resource option analysis to support irrigated agriculture in a mining and pastoral context (ends 2017).
- Carnarvon ($25m) – built on previous investments, this project was primarily an infrastructure project, though required initial work to locate suitable soils and water before building core infrastructure (35 production bores and 24km power and pipeline) to access at least 4 GL/a of water to develop at least 400 ha of new land.

1. Cockatoo Sands

The Cockatoo Sands Project was established near Kununurra to assess areas mapped by DAFWA soil surveyors during an earlier period of regional soil investigations. They identified two primary target areas (this Project) and a third area, referred to as the Bonaparte Plains, 60km to the North; currently being investigated under new ‘Royalties for Regions’.

Unlike the ‘black soils’ traditionally farmed near Kununurra, Cockatoo Sands have characteristics that allow them to be easily cultivated and prepared for planting various crops during the early and late stages of the northern Australian wet season. Developing Cockatoo Sands will therefore increase opportunities for agriculture by: increasing scale, allow a more
Investigations (Smolinski et al 2015) identified 2268 ha of suitable Cockatoo Sands within 15km east of Kununurra on the Victoria Highway. Another 5305 ha of suitable Cockatoo Sands and Packsaddle loams were identified in the Carlton Hill area, about 5km north-east of the existing ORIA Stage 1 area. The addition of 1233ha of lower capability Pago soils would make a more cohesive 6538 ha area of land for development at Carlton Hill, but will require management of some of the agricultural limitations identified. The waterlogging limitation of the Pago soils can be managed using selected broad scale fodder or perennial crops that can use subsoil water. The three soils have no other major chemical or physical limitations that would preclude their use for irrigated agriculture, though several soil factors such as low buffering capacity of the topsoil, the potential increase of soil acidity and the potential decline of calcium–sodium ion ratios, can be controlled through fertiliser management and amelioration with gypsum.

Local, mostly unconfined fractured rock aquifers contained within Cockatoo Formation sandstones and Devonian limestones occur beneath the two development areas. Drilling and related aquifer tests showed they are low yielding (2-5 L/sec) and have low storativity. As a result, while local supplies of low salinity groundwater are available for various agricultural uses, both locations will require a reticulated water supply from the nearby Ord River to allow full development (Bennett et al, 2016).

Development risks assessed included increased watertables, off-site surface and groundwater discharge and associated surface and groundwater quality impacts. However Bennett et al (2015, 2016) assessed the risks as low given the results of baseline analysis (hydrography and hydrogeochemistry) completed, capability for aquifer management and preferred use of pressurised irrigation systems that can be setup to manage water and nutrients.

Preliminary irrigation designs have been completed for both areas, though while development is likely to be initiated at Victoria Highway as water, and road and energy infrastructure is available, opportunity also exists at Carlton Hill on smaller areas in association with fodder and beef. Based on a peak demand/supply rate of 1.5 L/s and an annual application of 20 ML/ha — required to enable cropping in both the wet and dry seasons, of the order of 50 GL/a
allocation would be required for the Victoria Highway area. Preliminary budgets suggest development costs of the order of $20 000 per ha and volumetric water costs of $100 per ML.

2. La Grange

The La Grange Project was established to define appropriate land and water resource development options to support up to 5000 ha expansion of irrigated agriculture adjacent to the Northwest coastal highway, south of Broome Western Australia.

The available groundwater resource for irrigation at La Grange is the Broome Sandstone aquifer. The aquifer is a flat-lying, unconfined aquifer of variably consolidated sandstone covering over 30 000 km$^2$ between Roebuck Bay and Mandora Marshes. It has a saturated thickness of over 200m near the coast. Fifty gigalitres per annum (50 GL/a) is currently allocated for consumptive use under the Department of Water allocation plan (under review in 2017).

The project was founded on three governing principles, negotiated with the traditional owner groups, irrigators and other key water users (pastoral stations) prior to commencement. They were:

- Prior and informed consent; shared knowledge prior to development
- Baseline condition of the Broome aquifer; documented by the project so that development impacts can be assessed against them
- Monitoring system; with input from the traditional owners; a legacy groundwater monitoring network installed so that development impacts can be assessed and that discussion about new projects will be more informed and balanced.

These principles guided resource investigations and aimed to leave a legacy to underpin the sustainable development of the resource. The design of the Projects’ research program and plans to install a monitoring network was also influenced by the location of capable soils and available groundwater, and limitations, such as wetlands and access to water for cultural uses. In parallel with recognition of prior use and title, the goals of the work were driven by a foundation review of knowledge gaps undertaken in 2012 (Paul, et al 2013).
The six key hydrologic gaps and related outcomes of the Project were:

1. Shared understanding and baseline; locate, survey, monitor and sample all existing bores to establish current conditions. Outcomes; 300 bores located, surveyed and 150 sampled for baseline level and chemistry. Monitoring of aquifer conditions and methods was first agreed with key input from Karajarri and Yawuru traditional owners, on seven Stations and with two horticultural businesses.

2. Acquisition and interpretation of airborne electromagnetic (AEM) data; to determine aquifer geometry, locate the salt-water interface (SWI) and assess variability in aquifer properties. Outcome; 25,000 km² AEM survey undertaken that precisely located the SWI, mapped and forecast, within expectations, thickness of the Broome sandstone, depth to the Jarlemai siltstone and allowed the spatial variability of aquifer salinity to be mapped. AEM also underpinned model development.

3. Drilling and other ground surveys to; confirm AEM results, provide stratigraphic and water level data and facilitate ongoing groundwater monitoring of irrigation development. Outcome; twenty-four sites drilled to up to 252m to confirm thickness and depth of the aquifer, and install nested, multi-depth monitoring sites to establish baseline conditions and enable future sampling. The main production zone of 100m is very permeable (20-50 m/day). A web application was built to deliver outputs.

4. Assessed location of wetlands (groundwater dependant) of the Broome sandstone by defining watertable depth and distribution and producing mapping tools. Outcome; airphoto and digital terrain modelling established mapped areas known to contain significant wetlands based on Broome aquifer discharge; used in modelling irrigation development scenarios and impact analysis.

5. Geochemical sampling of the aquifer to determine irrigation suitability, and assess recharge (using $^{14}$C age dating, stable isotopes and tracers). Outcome; over 60 samples from 26 sites taken for general chemistry, isotopes and related tracers to enable suitability assessment for irrigation use and recharge estimation. Water quality was typically < 500 mg/L TDS, and apart from minor boron and nitrate exceedances, fit for all sensitive crop applications. Recharge assessment using CFC and $^{14}$C showed
modern waters in the aquifer (older water up to 18,000 yrs at depth), with isotope data inferring episodic mechanisms after large scale (e.g. 100mm) cyclonic events, with mean annual recharge of 20mm typical of the areas proposed for development.

6. Construction and calibration of a water balance model to assess the potential impacts of further irrigation development on current and future groundwater users and the cultural and environmental values of the area. Outcome; MODFLOW-SEAWAT aquifer model constructed on 400m x 25 grid cell for scenario assessment. These include interactions between the SWI, wetlands and related traditional owner sites, as well as enabling testing interactions between future developments.

At the conclusion of the project, we located over 60,000 ha of suitable sols and confirmed the availability of at least 50 GL/a to support up to 5000 ha of irrigated agriculture (based on 10 ML/ha). The project facilitated ongoing conversations between divergent stakeholders, increased their capacity to make informed decisions about development and its benefits and impacts. The development pathway options have been mapped in a joint agency initiative to guide developers and approvers. Co-investing into research and tools to assist proponents calculate development costs and identify market opportunities provided information to support existing and new developments across the north west of Western Australia.

3. Pilbara

The Pilbara Project was developed to assess the potential of irrigated agriculture in the Pilbara using mine dewater and other in-situ water resources, as an economic diversification option for the Pilbara (DAFWA 2016a-c). To help define this potential, the project is investigating the availability of soil and water resources to support sustainable irrigation development, undertaking research into agronomic (Woodie Woodie demonstration site), regulatory and supply chain issues. New market opportunities (Coriolis 2016) and the evaluation the economic viability is included. The aim of the work is to provide information to facilitate and guide investment and development of irrigated agriculture in the Pilbara region.

The association of suitable soil and available water for agriculture in the Central Pilbara was first demonstrated by the Rio Tinto managed Hammersley Agriculture Project, where 850 ha of forage crops are being grown on mine dewater near Tom Price, and is being replicated near
Nammuldi on a similar area. Both developments were based on DAFWA trials with Rio Tinto at Wooramel a decade before and this project commenced, and further agronomic trials are underway near the Woodie Woodie mine site, initially utilising mine dewater surplus discharge (DAFWA 2016c).

Recent reviews (CMEWA 2014) indicate that mine dewater is highly variable, but at capacity, volumes of up to 250 GL/a may be licenced for discharge. George et al (2014) estimated that if 150 GL/a was suitable and ‘economically’ available, it could support 7500 ha of new irrigation (based on current use of 20 to 25 ML/ha). Reported dewatering surpluses in 2013 were approximately 125 GL (DoW 2015) and currently 3000ha of irrigation has been approved to dispose of mine dewater surplus in the Pilbara (EPA 2011, EPA 2012).

The project has audited of over 100 mine, aquifer, dam and regulatory ‘water source’ reports to define areas that may contain sufficient resources to establish irrigated agriculture. These reports include a mix of open source and private documents as mine dewater and ore production is highly correlated and thus ‘commercial in confidence’. In addition to this work, DAFWA is integrating traditional soil maps with additional digital data to define suitable soils for irrigation using the Disaggregation and Harmonisation of Soil Map Units through Resampled classification Trees (DSMART) process (DAFWA 2016c)

Results to date show that almost 45 GL/a is licensed (water abstraction and environmental discharge licences) to be used for irrigated agriculture and is expected to double with the next few years as sites like Nammuldi come on line.

A further 60 GL/a of accessible groundwater, mine dewater and unutilised surface water is also potentially available to enable at least 3000 ha of development based on 20 ML/ha (Table 1). In addition to this, opportunities exist to access specific dewater opportunities and managed aquifer recharge to utilise aquifer storage of it and storm flows, as a hedge against extreme rates of evaporation (up to 4000 mm/a) and deficits in inevitable drought periods. The project and partners now plan to investigate the most prospective sites.

Table 1: Preliminary assessment of land and water options for irrigated agriculture in the Pilbara.

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<th>Pilbara*</th>
<th>Water (GL/a)</th>
<th>Potential (ha)</th>
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<table>
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<tr>
<th>Aquifer/Location</th>
<th>Depth (m)</th>
<th>Flow Rate (GL/yr)</th>
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<tr>
<td>Lower Robe alluvial aquifer</td>
<td>5</td>
<td>250</td>
</tr>
<tr>
<td>Woodie Woodie dolomite aquifer</td>
<td>10</td>
<td>500</td>
</tr>
<tr>
<td>Harding Dam</td>
<td>10</td>
<td>500</td>
</tr>
<tr>
<td>East Pilbara (Newman) Mine Dewater Surplus (MDS)</td>
<td>10</td>
<td>500</td>
</tr>
<tr>
<td>NW Hammersley CID Aquifer</td>
<td>10</td>
<td>500</td>
</tr>
<tr>
<td>Shaw River (MAR)</td>
<td>5</td>
<td>250</td>
</tr>
<tr>
<td>Central Pilbara (Weeli Wollie) MDS</td>
<td>10*</td>
<td>500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>3000</strong></td>
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*Detailed work in the project areas is proposed to start in 2017 with discussion of Weeli Wollie Creek dewater opportunity (growth up to 50-100 GL/a)*

### 4. Carnarvon – Gascoyne Foodbowl Initiative

The Gascoyne Foodbowl Initiative was funded to install infrastructure to grow the Carnarvon Horticultural area from its current 1550 ha to 2000 ha. To do this it first defined over 600 ha of capable land, with low soil salinity and limited flood risk. Data used included detailed LIDAR surveying, 1:100 flood maps, and Geonics™ EM and soil survey data.

To achieve the goal of accessing 4 GL/a groundwater, DAFWA commissioned an airborne electromagnetic (AEM) survey over the area of the lower Gascoyne River to delineate drill targets. The survey was flown in April 2013 and data were later processed by CSIRO to generate 70 targets (Davis et al., 2016). In the interim, 12 exploration/monitoring bores and four production bores were drilled on the basis of preliminary AEM data. Using this experience to refine the 70 targets, between August 2014 to June 2015, and a total of 120 exploration/monitoring bores and 35 production bores were drilled and constructed in the primary target area and another eight to the west (2) and east (6) to explore hydrogeological targets.

Analysis of the results in terms of success rates shows that of the target sites, 64% met the initial criteria of intersecting 7 m unconsolidated sand and gravel and 52% were successful in producing target rate of 10 L/s; a success rate of 1:2. Of the 50 infill sites (non-targets that also used the AEM), 100% met the criteria of intersecting 7 m unconsolidated sand and gravel and 32% were successful in producing 10 L/s; a success rate of 1:3. Overall, the success rates of drilling at sites selected using the AEM (<2:1) is significantly better than the success rates of all 40-years previous drilling programs; which were at about 5:1.
Production bore capacities for individual bores of up to 35 L/s were estimated from extrapolation of 24-hour test pumping data. Thirteen bores have estimated capacity of 20 L/s or higher. The average for the 35 bores is 16.6 L/s. The total instantaneous borefield capacity using cumulative individual estimated bore capacity is 583 L/s, though interference between production bores and aquifer limitations will reduce the maximum instantaneous to that required for distribution in the pipeline. The 24 km, 900-450mm PN100 collector pipeline was designed with a peak capacity of 400 L/sec (or 1 L/s/ha) and is supported by over 24km of overhead power transmission lines along the bank of the Gascoyne River.

Salinity of the groundwater (as total dissolved solids) is low, ranging from 210 to 860 mg/L TDS. The comparison against ANZECC and ARMCANZ standards showed that of the 57 analytes recorded at every bore, salinity exceeded the highest irrigation threshold (500 mg/L) in only a few bores close to the river and farther away. The concentration of sodium, total phosphorous, total iron, hardness, molybdenum, fluoride and boron was elevated in several holes – in relation to TDS. Overall, the groundwater from the NGR Phase II borefield falls within the highly suitable class for irrigation.

A fully distributed MODFLOW aquifer model was parameterized and recalibrated to test the 4 GL/a (up to 6 GL/a) increase from GFB development scenarios. The model showed that the aquifer can support an abstraction of 18-22 GL/yr during periods of regular river flows (i.e. as simulated using the period 1990 to 2000) or abstraction of 14-18 GL/yr during periods of irregular river flows (i.e. as simulated using the period 2000-2015). Of significance, the model predicts no effective storage depletion in periods of regular river flow which recharge at a minimum 97% of initial levels for all modelled scenarios. The model predicts up to 51 GL storage depletion in dry periods during the 15 year period of irregular river flows. On the basis of annual use of up to 20 GL/a, using the estimated aquifer storage volumes obtained from the AEM of about 1100 GL (freshwater – with a similar amount of brackish water), planned annual use accounts for <2% of the total freshwater aquifer volume. After a 15-year low flow period, storage depleted by 51 GL is equivalent to a volume reduction of <5%. Of importance, aquifer salinity is forecast to be lower under high abstraction scenarios due to access for recharge and lower evapotranspiration.

**Developing irrigated agriculture**
For the north of WA, George et al (2014) reviewed available data to estimate that about 1600 GL/a of low salinity water is available for expansion of irrigated agriculture in the short to medium term. Based on current rates of use, this resource (both scheme and self-supply) could be used to irrigate another 85,000 ha of agriculture on top of that already being irrigated or under development (Figure 1). While additional water may (will) be available from more remote sources, there is currently sufficient to meet immediate demand. In addition, at present there is not support in Western Australia for large dams, especially from the State’s largest source, the Fitzroy River, and related costs (from remote or deeper sources) are an impediment to agriculture. New sources of water are being investigated as part of the State’s ‘Water For Food’ program (2014-2018) and Federal Governments projects such as the Northern Australian Water Resources Assessment – Fitzroy study (CSIRO, 2016-2018).

For crops, we have shown that a market driven approach can identify more than just the likely crops that are in demand (Coriolis 2015 https://www.agric.wa.gov.au/sites/gateway/files/DAFWA%20Growing%20the%20north%20market%20opportunities_0.pdf), it can also identify investors throughout the supply chain that can be engaged, and alludes to the type of infrastructure that may be required. The development costs experienced across the region highlight the financial challenges to develop land and the need for efficiency and risk reduction throughout every part of the development process. For water, there is a highly variable cost structure, depending on whether it is sourced from commercially-managed supplies, or private ‘self-supply’ systems. For example, the Ord Irrigation Cooperative irrigators bulk water price from Lake Kununurra is currently less than $10/ML, by contrast with that in Carnarvon based on the groundwater piped supply managed by Gascoyne Water Cooperative of $250-350/ML (Figure 2).

In privately managed enterprises, costs are critical, and depend on a range of factors, but the cost of energy is a major issue. Comparisons of diesel (generators) and reticulated grid-power supply, show diesel can add $10-30/ML to prices that can range from as low as $60/ML where heads are artesian or low (eg West Canning Basin), to over $200 ML if high (e.g. total delivery heads of 100 m). For reference, a typical centre pivot requires up to 30 m to operate, and given watertables (under favourable drawdown conditions) are <20 m, and drawdown is <10 m, $100/ML is considered a benchmark (e.g. La Grange, Figure 2).
The impact of combining costs, land capability and aquifer data to select land with the highest probability of economic return and least impact on the environment was piloted at La Grange, south of Broome (Figure 3).

Figure 2. Typical water costs for irrigation showing how total head (ie lifting water from the aquifer and pushing through to a sprinkler) and related energy costs may impact project viability. Regional prices for private and scheme water delivery - only – are included.

Work showed that site selection is critical for the economic development of new land. It showed a high benefit to favour highly capable land (to minimise risks and enable approvals, and maximise production per ML applied), and areas with relatively shallow watertables and highly permeable aquifers (transmissivity over 4000 m$^2$/day). Site selection is also a delicate trade-off where there are cultural and environmental conditions associated with shallow groundwater (soaks, wetlands, and vegetation) and or downstream impacts.
Figure 3. Example of the use of combined land capability mapping and water data for irrigation showing optimised areas for irrigation development imprinted at a regional scale south of Broome – La Grange Project. Development was not recommended west of the salt-water interface where cultural and environmental constraints were defined.

Future de-risking investigations by the State should focus on preliminary assessment of the land and water resource, both to limit risks to the State (e.g. protecting environmental and other community values), but also preventing unwanted failures by agricultural developers such as has occurred in the past. We have showed that investing about 1% of the development costs (an irrigated hectare costs $10,000 to 30,000 to develop) can ensure both the eventual developer (who may or may not be a local owner) and State can maximise long-term sustainability – both economic and environmental. Applied research can also be undertaken during investigations and is critical if irrigated agriculture is to be approved and to prevent the mistakes made in southern Australia in the past century.
Acknowledgements

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Key Factors in the Attraction and Retention of Local Remote Staff in Northern Australia

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**Key Factors in the Attraction and Retention of Local Remote Staff in Northern Australia**

**Abstract:** Despite significant policy and program prioritisation and public intervention directed towards the employment of local residents in remote Aboriginal communities, expected changes have not been achieved in many parts of Northern Australia. Across sectors (public and private) some key factors, models and opportunities emerge concerning local employment, and with them an appetite for cross-sectorial communication on challenges and opportunities. The attraction and retention of migratory professionals in marginalised and remote settlements is increasingly well defined in national and international literature but there are specific distinctions between those scenarios and the key factors effecting local remote staff. Where local staff employment is largely shaped by actions and expectations through public policy, program design, and skills and training pathways in many service related sectors, there are also pockets of market engagement, where opportunities are generated by aspirations, strategic planning, and responsive capacity to adapt from local to global markets. This overview of multi-sector remote employment of local remote staff highlights some of the models of employment which have emerged through case studies drawn from employers, locations and sectors across the Northern Australian region. Identifying some of the key factors in the attraction and retention of local staff in remote areas is a topic of interest to the synthesis and integration of research for the Cooperative Research Centre for Remote Economic Participation (CRC-REP), managed by Ninti One.

**Keywords:** remote, socio-cultural economic participation, market, mixed-market, non-market

**Introduction**

The national Indigenous Affairs agenda previously set evaluation targets to measure increased employment of adult residents in remote and very remote Australia, particularly residents of Aboriginal and Torres Strait Islander communities (Australian Government, 2016). The northern Australia development agenda has since prioritised processes to procure skilled labour for the northern workforce, but lacks initiatives that boost local remote participation (Australian Government, 2015).

While these two influential national policy agendas overlap in discrete Aboriginal and Torres Strait Islander community contexts, they lack a shared understanding of the key factors in attracting or retaining local remote staff: employees, employers and entrepreneurs. The
Cooperative Research Centre for Remote Economic Participation (CRC-REP) identified the theme of staff attraction and retention in 2014 as a topic of Synthesis and Integration, a project that brings together common themes to deepen the knowledge from research.

This analysis of three case studies describes key **personal, community and organisational** factors that affect the attraction and retention of local remote staff. Two cases, from the Aboriginal and Torres Strait Islander Arts Economies and Tourism Products projects, reflect findings of the CRC-REP Enterprise Program, and the third reflects findings of the Synthesis and Integration project (Acker & Congreave, 2016; Jacobsen, 2016a, 2016b; Lovell, 2016; Seet, Jones, Acker, Whittle, & Weber, 2015).

The data were drawn from research with 53 remote staff involved in one or another of these research projects. In all, these staff interviews represent findings from 45 remote locations in northern Queensland, northern and central Western Australia, South Australia and Northern Territory. The case studies contribute data to answer the research question: **Which organisational, personal and community factors influence employee attraction and retention in a sample of remote Indigenous communities in Australia?**

**Setting the scene**

National data and policy projections suggest that employment opportunities for adults in many parts of remote northern Australia remain more closely tied to government welfare policy and funding cycles than to the mainstream market economy (Lovell & Zoellner, in press). This contributes to the challenges of sustainable development agendas for remote Aboriginal and Torres Strait Islander residents. In some locations there is opportunity to engage with markets, for example resource extraction, horticulture, tourism and pastoral industries, although employment of local remote Aboriginal and Torres Strait Islander people in these sectors is reported to be highly variable and very much driven by proximal locations and ecological features or access to natural resources (Blackwell & Robertson, 2016; McRae-Williams, Guenther, Jacobsen, & Lovell, 2016; Taylor, Payer, & Brokensha, 2015).

The case study findings reported here agree with those of wider literature in finding that markets can provide opportunities for local remote staff, but usually where sustainable development is aligned to traditions and cultural values (Acker & Woodhead, 2015; Jacobsen, 2016a; Lovell, 2015; Memmott, 2010; Pearson & Daff, 2014; Tremblay, 2010). Often, the meeting place of development and culture is the fertile ground for market and mixed-market
type opportunities with a return of cultural, environmental, social and financial benefit to local residents (Appadurai, 2013). Wider market benefits arise from these opportunities, realised by agents along value chains.

Significant numbers of local remote staff are employed in (primarily government-funded) remote service delivery (Hastings, Ryan, Gibbs, & Lawrie, 2015; Ryan & Ronald, 2015). Employing agencies who receive public funds and deliver remote services are the subject of the third case study. Remote service delivery is not tied to mainstream markets but to competitive grant funding cycles, fee-for-service and operational cost recovery formulas and, in some instances, outsourcing to local remote skilled contractors.

The cases

The cases describe three distinct industry groups, whose local staff employment information and data was ‘purposefully selected’ (Braun & Clarke, 2006) from reports and literature, and in the case of government agency employment, was synthesised from interviews. Local staff are residents who are also members of the dominant Aboriginal or Torres Strait Islander cultural group, and are recognised as such. For inclusion in the study, they live and work in a ‘remote or very remote’ location (see Australian Bureau of Statistics, 2012 for the classifications of geographic remoteness).

Purposeful selection was applied in selecting sectors likely to attract remote local staff. The term ‘staff’ includes the entrepreneurs, self-employed and employees who variously:

- develop and provide remote Indigenous tourism products as owners of small to medium enterprises (Jacobsen, 2016a)
- are employees of remote, who are likely to be members of an Aboriginal art centre incorporation, and have a degree of self-employment interest in their workplace (Woodhead & Acker, 2014)
- are employees of national and local government agencies, who are most likely to be contracted government employees, but may also be engaged in employment activities through active welfare contracts (Fowkes & Sanders, 2015).

Method

In a similar study of the attraction and retention key factors for remote and regional professional staff, Becker, Hyland, and Soosay (2013, p. 348) uses a framework of ‘organisational, personal
and community factors’ to describe the complexity of attraction and retention based on data from several rural and remote Queensland settlements. In this study, organisational, personal and community factors are a means of considering the interactivity of themes arising from the models of business, training and mentoring, and policy–mesh, outcomes and challenges.

Cooperative Research Centre for Remote Economic Participation (CRC-REP) research reports provided secondary sources of data for Aboriginal Art centres staff, as reported by Acker and Congreave (2016) and for Aboriginal and Torres Strait Islander Tourism producers, as reported by Jacobsen (2016a). CRC-REP and Northern Institute Synthesis and Integration project provided data from interviews with staff of government agencies, from related research about local staff attraction and retention.

The findings summarised below were reached through coding and recoding both the interviews and the literature in NVIVO, a software for qualitative data analysis. Thematic analysis of the data provided both the core themes and their interactive links between sectors, and as key factors of organisational, personal and community domains. These findings form the basis of the summary of findings.

**Summary of findings**

The following are key factors of the attraction and retention of local remote staff that were identified from the case studies:

*Organisational key factors*

These include staff churn and consistency; expectations, sector and locational differences; and the alignment of policy and organisational regulation.

Staff churn and consistency:

- Data are most easily accessed at an organisational level where human resource management (HRM) is an active role in the workplace.
- HRM is most likely in regional or national organisations, but there is a shortfall of skilled staff in most organisations whose roles concern discrete Indigenous communities in remote northern Australia.
- Smaller local organisations’ sense of churn/consistency is dependent on the corporate memory rather than on systems.
• Self-employed local remote staff and sub-contractors control their own work flow as required; they do this best when procurement is managed at a settlement level by a local organisation.

Employment expectations are more varied between locations than between sectors. Some sectors provide more flexible employment models than others:

• Organisations require operational certainty and capacity to meet a deadline, deliver a service or provide the goods to a market.

• Overall, local staff attraction reflects a preference for flexible employment models, with varied hours and access to appropriate mentoring, professional development or training pathways.

• Across sectors, culturally congruent and autonomous work roles and teams attract and retain local remote staff more successfully.

• Differences between sectors and, to a certain degree, job roles are less of a key factor in organisational attraction and retention of local staff than the impact of socio-historic differences between locations.

Alignment to policy through organisational regulation:

• Some organisations felt the targets for discrete Aboriginal and Torres Strait Islander community employment should reflect the population, closer to 85+% than the legislated 10–30% policy targets. Others felt their priority to be service delivery, rather than staff development; or they felt incapable of developing required staff capability.

• Some sectors value the cross-cultural capabilities and leadership of local staff as pivotal to the enterprise or to the mesh of service delivery with local community residents, so they work hard to attract and retain local staff who can ‘bridge’ between organisation and community.

• The tension between cultural and organisational expectations of local staff is a significant factor of employment churn in service delivery sectors. Culturally aligned employment was less susceptible to this and adept at building flexibility into employment models.

Community key factors
Community key factors are those that particularly contribute to the interaction between communities, individuals and organisations.

- Locational differences were more pronounced than sectoral ones, but local leadership was intrinsically important: modelling cultural and local values, governance and enterprise and workplace behaviours.
- Local leaders might be successful entrepreneurs, self-employed contractors and people with cultural authority. Communities with active leaders were more likely to foster resilient and capable development strategies and to be culturally homogenous or harmonious settlements.
- The histories of local settlement, cultural and kinship obligations can stimulate intercultural tensions, impacting on the accessibility and safety local staff experience and on their attraction and retention.
- Local staff experience of accessibility to the workplace impacts on their attraction and retention by an organisation. People are required to manage changing generational, social and behavioural expectations, which are factors of local community development and change.
- The mesh between organisational policies in relation to employment and community priorities and the local social and power structures impact on the everyday life in communities as well as on aspirations residents and organisations held for the future.

**Personal key factors**

- Personal key factors of local staff attraction and retention come from themes of capability, cultural interface and resilience. These factors are more likely to have positive attraction and retention outcomes than financial incentive alone:
- Pride, capacity and cultural alignment to others in the workplace, as well as to the work itself, motivate many local staff.
- Employment and training that enable an individual to remain in the community are rated highly; individuals would change jobs rather than pursue a career that meant moving away from their community.
- Many local staff negotiate competing demands of family, the obligations of cultural practices and community expectations, as well as the expectations of their employment. This is far less likely the case for non-local staff, who are more removed from the cultural and social fabric of the remote communities they work in.
• Requirements for autonomy, self-determination or community valorisation can inform the employment choices of local remote staff.

• Feeling safe and communicating effectively in first language enables greater access to the workplace.

• Access to appropriate training and mentoring, social inclusion, and advancement in the workplace contribute to local staff capability.

• Professional regard among co-workers and recognition of capability by organisations are key factors that counter the challenges of isolation, remoteness and political differences that local staff can experience in their professional roles.

Conclusion

The key factors affecting the attraction and retention of local remote staff is an important issue, about which little is understood. This analysis suggests that low rates of attraction and retention can be positively influenced by better understanding the differences between local and non-local staff. For local staff, maintaining a strong relationship with the location in which they live and work and navigating everyday demands of family and community life are key factors which often would not impact on non-local staff with the same intensity.

Increasing the profile of local leadership, pride and valorisation of the work of local staff energises the interactivity of two fundamental key factors: development and culture, of which local capability and resilience are indicators. These can be strengthened by ensuring workplaces are accessible and culturally safe for staff, and that functional and appropriate mentoring, training or support is provided with some surety and continuity, for staff and organisations. Most importantly, organisations and communities must be able to foster local policies that fit the purpose of individual, community and organisations, rather than rely only on externally driven policies.

Settlement histories are a significant key factor that benefit or detract from positive staff attraction and retention. The complexity of socio-historic factors requires further study, as the range of market functionality and remote service delivery opportunities in remote and very remote locations is very diverse. In each enterprise case study, development and culture working together are seen to strengthen capability between markets and remote residents.

Further Information
The Key Factors in the Attraction and Retention of Local Remote Staff is a Synthesis and Integration project. Research synthesis consolidates the knowledge from different projects to describe impacts for industry, community and policy. Integration of research findings contributes to policy solutions, support or intervention for entrenched and wicked problems and improves the baseline of participation and innovation in remote industry. This summary describes knowledge about, and founded in, remote and very remote Australia which comes from research designed with local communities, government and industry stakeholders.


Lovell, J. (2016). *Key factors in the attraction and retention of local remote staff: Case studies from northern Australia*. Developing Northern Australia Conference, Darwin 2016: Above the line, unleashing the north's potential. Developing Northern Australia Conference. Darwin, NT.


Our North, whose future: What is the scope for Aboriginal workforce development?

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Abstract
In this paper we use key learnings from the Cooperative Research Centre for Remote Economic Participation (CRC REP), Remote Education Systems and Pathways to Employment research projects to critique the white paper on Developing the North and the potential of such a future to unleash the north’s potential. With very little about how to maximise the values of Aboriginal peoples or even a recognition of the availability of an Aboriginal workforce, we ask how this traditionally orientated development proposal will build strengths and capacities within the North, not simply contribute to Gross National Product (GNP). From a strong research base we highlight flawed assumptions behind current Aboriginal employment strategies and what does and does not work in terms of local Aboriginal workforce development. Through this we point to an extensive gap in innovation with industry and entrepreneurial activity limited to five growth sectors. Finally, drawing on the results and implications of our respective research projects, we propose some ways in which industries, regulators, legislators and government sponsored innovation initiatives could respond to better harness the latent potential of Aboriginal peoples and communities.

Introduction
Sometimes described as miles and miles of nothing, very remote Australia is often imagined as an unused mass of land ripe for development. Yet it is not nothing, but rather an environment interwoven with historical and contemporary human history, soaked with relationships and meaning. It is rich in natural resources that can be extracted for economic returns, but it is also full of places that people belong to. It is rich in knowledge and experience, full of human life, love, humour and grief. It is not a landscape of nothing—rather it is one that is fundamentally known. As the Developing the North white paper states northern Australia is one of “untapped promise, abundant resources and talented people” (Australian Government, 2015a, p. 1).

The majority of the north’s population reside in regional zones such as Darwin, Cairns, Charters Towers and Mackay, or near towns classified as ‘remote’ such as Cooktown, Mt Isa, Cloncurry, Katherine, Jabiru and Broome. Yet undeniably the largest proportion of Northern Australia’s land mass is classified as ‘very remote’ (ABS, 2011). Having a resident population of approximately 94 000 people (ABS, 2012b) the very remote north also provides significant income to those living in other areas, such as consultants, contractors, and fly-in fly-out workforces. Similarly, many
Aboriginal and/or Torres Strait Islander people living in more populated regions have strong connections to people and places within very remote Australia. Of the 94,000 people permanently residing in very remote Australia, 68 per cent identify as Aboriginal and/or Torres Strait Islander with a significant proportion (64 per cent) of these individuals speaking distinct and diverse Indigenous languages.

As part of the Cooperative Research Centre for Remote Economic Participation (CRC-REP 2010-2017) program, this paper will share learnings from the Pathways to Employment project and the Remote Education Systems project. These two five year research projects are on the verge of completion and have specifically focused on the context and experiences of education and employment for Aboriginal and/or Torres Strait Islander peoples residing in very remote Australia. While this body of work has not been confined to northern Australia it has included these regions to a significant extent. As the White Paper on Developing Northern Australia proposes “many failed projects and plans litter the north” and “It is essential that development ambitions recognise these challenges” (Australian Government, 2015 p.2).

In response to this, we (the two project leaders) will critically examine the content of the White Paper with a particular focus on how Aboriginal and/or Torres Strait Islander peoples, who live in the north, are represented in this visionary document. Specifically we will look at how Aboriginal and/or Torres Strait Islanders who live in very remote Australia are included within its Workforce Development strategy. Due to our research interests in education and training we will particularly focus on how this development proposal aims to build capacity and utilise what it describes as ‘untapped workforce potential’ (Australian Government, 2015, p. 102).

First we will outline our analytical approach and unpacked the content of the White Paper. Then we reflect on the learnings of our two research projects and consider where our evidence intersects or diverges from the propositions presented. By highlighting a range of flawed assumptions, we will point to reasons why many very remote workforce initiatives continue to have limited success and propose ways that such development proposals could better respond and harness the ‘untapped’ potential of Aboriginal and/or Torres Strait Islander peoples.
Analytical approach

In preparing this paper we have drawn on our analysis skills to examine the content of the *Our North, Our Future: White Paper on Developing Northern Australia* (Australian Government, 2015a; Government, 2015) document. This type of ‘content analysis’ is used widely in qualitative research (Bernard & Ryan, 2010) as a way of critically assessing qualitative data, which often is in the form of texts such as this White Paper. Using qualitative analysis tools for this purpose (in this case NVivo software) we assign ‘codes’ to the text according to the themes that emerge from the data (Franzosi, 2010). A starting point in the analysis might be, as we have shown in How does the White Paper treat Aboriginal and Torres Strait Islanders within the framework of Developing Northern Australia?

, a simple word cloud that presents word clusters or themes that come out of the document. In this case what we have then done is code paragraphs (which we refer to as references) according to the themes we want to examine. Having done this we can then construct queries to find where intersections between one theme and another lie.

How does the White Paper treat Aboriginal and Torres Strait Islanders within the framework of Developing Northern Australia?

The White Paper, as might be expected from its name, presents a forward looking and largely optimistic view of the economic development opportunities that exist for the north. The word cloud shown in How does the White Paper treat Aboriginal and Torres Strait Islanders within the framework of Developing Northern Australia?

demonstrates the focus on issues of ‘development’, ‘land’ ‘investment’, ‘resources’ and ‘economic’ opportunities. Notable also in this depiction is the role of governments, Indigenous people and business.
While we could have considered any number of different themes we have chosen in this paper to focus on the ones listed below. For example, here we have not considered governance, migration, governments or policies that are mentioned throughout the document.

Table 1. Number of references for selected themes

<table>
<thead>
<tr>
<th>Selected themes from the White Paper</th>
<th>Whole paper</th>
<th>Aboriginal and Torres Strait Islander intersections</th>
<th>WORKFORCE chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land, resources and infrastructure</td>
<td>491</td>
<td>104</td>
<td>12</td>
</tr>
<tr>
<td>Economic wealth and assets</td>
<td>398</td>
<td>75</td>
<td>20</td>
</tr>
<tr>
<td>Employment, jobs</td>
<td>232</td>
<td>52</td>
<td>25</td>
</tr>
<tr>
<td>Opportunity, growth and benefit</td>
<td>228</td>
<td>43</td>
<td>18</td>
</tr>
<tr>
<td>Trade, exports and markers</td>
<td>178</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>Indigenous, Aboriginal and Torres Strait Islander</td>
<td>158</td>
<td>158</td>
<td>6</td>
</tr>
<tr>
<td>Environmental</td>
<td>121</td>
<td>29</td>
<td>2</td>
</tr>
<tr>
<td>Barriers and risks</td>
<td>109</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Industry and employers</td>
<td>74</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Skills and labour</td>
<td>70</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td>Native title</td>
<td>63</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>Education and training</td>
<td>53</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>People</td>
<td>53</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Culture</td>
<td>36</td>
<td>19</td>
<td>1</td>
</tr>
</tbody>
</table>

From this content analysis, we can see where the priorities of the White Paper lie. The largest number of references, are focused firstly on land, resources and infrastructure, second on economic wealth and assets, and thirdly on employment and jobs. Within the ‘Northern Workforce for Growth’
chapter, the three main concerns are (as could be expected) skills and labour, employment and jobs, and economic wealth and assets. These findings are not surprising as the stated vision of the White Paper is to ‘lift the growth speed limits in the north on the foundations of land, labour, water and infrastructure’ (Australian Government 2015, p. 3).

However, our interests in this paper are mainly with what this might mean for Aboriginal and/or Torres Strait Islander peoples of the north. The White Paper acknowledges that:

*Developing the north will need to be done in full partnership with Indigenous Australians, with a focus on creating opportunities through education, job creation and economic development* (Australian Government 2015, p. 4).

Yet our reading of the White Paper and the analysis in Table 1 shows that the main focus of the proposal is directly related to land, resources and infrastructure. It is therefore a traditional economic capitalist development exercise, focused on the accumulation of wealth through the extraction of resources and the industrialisation of agribusiness. Land, in this document is seen as an economic asset, where its primary purpose is its economic use. This is reflected in the plan for ‘Simpler land arrangements to support investment’ (Australian Government 2015, p. 126) which makes seven mentions of Indigenous land. This is in contrast to subsequent schemas for ‘developing the north’s water resources’ (p. 127), ‘Our business trade and investment gateway’ (p. 128), ‘Infrastructure to support growth’ (p. 129), ‘A northern workforce for growth’ (p. 130), and ‘Good governance for northern Australia’ (p. 131). These make just three references to Aboriginal and/or Torres Strait Islanders: as employment supplier use targets (p. 130); having more employment opportunities (p. 130); and as rangers undertaking biosecurity surveillance (p. 128).

In this paper we are not disputing that there is a strong argument and evidence base supporting the need for land tenure policy reform to better benefit Aboriginal and/or Torres Strait Islander peoples (Coombes, Johnson, & Howitt, 2012; Marks, 2014). However our analysis leads us to question: Who will be the main beneficiaries of such reform?; particularly if the overarching framework is dependent on Aboriginal and/or Torres Strait Islander people’s inclination to provide investors access to land for resource extraction or large scale agribusiness. Along with its emphasis on individualised and alienable rights in land, we want to acknowledge a deep tension in the Developing the North agenda which states: “land is of deep significance to Indigenous Australians and is a foundation for economic development in the North” (Australian Government 2015, p. 4). We ask: “how is this significance being recognised and embraced in the White Paper: Our North, Our Future”?  

Coming back to the main focus of our paper, we would like to draw attention back to the above analysis. Table 1 shows that the intersection between Aboriginal and/or Torres Strait Islander peoples and the need for skills, education and training, rates scant mention in the White Paper. Ironically, thinking on the question just raised, greater attention is given to culture than to these issues. As an example of the popularity of ‘Big development’ economic plans for the North (Stephens, Oppermann, Turnour, Brewer, & O’Brien, 2015) the White Paper assumes that massive infrastructure projects supporting resource exploitation will necessarily lead to economic growth and prosperity. Yet given the limited benefits derived by very remote Aboriginal and/or Torres Strait Islander peoples in the north from such activities at the present, this assumption becomes questionable (Altman, 2004; Langton & Mazel, 2008; O’Faircheallaigh, 2006).
If the assertion of “full partnerships with Indigenous people” is to be taken seriously we ask what needs to be done in order to build local capacities. Drawing from the findings of the two CRC-REP projects we question both the marginality and emphasis of the White Paper workforce development strategy to effectively achieve improved economic engagement and participation for Aboriginal and/or Torres Strait Islander peoples, particularly those living in very remote Australia. Our analysis of ABS Census data (see Figure 2) shows that while Place of Usual Residence counts rose significantly in the period from 2006 to 2011, the beneficiaries in terms of employment at least, were all non-Indigenous people. For Aboriginal and Torres Strait Islander people, employment contracted by more than 500 and unemployment grew by more than 1700. And we know this is not because of a lack of work skills or even basic literacy and numeracy capacities because high proportions of the overall labour market have little more than Year 10 and no Certificate qualifications (Guenther & McRae-Williams, 2014a; McRae-Williams & Guenther, 2014a).

Development in this White Paper proposal is viewed largely in terms of economic growth. Our work diverges from this standpoint and begins with an assumption that human, social, cultural, and identity capabilities and capacities are also essential to development agendas for the north.

CRC for Remote Economic Participation (CRC-REP)

As part of the CRC-REP (2011-2017) research portfolio, the Remote Education Systems (2011-2016) and Pathways to Employment (2012-2016) projects have been dedicated to exploring the challenges...
and enablers of engagement and participation in education and employment for Aboriginal and/or Torres Strait Islander peoples residing in very remote Australia, a large proportion of which is situated in Northern Australia. As children of colonists and residents of a metropolitan centre of Darwin, who operate in society with the privileges granted to white Australians, we are acutely aware of the need to position ourselves and carefully critique our assumptions (Guenther, Osborne, Arnott, & McRae-Williams, 2015). Putting effort into this endeavour, we have over the life of the CRC-REP projects worked constructively with a significant number of Aboriginal and Torres Strait Islander peoples who represent the profuse diversity of the population.

The key learnings from these experiences have led us to uncover a range of flawed assumptions that sit behind education, training and workforce development initiatives - assumptions it could be argued, that also sit firmly behind the workforce strategy in the White Paper. The first assumption or myth we debunked was that many Aboriginal and/or Torres Strait Islander people are unemployed or underemployed because there are no jobs, or no ‘real’ economy in very remote Australia. This is not strictly speaking true, taking into account the difficulties of capturing contractors and fly-in fly out workers. Based on Place of Enumeration there were 106,437 people with jobs recorded in the 2011 Census (ABS, 2012a). So contrary to popular discourse, there are plenty of jobs in very remote Australia however non-Indigenous workers are disproportionally represented in the labour force, being 57 per cent of the population versus 82 per cent of the resident workforce (Guenther & McRae-Williams, 2014b).

It is tempting to view these ‘gaps’ in employment outcomes as simply reflecting disadvantage, particularly educational disadvantage. Yet there has been a steady increase in Aboriginal and/or Torres Strait Islander formal education and training achievement, with more and more individuals achieving year 10, 11 and 12 as well as increases in all levels of certificate qualification (Guenther & Boyle, 2013). It also turns out that non-Indigenous people do not hold jobs because they are better educated or trained. About 46% of the whole workforce and 36% of the non-Indigenous workforce had not completed a certificate or higher qualification, with many having left formal schooling at year 10 levels. In 2011 there were 46,505 jobs in very remote Australia that required no certificate qualification (Guenther & McRae-Williams, 2014a; McRae-Williams & Guenther, 2014b). What this tells us is that many Aboriginal and/or Torres Strait Islander people in very remote Australia are not transitioning from education to employment, nor are they transitioning into employment that does not require formal qualifications. This is significant if we think about the substantial amount of funds and effort directed at disadvantaged job seeker, job activation or ‘job ready’ initiatives.

It is common for this lack of transition to be explained in terms of ‘training not being linked to jobs’ and the related issue of a lack of effective service provider (and employer) collaboration. While to some extent this may be true, our findings demonstrate that it does not matter how successful collaboration is. If there is no client or local resident buy-in outcomes remain poor (Guenther & McRae-Williams, 2015). Our research concludes that the ‘engineered pathway’ from unemployability to employability, from unskilled to skilled, from illiterate to literate, from unqualified to qualified, and from unemployment to employment, does not necessarily have the same lure for individuals in very remote Australia as it may in other parts of the nation. While considerable time, effort and money is expended on engineering pathways from education or training to employment not many people are choosing to jump on or follow the road to the end.
This firmly points to the need to reconceptualise what works and the logic of processes and activities for engaging people in the economy and maintaining their participation. There is a commonly held view that engagement in work is a normal and expected outcome of schooling and training—the product of a ‘good education’ (Biesta, 2009). This view is based on philosophical positions about the aims of education, related in part to human capital theory (Becker, 1993) which sees education as an economic investment with productivity and labour market returns (Sheehan, 2012) and ‘economic self-reliance’ (Brighouse, 2009, p. 37). It is therefore not surprising that much effort and substantial amounts of funds have been directed at education to employment transitions. Yet our research has raised significant questions regarding this assumed linear and causal journey (McRae-Williams & Guenther, 2012). Education to employment initiatives, including those mentioned in the White Paper, continue to view many Aboriginal and/or Torres Strait Islander peoples as not being ‘job ready’ and therefore in need of more training, education, work exposure or experience. Or in the case of the White Paper job seekers will have the opportunity to ‘fulfil their ‘work for the dole’ requirements through placements in local businesses’ for 6 months or longer (Australian Government, 2015a, p. 109).

A theme that emerged across the Pathways to Employment research was that many non-Indigenous peoples (particularly white Australians) felt that remote living Aboriginal and/or Torres Strait Islander people did not understand and therefore did not value education and employment (McRae-Williams, 2014). We suggest that this has led to programs modelled on deficit and focused on attempts to impart skills (either through education/training or coercive welfare measures), such as turning up on time and staying for a required period. Yet both the Pathways and Remote Education Systems projects found that for the majority of Aboriginal and/or Torres Strait Islander people involved in the research, education and employment had both historical expression and contemporary importance, which influences how communities perceive opportunities, and how they take them up (see for example Guenther, Disbray, & Osborne, 2014). While not viewed from a position where the virtue of independence and the morality of self-reliance were central measures of success, an understanding of their value and nature was always evident. This would appear to be an example of what Tjitayi and Osborne (2014) have highlighted as one of the hallmarks of linguistic/cultural difference, where we may be talking about the same things but approaching them from different positions. The question becomes: Does a focus on certain job activation skills support individuals with their attempts to engage with and benefit from the contemporary and future economy of the north?

We argue that the enablers for increasing economic participation for Aboriginal and/or Torres Strait Islander peoples in very remote Australia are often discounted as less than important while alignments with non-remote/non-Indigenous frameworks and values are privileged (McRae-Williams, Guenther, Jacobson, & Lovell, 2016) by economic development systems. For example, the value of art industries and tourism industries are marginalised in favour of the ‘real economy’ and associated ‘real jobs’ of mining, agriculture, construction and manufacturing (Lovell, 2015; McMurty, Lovell, Zoellner, & Guenther, Forthcoming).

Our research demonstrates that program and policy apparatus that assumes a direct link between education/training and employment is fundamentally flawed in the very remote Aboriginal and/or Torres Strait Islander context. In this paper we argue that such a standpoint is in fact potentially back-to-front. It is not a journey from education to employment but rather one that begins with
employment. For example, education and training teach skills—they do not really provide work values nor model work behaviour. Rather, it is parents with jobs who earn a reasonable income who provide and model these values and behaviours for their children and encourage them to get an education, which then may influence their engagement in work they value. In the case of the Remote Education Systems project, we find that remote schools with higher proportions of local staff, also tend to have higher levels of attendance and better academic performance (Guenther & Disbray, 2015). The findings clearly show that it is not teachers who build aspiration, but parents who are the foundational teachers of their children, who model what it means to be employed (Osborne, 2015; Osborne & Guenther, 2013).

This leads us to question what more of the same, in terms of education to employment initiatives will look like. How will the White Paper proposal of getting people into ‘real jobs’ without the associated benefits of real pay achieve a desirable outcome? What economic impact would a continuing decrease in Aboriginal and/or Torres Strait Islander employment and income in very remote regions have on Northern Australia? Who wants or benefits from this future? The White Paper does not answer these questions, we suggest, because it does not properly value the human assets of the north that it purports to. We argue that despite the stated importance of engaging with Aboriginal and Torres Strait Islander peoples, the White Paper treats people as means to a productive end. Development in this context has little to do with building the capacity of people. Rather, it has everything to do with maximising the economic wealth that can be extracted from or produced out of the land. The proposal to secure ‘Indigenous employment opportunities’ by setting contract targets (p. 110) again can be seen as a means to make Aboriginal and Torres Strait Islander people more productive within an economic capital model. Further, the logic behind the ‘real work experience’ (p. 109) proposal is further evidence of responses in a deficit thinking mindset, which sees labour force participation as only about national economic benefit:

> the economic benefits of closing the gap in Indigenous employment outcomes would benefit Australia’s GDP by $24 billion by 2031 (Australian Government, 2015a, p. 109).

**Some ways forward**

Aboriginal and/or Torres Strait Islander people, particularly those who reside in very remote Australia are not the primary beneficiaries of the future economic development proposed in the White Paper—as the quote above suggests, it is ‘Australia’s GDP’. Beyond playing a negotiation role in land access decisions for infrastructure and resource extraction their labour potential is barely recognised. If we were to shift the balance to those whose future is the north, a large proportion of who are Aboriginal and/or Torres Strait Islander peoples, what would an economic development proposal look like? What would a “full partnership with Indigenous Australians, with a focus on creating opportunities through education, job creation and economic development” (Australian Government 2015, p. 4) create?

The Pathways to Employment and Remote Education System projects cannot answer these questions directly, but our research points to a number of factors that would contribute to true partnership and meaningful engagement. They include:

- Processes that give power to local people through governance, leadership and decision making;
• Engagement where there is at least mutually recognised benefit for all involved, rather than engagement that ‘targets’ particular groups;
• Learning experiences that strengthen and extend local capacities and foster informed decision making capabilities
• Processes that recognise the inherent value of local epistemologies, axiologies and ontologies—where local languages, traditional and contemporary knowledge systems and values are the basis of respectful negotiations;
• Recognition that employment positions require local legitimacy and support and are embedded in local contexts not separate from them.
• Recognition of the value of enterprises and entrepreneurs who operate in a mixed economy: arts and creative industries, land management, Aboriginal tourism, and small-scale micro-enterprises as examples;
• The offering of value for money work experiences rather than work for the dole work experiences;
• The provision of opportunities for work that include training—in other words work that leads to qualifications rather than training that leads to work; and
• Strategies that decolonise the labour force in such a way that intentionally replaces non-local labour with local labour.

This future may include partnerships where Aboriginal and/or Torres Strait Islander peoples have a strong and respected position to negotiate land use, land leasing payments and have both the autonomy and backing to create meaningful and sustainable livelihoods for their own families and communities either on or off country, for example Working on Country programs (see for example Australian Government, 2015b). It may include mandated minimal local workforce requirements for business operators and contractors (see for example Department of Local Government and Community Services, 2016). It could also include strategies that work through local Aboriginal organisations to encourage enterprise in the so-called real economy (see the Kalano Tomato Farm ABC, 2016). It may involve building local micro-enterprises (Enterprise Learning Projects, 2016) or piggy-backing onto existing large scale enterprise (for example land management contracts in mining: Haslam McKenzie, 2014).

With these positive examples in mind, we question whether ‘work-for-the-dole’ placements could have the positive benefits the White Paper suggests. If the work in work for the dole is real, why then should it not be paid a real wage, rather than the dole? If an individual regardless of their level of schooling or qualifications works in a ‘real’ work environment for their required 50 hours a fortnight (Fowkes, 2016) at a rate of approximately $11 per hour it would result in a fortnightly pay packet of $550, for at least six months or longer. However, if this position was simply a ‘real job’ the individual would work for a minimum wage ($17.29) and take home $864.50 a fortnight. If they were on a casual rate this would be $1,080 (Fair Work 2015). In this future, ‘work-for-the-dole’ could disappear. There are jobs (real or unreal - whatever that might mean) and a social welfare net for those who cannot work. Individuals have the opportunity to increase their skills through education and appropriate pay increases, they have access to leave allowances and superannuation and as a consequence their children are more likely to attend school and see a pathway to employment (Guenther et al., 2014). Similarly, local people are more likely to spend locally and contribute to local economic and enterprise viability. As the White Paper points out:
Getting more Australians into work does not just benefit business — individuals, families and the broader community reap the economic rewards of higher incomes. People with jobs are also socially rewarded through the enjoyment and fulfilment derived from work, improved health outcomes, social connectedness and mental wellbeing (Australian Government 2015, p.83).

Conclusions

The White Paper on Developing Northern Australia lays out a vision for the north. However, as our analysis has shown the foundation of that vision is built on assumptions about the wealth that can be extracted or produced from land. Development in this context is a purely wealth-generating exercise and takes little account of people. Our primary concern is for the people who belong to and own the land. The tacit message of the White Paper is that Aboriginal and Torres Strait Islanders are primarily a barrier or impediment to development. As a latent workforce our critical reading of the White Paper suggests that Aboriginal and Torres Strait Islanders are units of (low) productivity that need to be better utilised for the good of Australia’s Gross Domestic Product.

The White Paper talks about partnerships with Aboriginal and Torres Strait Islanders. However, it seems that those partnerships are only useful to free up the land that people control. We propose that if this is to be taken seriously engagement and partnership must result in mutual benefit based on shared or intersecting purpose. The resources being applied to developing the north create tremendous opportunities for human development, not just economic development. These development agendas are not mutually exclusive. The research we have conducted in very remote parts of Australia through the Cooperative Research Centre for Remote Economic Participation suggests quite strongly that people living in communities want the best of both worlds—they want the benefits that economic development brings, but not at the expense of compromising their language, land and culture. There are plenty of examples (some of which we have cited here) which show it is possible to have it all: so that capacity is generated through employment and enterprise in ways that build on strengths inherent in land, language and culture. Within the scope of human and economic development, education and training can and should play an important role. However, as our research work has shown, the way these tools have been used in the past have not always been constructive or powerful for remote people living in communities. We argue that it does not have to be this way—and indeed that innovative examples are emerging which give power and control to local people, and which offer great benefit for local people living in very remote communities of the north.

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How can vocational programs respond to the challenges of globalisation, build workforce capacity in developing countries and contribute to occupational outcomes? Sponsored International Education Programs: more than an ‘off the shelf’ training package

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Abstract:
As indicated in the Northern Territory International Education and Training Strategy 2014-2024, education is integral to the Northern Territory’s connection with the region. It can provide social and economic benefits both here and abroad. This paper focuses on Charles Darwin University’s work with Timor Leste and reflects on a sponsored initiative designed to develop the capability of individuals to be trained effectively for employment within a globalised environment.

Programs that are industry sponsored often require educational institutions to respond in a different manner to their normal day to day business. It becomes a question not of what we offer, but rather, what do they need. It is not simply a matter of looking at a standard qualification and offering that, but instead, assessing what skills are required for international participants to flourish in a specific industry environment and then customising a package that provides a holistic experience.

The challenge is to design programs that work within contractual and time constraints and yet provide sustainable outcomes for both the participants and sponsor. In an international context, it is often not only knowledge and skills gaps that need to be bridged, but language also. Language competence is essential in preparing participants to train and work internationally. Extending English language skills alongside the development of vocational knowledge and fieldwork requires flexibility and the ability to tailor content for individual participants, while not losing focus on the other training components.

INTRODUCTION

The most recent available data indicates that 57,000 international students were enrolled in Australia’s public VET programs taught offshore, with another 20,000 students studying programs onshore. Charles Darwin University (CDU) delivers more than 75 nationally recognised and accredited programs to more than 1,600 international students from more than 50 different nationalities. Recent engagement in industry sponsored programs, however, has required CDU to tailor training programs to specific needs, rather than adopting an ‘off the shelf’ approach.

In an international context, whilst gaining a complete, recognised qualification is still important, companies sponsoring training are more focused on what skills potential employees may need, rather than what qualifications educational institutions may offer. It is important that educational institutions adopt a flexible approach to training in these contexts and customise their training appropriately. This flexibility needs to be underpinned sound project management principles to ensure that positive outcomes are achieved and a business style approach is also adopted. Educational institutions needs to be equipped to be able to quickly respond and adapt to industry sponsors’ needs, which do not necessarily align with traditional education practices.
CDU has established links with countries in close proximity to the northern Australian region, including Indonesia and Timor Leste. CDU has been particularly active in the delivery of successful Vocational Education and Training (VET) programs for Timor Leste nationals since 2007. These programs are either focused on or underpinned by foundations in Language, Literacy and Numeracy (LLN) training (both accredited and non-accredited). The programs have been delivered both in-country and/or in Darwin at CDU’s campuses. Strong working relationships with industries and Timor Leste based organisations have been developed as a result of these programs. Each program has been purpose-built in consultation with the sponsors of the programs, resulting in tangible skills acquisition and support for the Timorese; enabling them to develop skills to further their competitiveness for employment in local industries, or further abroad.

The program used as a case study for this paper illustrates ways that successful outcomes can be obtained for all parties involved, through applying a fluid approach to training provision. Sponsored by an international company in the oil and gas sector, this program required quality, customised training across a range of disciplines, with a particular emphasis on language and literacy outcomes. Customised English LLN teaching was integrated with vocational training and industry specific knowledge, to aid capacity development.

The model used for this program embedded English LLN within a specific vocational context, with a view to contextualising the learning and anticipated outcomes throughout the delivery period. The sponsor of the program, being from an industry background, not an educational background, had strong expectations of language outcomes as well as other training outcomes in an exceedingly short timeframe. To try and meet these expectations, the English LLN training was not only modified on an ongoing basis to support the other training delivered, but was also contextualised to each participant’s needs.

CDU drew on experiences gained in earlier work with Timor Leste nationals for other industry sectors via a review of existing delivery and management models, to construct a purpose built program. Key features of the program included a strong project management focus to manage expectations, an emphasis on the integration of English LLN within other vocational components and clear communication and reporting. Rather than attempting to retro-fit an English LLN remedial program into a prescribed framework, the goal was to develop project strategies that were well articulated, drawing on the lessons learned from previous/similar projects.

The program, a Pre-Employment Program, was underpinned by effective project management principles. This ensured background planning and management were suitable, timeframes and budget were adhered to, and that the aspects directly affecting participants were logical to them. Synergies that existed between the different components were identified to optimise use of the time available. Incorporated in the program was a series of seminars given by industry experts, requiring detailed coordination and sequencing to integrate sessions with topics and to work around trainers’ and subcontractors’ availabilities. Induction was also a key feature, ensuring that the different training staff and industry representatives understood the full scope of the program -not only their contribution. The complexities of offshore delivery were understood and planned for, so that they were able to work together effectively as an integrated practitioner team. Pedagogical approaches to implementing the content were influenced by those previously developed to support
capacity development and advance local workforces in remote locations in Northern Australia as well as Timor Leste.

TRAINING FOR THE OIL AND GAS INDUSTRY

Between Australia and Timor Leste in the Timor Sea lies the Joint Petroleum Development Area (JPDA). The Timor Leste Autoridade Nacional do Petroleo (or National Petroleum Authority (ANP)) is responsible for regulating and managing petroleum related activities in the JPDA and has “enacted rules and regulations covering the exploration, development, production, transportation and distribution of petroleum and natural gas resources” under the Timor Sea treaty (National Petroleum Authority, 2015). Optimising opportunities for the participation of Timor Leste nationals in the Oil and Gas industry is a key component of ANP strategy, leading to a range of training and development programs being sponsored by exploration companies working in the area. These programs are typically contracted out following a competitive tendering or invited submission process.

The Pre-Employment Program, featured as the case study in this paper, was initiated by an international oil and gas company that operates in the JPDA. The company (sponsor) invited a submission to deliver a high quality, industry specific training initiative, both on and offshore, to a minimum of ten graduates. CDU was awarded the contract and worked in partnership with the sponsor to develop a high calibre and effective program. Concurrently, the sponsor sought expressions of interest from graduates with an interest in future employment in the oil and gas industry, resulting in numerous applications being received.

TIMOR LESTE IN CONTEXT

Timor Leste is a developing country with a growing economy, which is heavily dependent on the petroleum industry. As of the 2010 Census, the population of Timor Leste was 1,066,582, spread throughout thirteen districts. The country has some of the highest poverty indicators in the Asia pacific region; however the government’s objective is to use oil and gas revenues, through its Petroleum Fund, in support of longer-term development of the nation. The Timor Leste Strategic Development Plan outlines a framework for economic development 2011 – 2030, but challenges exist due to a lack of infrastructure, particularly in telecommunications, power and transport. Most of the population are employed in the agricultural sector, including some in subsistence farming, with coffee the second largest export (Australian Department of Foreign Affairs and Trade 2015).

Australia’s relationship with its close northern neighbour Timor Leste has been built on:

- Geographic proximity – Australia’s northern-most city, Darwin, is one hour and fifteen minutes flight time from Timor Leste’s capital, Dili.
- Military connections – relationships established during World War II when Australian forces were deployed to Timor were developed further when Australia led the International Stabilisation Force during Timor Leste’s transition to independence. Collaboration continues currently under the Defence Cooperation Program (DCP)
- Common interests - including business and trade, regional security, and activities in the offshore oil and gas fields
• Connections which are established and maintained via the Timorese diaspora, through association with development and aid organisations, medical collaboration, research and educational exchange, service clubs, special interest groups and religious links

• Person to person relationships – Darwin, Australia’s northernmost city, shares a Sister City relationship with Dili, involving exchanges and other partnership activities.

RATIONALE FOR THE PROJECT

The program sponsor’s objective was to develop an education and training initiative that would provide for and improve employment opportunities for Timorese nationals. They elected to do this through the implementation of a high value program, to build capacity in areas such as technical English (both written and spoken), oil and gas terminology, awareness of differing workplace cultures, vocational studies/technology skills and an understanding of the industry. It was delivered in a series of training blocks, alternating between the CDU campus in Darwin, Australia, and Dili, Timor Leste. The purpose was to not only prepare participants for working within the industry, but to be a precursor to the second stage of the sponsor’s initiative - a work-based internship. A key objective was to ensure that participants could quickly adapt to being in a globalised industry environment, and interact and communicate effectively with their work colleagues and supervisors during placement.

PROJECT DESIGN AND DEVELOPMENT

What makes programs of this nature different from other state funded vocational training courses is that the capacity building objectives link to nation building, rather than the more common individual motives that ordinarily dominate the mobility of students (Kell and Vogl 2010). As such, development took a constructivist approach in:

• implementation of a purpose built program in partnership with the client, with tangible results in participants’ skills acquisition
• the application of a consistent and professionally managed approach to the delivery of services, responsive to the needs of all stakeholders
• supporting participants in developing vocational skills to further their competitiveness for employment in Timor Leste or abroad
• emphasising opportunities for participants to fully engage and participate in the learning process
• using time in Darwin to maximise learning opportunities and experiences that were not available in Timor Leste.

Whilst the sponsor set the training requirements and outcomes at a broad level, design of the program itself was given careful attention by project managers to ensure that it was holistic and that participants received added benefits from participation.

DYNAMICS IN PROVISION - A FULLY SUPPORTED ENVIRONMENT

Intensive pre-planning was done prior to the participants’ arrival in Darwin in order to give the program its best chance of success. There were several factors involved that would not occur in quite the same way with other international students and these were considered during the pre-
planning phase. These factors were student mobility across the two jurisdictions, transport arrangements, security, pastoral care, maintenance of family connections, provision of a structured environment and contingency planning in case of unexpected events.

The approach involved a “wrap around” model where the suite of contracted services, including opportunities for value adding, were all considered in the design process. This holistic approach allowed the program to be responsive to individuals, particularly in enabling them to cope and to succeed academically in a very different environment. Personal and social needs outside class times were catered for and facilitated through the institution’s existing linkages with the local Timorese community, and networking with representatives of participants’ religious groups. Off-campus activities were provided which broadened knowledge and experience of the region more generally whilst providing opportunities to practice their English in a range of contexts.

Academic components were developed using appropriate pedagogical approaches, with vocational content supported by English development. Ways to add benefit beyond contractual requirements at no extra cost were sought; to include opportunities for additional knowledge and skills development during Darwin based training blocks. Considered most appropriate were those that would not be easily available once participants returned to Timor Leste. Two skill areas deemed very important to those wanting to work in the oil and gas industry were:

- Helicopter Underwater Escape Training - offered through one of the university’s external partners and identified by CDU as adding value
- Senior First Aid training – considered to be very beneficial to the participants for both work purposes and within their local communities.

FACTORS IN THE DEVELOPMENT OF AN EMBEDDED LLN MODEL

Adult LLN have become increasingly important to governments in terms of a country’s ability to meet economic challenges. The profiling of populations has been periodically conducted (OECD 2015), e.g. the International Adult Literacy Survey (IALS – 1990s) Adult Literacy and Life-skills Survey (ALLS – 2003 and 2006), and more recently the Programme for the International Assessment of Adult Competencies (PIAAC - 2013). The education sector in Australia has used the results of these surveys in developing and funding approaches to meet the identified LLN needs of adults with low skills; specifically, to facilitate the acquisition of qualifications at a minimum Certificate III. Different theories, models and practices in provision of LLN support for learners being used in Australian vocational settings were considered in terms of their application in the offshore training environment. There is a lack of publicly available information/data on the use of English LLN practices in supporting vocational training contexts in Timor Leste. If used, they would more likely occur in specific sponsored programs, such as those funded by aid organisations or industry groups; hence they may not have been published. In this context, CDU focused on practices related to Australian-based provision, since Australian vocational qualifications were delivered as part of the overall program content.

Early work situated within the Australian vocational environment looked at addressing learner needs through concurrently developing English LLN alongside vocational competencies (Courtenay and Mawer, 1995). Other studies related to customising English LLN teaching involved courses that have
been conducted in the workplace (e.g. Sefton et al 1994, Woods et al 2006, McKenna and Fitzpatrick 2005). In the main, these projects were federally funded under the Commonwealth’s Workplace English Language and Literacy (WELL) program, although some were financed by employer groups. McKenna and Fitzpatrick described the “built in, not bolted on” approach, recognising that integrating English LLN is an important component contributing to the achievement of training outcomes. They argue that integration should be planned for rather than an ad hoc “add on” element. UK influences on this practice include those described as “integrated approaches”, where LLN support was found to lead to improved retention and student achievement rates (Roberts et al 2005).

A number of ways of achieving integration have been developed, some of which are contested on the grounds of being “deficit models.” Certain approaches which have been questioned may be accepted by organisations and teachers as good practice in terms of assisting students to achieve, for example through conducting pre-training assessments to identify individual strengths and needs. In those perceived as “deficit models”, screening processes are implemented to identify students who have LLN “problems” and those students may be withdrawn during vocational classes for extra tutorial assistance. Alternatively integrated support may be offered in vocational settings, with an English LLN teacher circulating in the room providing help, as needed, to all learners. Embedded models recognise a joint responsibility for the development of learning approaches by an English LLN teacher and vocational trainer (Black and Yasukawa 2011). Learner needs are addressed within the particular vocational context and may occur during either theoretical or practical sessions. The English LLN teacher and vocational trainer work together as a teaching team during a class. No students are singled out as “requiring LLN assistance” – rather, the LLN components related to the vocational context are presented to everyone in the class to assist them to achieve competency. In designing the Pre-Employment Program, these known models were considered and their suitability assessed as part of initial project scoping.

PROJECT MANAGEMENT

Project management, on the surface, can appear straightforward, and due to this some stakeholders can overlook its importance. Even within educational institutions, the idea that project management is a “needless overhead” is surprisingly common. Yet, project management, particularly for multi-faceted, multi-provider and cross disciplinary projects, is vital. It is particularly important to retain flexibility in the project management approach. Whilst standardised processes and approach to project management can lead to more efficient outcomes, it can also lead to reduced effectiveness (Canale 1998). Flexible processes and approaches, on the other hand, can accommodate individual circumstances and thus be more effective, but less efficient. As such, it is important that the sponsor understands this balance.

For programs such as this one, a tailored project management approach is important for numerous reasons. These include:

- Defining agreed roles and responsibilities – ensuring that the right people are involved and that everyone is clear regarding their responsibilities and the expectations of their roles
- Ensuring the project is planned, monitored and controlled on a stage by stage basis
- Maintaining tolerances: time, cost, quality, scope, risk and benefit
Managing stakeholder expectations – ensuring there is a common understanding of the services and quality required

Ensuring that project knowledge, including lessons learned, is captured, managed, retained and passed on for use in future projects. (OGC, 2009)

In this program, the importance of sound project management in leading to quality outcomes was recognised. From a provider perspective, given the size and nature of the program and the importance of both the program and the relationship with the sponsor, it was essential to have dedicated project managers to oversee it. Other considerations were the numerous stakeholders involved, including subcontractors. With delivery spanning two jurisdictions and integrating several differing discipline areas and therefore different vocational teams, it was important to consider the skill sets required. Two project managers were assigned, one with Prince 2 Practitioner project management accreditation and a strong background in project management from a commercial point of view, the other with substantial experience in managing projects within a university context and possessing an academic background. It was this combination that proved to be very successful in managing the complexities of the program.

A program of this dimension required strong planning, communication, monitoring, reporting, and evaluation. During the planning phase, the budget was reviewed and clarified, a project plan and timeframes were set, and responsibilities were articulated so that it was clear who was responsible for specific tasks. A small project team was established and met regularly to ensure that expectations were clear, any problems arising could be raised and dealt with so that timeframes were met. Both project managers worked together to design the training schedule so that it followed logical sequence, met client expectations, and fit around trainers’ and subcontractors’ availabilities. Having dedicated project managers also meant that the delivery teams could focus on training aspects rather than on client communication and negotiations. The project management handled all logistical requirements such as identification of training venues, scheduling, support to delivery areas, accommodation, subcontractor management, transport and contingency management. All communication between the sponsor and CDU was conducted through project management channels. This allowed the institution to successfully manage sponsor expectations, clarify and resolve any arising issues, and maintain a consistent approach.

CULTURAL CONSCIOUSNESS

When working off-shore it is incumbent that teaching staff are aware of the cultural norms and sensitivities that may be expected in-country. To some extent, this can be addressed via an “induction to country” seminar prior to departure and by pre-reading relevant material, but not fully. Timor’s disrupted history and cultural practices were considered as part of program design and development. Importantly, it was recognised that participants were likely to have experienced the effects of conflict, requiring teaching staff to be sensitive to some subjects that may arise in discussion. Although traditionally adopting a more paternalistic style, Timor Leste has made significant efforts to promote gender equality and encourage women’s economic participation. This was reflected in the gender balance that was achieved in the Pre-Employment Program. Some females were naturally quieter, at least initially; however teachers paid attention to the gender dynamics in the classroom, to cultivate an enhanced learning environment. The approach included establishing class norms or ground rules for discussion, maintaining awareness of levels of
involvement and ensuring that more confident or verbally articulate learners did not dominate the
discussion. While the selection processes for employment post-course were known to be
competitive, modes of learning were inclusive, proactively valuing and addressing diversity; the
success of which was reflected in the high levels of teamwork demonstrated amongst participants
throughout.

SOCIOLINGUISTIC SITUATION AND LEARNER CONTEXT

When planning to deliver projects in other cultural contexts, an important aspect is to give due
consideration to common language/s likely to be spoken by learner cohorts. Where training is to be
delivered in English, proficiency must be assessed in order to determine the correct delivery model.
In some cases an intensive English program is useful in preparing participants to engage productively
in vocational training, for example where learners’ spoken English is more advanced than their
reading, comprehension and writing. Historical factors, either individually or collectively are
complex with potential to derail projects if time is not taken understand fully the context from which
participants are coming. Knowing these factors allows for the implementation of strategies to
minimise risks and to optimise outcomes.

Timor Leste has an interesting linguistic history, with languages and language policy subject to
change over time. Up until 1975 the country was colonised by Portugal, with Portuguese the official
language spoken, although primarily by local elites. Subsequently during the occupation period, up
until 1999, Indonesian was the official language. Previously and throughout these periods, Tetum
was widely spoken, along with a range of local dialects in the sukus. Opportunities for local people
to speak English appear to have become more common during the period of the United Nations (UN)
stabilisation (1999 – 2002). Currently Portuguese and Tetum are considered official languages.
Tetum is spoken in most Dili homes and in the districts to a greater or lesser extent, along with a
variety of other dialects. English and Indonesian are considered working languages. (Caffrey et al,
2014).

Since all training was to be conducted in English, it was recognised that there would be challenges in
working with students from these varying language backgrounds. New learning experiences were
expected to place a higher demand on participants’ existing English language skills and
comprehension; consequently the identification of English language pressure points in the
accredited training were considered and planned for. These pressure points included unfamiliar
vocabulary related to the oil and gas industry, terminology used by vocational trainers or guest
speakers, and acronyms or idiomatic expressions that were encountered during Darwin-based
training blocks.

ESTABLISHING ENGLISH LANGUAGE COMPETENCE

The approach to course design began with the establishment of participants’ current English
language competence, via an interview and a skills gap analysis, to enable the development of
individual learner profiles. The results of the English assessment enabled a pre-course Intensive to
be developed and delivered ahead of the vocational training and industry facilitated seminars. The
assessment aimed to identify:

- the extent to which English was currently used by participants in daily life
• their education, work history and career aspirations
• if any of their previous training had been conducted in English and, if so, where difficulties were encountered
• participants’ individual learning styles and preferences.

English language assessments were not able to be conducted prior to commencement of the first training session, making it difficult to use the results to inform the training and resource development, however assessments established areas of strength in addition to those requiring development during the program and longer term. Outcome ratings were explained to assist learners in preparation for learning (i.e. individuals’ particular language areas that would have increased focus). This approach allowed participants to assume responsibility for defining and helping set their own learning objectives, and evaluating their own language progress during training.

Knowledge of participants’ proficiency in English language helped identify and confirm the delivery model, i.e. depending on the results, an English as a Second Language (ESL) lecturer co-teaching with vocational subject matter specialists might be preferable, or, if participants were not sufficiently proficient in English, via the use of translation. In this particular case, the ESL lecturer spoke the key languages of English, Tetum and Bahasa, so was able to translate back and forth between languages in an ad hoc manner, whenever conceptual or comprehension difficulties arose. The significance of possessing these abilities was highlighted throughout the program.

WORK SKILLS ASSESSMENT

Information gained through the English LLN interviews and the work skills assessment was essential in identifying individual training needs, and in developing training plans for each participant. Whilst all of the participants were graduates with a minimum of a Bachelor degree, their levels of ‘work readiness’ needed to be ascertained so that content could be designed appropriately. Along with the obvious need to assess English was the need to evaluate participants’ experience with different varieties of office technology and software. The sponsor’s expectation for the accredited vocational components was aimed at the lower AQF levels and seemed readily achievable, especially by University graduates. Taken into account were the added complexities involved due to being taught predominantly in English, placing considerable demands on participants’ skills. This, coupled with the timeframe and the sponsor’s strong expectations surrounding English improvements, meant that work skills assessments were vital to ensure the ability to deliver against each of the requirements.

Alongside the formal testing of LLN levels and other skills, it was important to meet individually with the participants to discover more about their personal interests and ambitions, as these would be important in keeping them motivated and driven to succeed. The client also required a ‘behaviours’ assessment, comprising assessment of participants’ core behaviours such as leadership; communication; commercial awareness; analysis and enterprise and other work related attributes. This assessment proved more challenging for staff as some of the character traits valued and upheld within Timorese society do not easily allow for their demonstration within a mixed group environment.
PEDAGOGIC PRINCIPLES

Pedagogical approaches to implementation were based on those developed to support capacity development and growing workforces in remote locations in the north of Australia. Strategies for building knowledge were established, incorporating strength-based approaches which recognised the value of participants’ existing competencies, to ensure relevance of training. Importantly, the involvement of a highly qualified, experienced ESL lecturer was critical to the customisation of the program. In matching staff skills to project needs, consideration was given to essential aspects such as the lecturers’ experience in off-shore project design, resource development, delivery and evaluation. Significant experience in curriculum development and assessment in work based training contexts was another important component, so that themes, functions or texts relating to the industry could be analysed to target functional and grammatical aspects which were likely to pose difficulties for participants. Working in this way enabled a needs-responsive and reflective pedagogical approach, which focused on the individual needs and progress of learners (Markwick-Smith, 2015).

In the Australian vocational training sector, much emphasis is placed on the funding of, and consequently the delivery of certified English LLN courses. While accredited LLN training has an important role in skills development, the structure of such courses and the inflexibility of content can be unsuitable to the requirements of some projects. In this project, the English Language teaching components were non-accredited, which avoided pressures to achieve specific training package competencies and maximised flexibility to respond to individual needs. The practice of integrating English language development into vocational contexts also relies on teaching staff working cooperatively to ensure that the vocational English is purposefully connected to the industry context and that materials are adapted accordingly (Alkema and Rean, 2013). The integrated approach provides benefits in ongoing English development alongside vocationally specific content, with the ESL lecturer and vocational trainer/s taking turns as the main instructor during a session. To assist participants in understanding content, the English lecturer explained the language relevant to the vocational content, consolidating the participants’ ability to comprehend and apply information. Principles regarding the use of English during class times were established and remained a useful strategy to minimise any tendency to revert to other languages. Engagement has enabled participants to complete industry related training in English speaking environments and to compete successfully for positions within a diverse and highly competitive industry sector.

LIMITATIONS AND CONSTRAINTS OF PROJECT

Like every project, successful or otherwise, there were limitations and constraints that impacted on this program. There was little early involvement by the institution in the setup and selection process, due to the sponsor’s own structure for program development. Consequently, CDU was unable to evaluate skills before the first training block, thereby reducing time available to align content. Some participants could have undertaken more advanced training in certain vocational areas, but because their capacity to do so was not able to be assessed earlier, a median level was arrived at that suited the different learner profiles, however having this information earlier would have allowed more informed decision making. The length of the program itself was not commensurate with the gains in English anticipated by the sponsor. Difficulties with internet access and reliability in a developing country affected some aspects of delivery, since online activities were
difficult in Timor at times. Participant research for their final presentations was affected similarly - a constraint to be mindful of for any future projects delivered in this way.

**IMPORTANCE OF ORGANISATIONAL EXPERIENCE AND CAPACITY**

There are similarities in working in Timor Leste and in Australia’s very remote Indigenous communities. Both have small populations dispersed in small communities or villages that are isolated, either by distance in Australia’s case, or road conditions in the case of Timor. These populations speak a range of languages and dialects, and may or may not have facility in English. Small and remote locations are often under serviced and lack infrastructure and reliable telecommunications. Dili is developing rapidly, with considerable improvements in these areas, however university staff can still suffer the challenges of isolation while working remotely and away from their “home” campus and usual facilities. To manage, they must understand and cope with the realities of working in this way, across the different cultures, languages and knowledge systems, to achieve project requirements and industry goals (Sushames and Wallace, 2009). Programs of this nature require teaching staff who:

- have been working in their area of specialisation for extensive periods
- possess experience in the development of customised resources for specific industry contexts
- are able to work in under developed locations and environments
- are familiar with the demands of working offshore
- can cope with the travel required to deliver training
- have experience in working with multi lingual audiences
- can adjust to the reporting obligations of contracts, which may be broader than those required in mainstream academic environments.

High levels of expertise and experience in working in-country allowed the model to be developed, implemented and fine-tuned, as a “fit for purpose” purpose-built approach reflecting the context and requirements of the client. From a project management perspective, there is potential for this model’s transferability to other contexts, provided that they can be resourced similarly. The program components and timelines were sponsor driven; however bringing the various aspects together into one comprehensive “package” was the responsibility of the provider and a complex process. Project management proficiency provided a level of cohesiveness, timeliness, flexibility and clarity that would otherwise have been difficult to achieve.

Important was the ability to take corrective actions and to be prepared for shifting timelines, which may or may not coincide with the academic year, requiring flexibility on the part of the institution and subsequently on staff. Contractual requirements and sponsor expectations do not always align, requiring agility to be able to meet sponsor demands, negotiate where appropriate, and make decisions and to take calculated risks. Sometimes changes need to be made with very short notice due to external factors; consequently organisations need to be able to respond quickly within business timeframes, taking into account the vagaries of different time zones. They also need to be cognisant of issues that may result in delays, for example lengthy visa processing times, or other issues arising in-country that can affect scheduling.
CONCLUSIONS

The success of any workforce program of this nature relies heavily on the relationships between the sponsor, provider and the participant. A thorough post-course review process has captured feedback regarding these matters from the stakeholders to assist in the continuous improvement of future projects. This initiative met its objectives and was delivered within the timeline set by the client, although this required flexibility in scheduling and project management to optimise effective delivery, noting that this flexibility can impact on some aspects of efficiency. All participants successfully completing vocational training were awarded an Australian qualification – a testament to their ability to manage the vocational English language demands and content of the program. English LLN levels were reviewed again towards the end of training, with participants achieving increases in ACSF ratings, as well as demonstrating increased confidence in using English more generally. All were considered suitable to undertake selection for placement in the second phase.

Factors contributing to the success of this program include:

- the sponsor’s excellent and careful selection of candidates
- the attitude, motivation, team work and diligence of participants
- managing the expectations of the sponsor and participants (this was complex at times, particularly in terms of what the project would or could offer within its time limits)
- regular reporting and communication with the client
- having dedicated staff assigned for the duration of the program and ensuring they were well supported in their roles
- a strong project management framework.

Embedded models do not necessarily include approaches intended to assist the vocational trainer to develop confidence in identifying English LLN issues amongst learner groups, nor develop their own skills towards understanding where common barriers to student understanding might occur. However, where they do, awareness on the part of by vocational trainers of these potential barriers can lead to changes in practice which improve classroom dynamics for both trainer and students. In this program, the ESL lecturer and vocational trainers reviewed materials together as part of preparation, which benefited pedagogical practice. Some useful strategies identified by vocational training staff that improved their own delivery included:

- speaking more slowly and articulating clearly
- allowing extra time during oral presentations, for learners to be able to process information
- giving consideration to the denseness of text and font size in resource materials
- provision of a glossary relating to the vocational area
- avoidance of jargon or idioms that were likely to be unfamiliar to participants.

Some aspects of program reporting were challenging, taking staff outside of their comfort zones. When a secondary selection process is planned on completion of projects to determine the most appropriate people to be employed, sponsors may require behavioural reporting on participants’ attitudes and leadership. Although not unexpected, this type of reporting can be uncomfortable at times for teaching and training staff.
Ongoing communication between participants and staff through email, social media and face to face during Darwin blocks proved effective in supporting participants and these efforts were acknowledged as important by the client. Participants have continued to maintain ongoing contact post course, making it possible to follow their achievements and career development. Formal and informal feedback from participants has been positive in regard to their appreciation of the opportunity to develop specialised skills that were not acquired during earlier university studies, as well as the advantages as a result of full immersion in an English speaking environment.

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