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**2030 Vision for Developing  
Northern Australia**

**SGS Economics and Planning Submission**



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Independent insight.



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# 1 CONTEXT FOR OUR SUBMISSION

SGS Economics and Planning Pty Ltd is a firm of urban and regional economists and planners that provides advice to shape policy and investment decisions in favour of sustainable urban and regional development. We have undertaken stakeholder engagement, prepared advice and undertaken analysis for Commonwealth, State, Territory and local Governments, Indigenous organisations and private sector operators. In undertaking this work we have applied the principle of collaborative engagement, particularly when working with Indigenous communities and stakeholders.

SGS has around 50 core professional staff and has been in continuous operation since 1990.

Many of the projects we have undertaken have relevance for the future of Northern Australia. However, the newly-elected Commonwealth Government may not be aware of all these projects, or have access to associated reports, as many are not public documents.

Without breaching client confidentiality, we would like to identify some key issues for Indigenous development that we consider should be taken into account in the development of a long term vision for Northern Australia, specifically:

- better planning for infrastructure and services, particularly in remote areas; and
- economic and employment opportunities for Indigenous people.

SGS also has extensive experience and has undertaken many other projects of broader relevance to development in Northern Australia. These projects cover:

- regional and economic development; and
- risk assessment, and community involvement in planning for disaster management and climate change.

Information on relevant projects undertaken by SGS is included in Section 4 of this submission.

We would be pleased to be involved in further progressing the Vision for Developing Northern Australia. SGS is a current member of a number of Commonwealth Government Panels including the Participatory Planning, Research and Evaluation Panel and the Project Advisory and Management Services Panel. Both of these Panels were commissioned by the former Department of Families, Housing, Community Services and Indigenous Affairs.

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# 2 PLANNING FOR INFRASTRUCTURE IN REMOTE AREAS

## 2.1 The importance of infrastructure

Infrastructure is a great enabler and important building block for communities.

Many of Australia's Indigenous communities do not currently have adequate infrastructure including water supply, roads, sewerage treatment, waste management and electricity or other energy supplies.

This is despite the substantially increased focus by COAG in recent years on Indigenous development initiatives, and the acknowledgment that these services are essential to 'Closing the Gap' in Indigenous disadvantage.

The effective planning, delivery, management, operation and maintenance of essential and municipal infrastructure such as energy, water supply, waste water management, roads and solid waste management in remote Indigenous communities are crucial to improving health, educational and economic development outcomes for the people living in those communities.

Data available in 2011 on remote Indigenous communities<sup>1</sup> indicated that:

- people in these communities are hospitalised for reasons associated with poor environmental health at a rate up to seven times higher than for other Australians;
- over a four year period up to one in every ten people in these communities can expect to be hospitalised for reasons associated with poor environmental health;
- diseases such as trachoma and scabies are common;
- around 30 per cent of people living in remote Indigenous communities had experienced five or more interruptions to their water supply in the previous year;
- around 20 per cent experienced 20 or more interruptions to their electricity supply in the previous year;
- around 40 per cent of people in these communities were affected by sewerage system overflows or leakages in the previous year; and
- road access to some communities is not possible during the wet season.

The Australian Bureau of Statistics has projected that the population of Indigenous people in remote areas will increase by 13.6 per cent to nearly 145,000 between 2006 and 2021. The need for prompt action to avoid the transmission of disadvantage from one generation of Indigenous people to the next is crucial.

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<sup>1</sup> This information is included in Local Implementation Plans for Remote Indigenous Communities, collected as part of COAG's National Partnership Agreement on Remote Service Delivery.

## 2.2 The need for better planning and coordination

While significant funding and effort has been directed to provision of infrastructure for remote Indigenous communities in recent years, the allocation and use of this funding has often been ad hoc and un-coordinated. Its effectiveness has been limited because necessary planning had not first been undertaken. There has also been poor linking of capital funding with arrangements for maintenance and management of assets.

Different governance and funding arrangements apply to the provision of infrastructure for remote Indigenous communities in different States and in the NT.

As there will never be enough government funding to address all needs, a fresh approach is needed incorporating:

- more effective targeting and planning for use of funds;
- better co-ordination between capital and recurrent funding;
- effective capture of private and not-for-profit sources of funding, expertise and in-kind support;
- user contribution by Indigenous communities through levies or charges; and
- linking infrastructure funding and management arrangements to enhanced economic development and employment opportunities.

If it is to be successful, a new strategic policy framework and funding model will need to consider a range of matters, including cultural considerations, governance, funding, technical matters, and economic development. The key challenges in each of these areas are discussed below.

### ***Cultural Considerations***

The challenges for governments at all levels, infrastructure providers, and non-government organisations involved in infrastructure and service provision is to find new ways of working with Aboriginal and Torres Strait Islander communities to develop a better understanding of each other's culture and practices through constructive engagement, the development of partnerships and where necessary the use of formal agreements. It is incumbent on all levels of government and infrastructure agencies and enterprises to ensure that Aboriginal and Torres Strait Islander people are effectively engaged and consulted in the planning, design, delivery, operation and maintenance of essential and municipal infrastructure in their communities, consistent with the principles espoused by the Aboriginal and Torres Strait Islander Social Justice Commissioner in his *2009 Native Title Report*.

The absence of basic cadastre in remote Indigenous communities is also just beginning to be addressed in some jurisdictions, but there is a long way to go. However, the problem is not the ownership of the land as such, nor the possible existence of native title rights and interests, but rather where the responsibility for the ownership, operation and maintenance of the infrastructure asset lies and how that will be paid for and maintained and managed over time, and how remote Indigenous communities may be able to utilise the value of their land to create revenue and economic opportunities.

Further land tenure reforms to the Aboriginal land regimes in the various jurisdictions, and amendments to the Commonwealth's Native Title Act to enable native title holders to realise economic development opportunities on their land without having to extinguish their native title rights and interests, may need to be pursued. These are discussed in the Aboriginal and Torres Strait Islander Social Justice Commissioner's Native Title Reports (Aboriginal and Torres Strait Islander Social Justice Commissioner 2005-2010).

### ***Challenges for Governance***

All levels of government are currently involved in the provision and maintenance of various infrastructure elements in remote Indigenous communities. The plethora of agencies and responsibilities between and within the various jurisdictions gives rise to the complexity of governance structures and confuses accountability arrangements and fiscal responsibilities. As a consequence, considerable resources are consumed in coordination within and between the different levels of government and other stakeholders involved in infrastructure planning, delivery, management and maintenance, and there is little comprehensive strategic planning of needs from a regional or jurisdictional perspective. Most initiatives are responses to pressing needs, rather than being part of local or regional strategic initiatives aimed at achieving long term sustainable gains in human social and economic terms.

In developing a new strategic policy framework and funding model, associated governance arrangements need to take account of:

- links with COAG's 'Closing the Gap' agenda;
- links with State/Northern Territory planning processes;
- the obstacles imposed through the different roles and responsibilities of local governments in different jurisdictions;
- the obstacles posed by different land tenure arrangements and native title implications in different jurisdictions;
- the involvement of Indigenous communities in the planning, provision, maintenance and ownership arrangements associated with essential infrastructure; and
- opportunities for social and economic development for individuals and remote communities to gain a foothold in the broader local, regional and national economies.

Early results indicated that Local Implementation Plans for co-ordinating funding and service delivery to priority Indigenous communities under the National Partnership Agreement for Remote Service Delivery, have been more successful in some communities than in others.

- There is a need to better understand the reasons for these mixed results, so that future efforts can build on what has worked.

A key challenge for governance is to devise arrangements that will deliver more effective results.

### ***Challenges for Funding***

Remote Indigenous communities are often heavily reliant on public funding which bring with them all of the impediments and flaws of public sector funding models. For example, current public sector funding programs are often focused on the short term with a three-year horizon and driven by a 12-month annual budget cycle. They rarely focus on the longer term. This can mean that benefits from capital investment are squandered because inadequate attention is paid to ensuring that adequate funding and support is available for maintenance of assets.

By contrast, arrangements such as public/private sector partnerships (PPPs) typically have a time frame which may extend over 10-20 years. This means that decisions relating to the relative costs of capital and recurrent components are assessed and taken into account up-front. The involvement of private sector sources of funds is also likely to generate more rigorous risk assessment of different options.

Funding provided through traditional government grant arrangements is never likely to be enough to meet all needs for capital and recurrent funding for infrastructure in remote Indigenous communities. The need to explore other funding mechanisms as well as the more efficient use of funds is therefore paramount.

Leveraging of additional sources of funding or 'in kind' support could include:

- 'in kind' support from private sector companies such as mining companies;
- the provision of taxation or other incentives to encourage infrastructure investment in remote Indigenous communities;
- better co-ordination with charitable organisations providing support to remote Indigenous communities;
- provision of support and incentives for Indigenous people to take more responsibility for the provision and maintenance of infrastructure in their communities;
- providing incentives for "grey nomads" or other volunteers with appropriate skills to contribute to the provision or maintenance of infrastructure in remote Indigenous communities.

Funding decisions also need to be linked to governance. As discussed above, the plethora of agencies and responsibilities between and within various jurisdictions gives rise to complex governance structures, and confuses accountability arrangements and fiscal responsibilities. Improving the linkages between governance, funding and accountability are long overdue.

Inadequate co-ordination of infrastructure funding can also lead to failure of other government initiatives, for example, health services cannot store medicines effectively if the electricity supply is not reliable. Similarly economic development opportunities can be lost if roads are impassable during the wet season.

### ***Challenges associated with Technical Considerations***

The planning, delivery, management, operation and maintenance of essential and municipal infrastructure in remote Indigenous communities pose several unique challenges and complexities for governments, service providers and Indigenous organisations. In general, essential and municipal infrastructure in remote Indigenous communities have high capital costs, are time consuming to plan and construct, have limited durability and have high operating and maintenance costs due to extreme climatic conditions. These costs are generally not fully recovered through user charges.

In addition, the legacy of ageing infrastructure of variable standard, often with a shorter life span than current design standards, and a history of ill-defined land and asset ownership responsibilities, presents significant challenges for good asset management in remote Indigenous communities.

The key technical challenges are ensuring the level of infrastructure provided is relevant and appropriate to the community's specific needs and fit for purpose, yet does not compromise the health and safety of the community it services.

The infrastructure that is provided needs to take into account environmental considerations such as climate and topography. There is also a need to take into account the remoteness of the community, its 'on site' capacity and constraints associated with accessing external support.

The need for asset management and maintenance needs to be taken into account as well as asset provision.

Regulatory requirements developed for infrastructure facilities in urban or regional settings may not be suitable for remote communities, although there is clearly a need to ensure occupational and public health and safety provisions are not compromised.

There is also a need to have in place arrangements for monitoring and learning from what has worked and what hasn't, in a way that is transparent and does not seek to allocate blame for initiatives that have not worked.



In addition, there is a need to be proactive in addressing the potential implications of climate change, and to ensure infrastructure such as power supply arrangements minimise the production of greenhouse gases.

There is a need to be creative in developing and using the talents of local people. Where the local language used is not English, this needs to be considered in the way that information is shared, particularly in the way that health and safety information is conveyed. The ability of local Indigenous people to understand written instructions also needs to be taken into account.

### ***Challenges for Economic Development***

Essential and municipal infrastructure can support economic development in remote Indigenous communities and can also be a direct source of employment for people living in these communities.

Procurement provisions can be used (and are already used to some extent), to require infrastructure providers to train and employ Indigenous people in the provision and maintenance of infrastructure.

Other opportunities for economic development in a region can be hampered by infrastructure deficits or unreliability. As mentioned elsewhere, some remote Indigenous communities experience frequent interruptions to power and water supply or sewerage treatment services.

Good all weather road access is vital for the effective functioning of many communities, and for access to health, education and employment. Access to airstrips and ports for barges during the wet season can also be vital to the social and economic wellbeing of many communities.

Good road access between remote Indigenous communities and private sector employment centres, can mean that local people can seek direct employment or become engaged in the provision of goods or services that are used by private sector employers.

One of the issues associated with the prioritising of remote Indigenous infrastructure is to assess the potential sustainability of remote Indigenous settlements in a way that respects Indigenous culture, but also addresses the factors leading to intergenerational disadvantage.

Non-Indigenous people who have grown up in families and communities where unemployment is the norm, need additional support to become effective employees or business operators. In some remote Indigenous communities where inter-generational disadvantage is entrenched and employed Indigenous role models are scarce, the challenges are multiplied.

The transition from CDEP-type employment to a more 'normalised' model has been challenging in some communities, and is likely to be more difficult if poor infrastructure is a compounding factor.

### ***Other Considerations***

Other considerations include accommodating fluctuations in population in Indigenous communities; issues of environmental sustainability; and provision of support for Indigenous communities in urban and regional centres.

# 3 ECONOMIC OPPORTUNITIES FOR INDIGENOUS PEOPLE

## 3.1 Employment and Business Development Opportunities

Indigenous employment and Indigenous business development should be seen as key components of Australia's overall economic development and well-being. There is a need to better harness Indigenous people's ability to contribute to Australia's broad economic development objectives, including the provision of a labour force in locations that may not be attractive to city-based workers.

The development of Indigenous owned and managed businesses is also key to an increase in Indigenous economic participation.

- Indigenous owned and managed businesses tend to employ a much higher proportion of Indigenous people, and are more likely to sub-contract to other Indigenous businesses.
- Rather than reliance on incentives for Indigenous people to move from remote locations for employment opportunities in urban and regional locations, they should also be encouraged to seek economic participation opportunities in their own country.
- Indigenous communities should be encouraged to be involved in the identification and implementation of arrangements to increase employment and economic participation.

There is potential to learn from arrangements in the US about how to grow Indigenous businesses and strengthen procurement opportunities. There are also examples of successful approaches adopted through the NZ Local Government Association that could be applied in Australia.

There are key relationships between achievement of Indigenous economic participation outcomes and improvements in a range of associated areas including education, business skills, entrepreneurship, financial literacy and health.

Enhanced Indigenous economic participation is such a key part of the Indigenous agenda that consideration should be given to it linking it to Constitutional recognition.

Specific suggestions also include:

- that Indigenous economic opportunities should continue to be pursued through Australian Employment Covenant arrangements and Reconciliation Action Plans;
- that all jurisdictions be required to sign up to Supply Nation, and to collect better business-to-business data to inform future initiatives and priorities;
- that there be better documentation and monitoring of private sector commitments to employ Indigenous people;

- that further opportunities be identified for the substantial amount of money expended through government contracts to better contribute to Indigenous employment and economic participation objectives;
- that rewards be provided for the achievement of longer term Indigenous employment outcomes, such as part payment of incentives to employers at the end of 2-5 years, rather than all up-front or at the end of 3 months;
- that Indigenous Business Australia (IBA) continue to provide support for business development opportunities, and that Indigenous people also be encouraged to access mainstream business support services;
- that jurisdictions make more use of contributions and ideas from the Indigenous Business Council of Australia and Indigenous Chambers of Commerce;
- that each State and Territory establish an Indigenous employment advisory group and a separate Indigenous business advisory group;
- that jurisdictions ensure that key organisations set up to promote and facilitate Indigenous business development are not taken over by non-Indigenous people, who do not fully understand the importance of Indigenous culture;
- that support be given to Indigenous role models who can assist other Indigenous people to identify economic participation opportunities and how they can be accessed; and
- that support continue to be provided to build on good work already undertaken in local Indigenous communities, and to publish information on Indigenous economic participation success stories.

Suggestions with particular relevance for **Indigenous economic participation in remote areas** include:

- “normalising” business and employment opportunities in remote Indigenous communities, by highlighting opportunities associated with hospitality, service provision, retail and tourism, as well as government-funded employment opportunities;
- identifying and building on employment opportunities for Indigenous people in mining; agricultural development, pastoral station operations, stock management, grain production, grape growing and food processing;
- implementing measures to attract people with business skills to work with Indigenous people in remote communities;
- identifying ways to capture more of the income earned by people working in remote locations in the mining, telecommunications and service industries, by providing more opportunities for them to spend their earnings in local communities;
- improving education and skill development opportunities for Indigenous people, particularly in relation to adult literacy; and

- provision by the Commonwealth Government of direct grants to local governments to support Indigenous economic participation in regional and remote areas.

# 4 SGS EXPERIENCE

## 4.1 Indigenous - specific projects

SGS has also consulted extensively for the Commonwealth, State and NT Governments and for Aboriginal organisations directly. Information on specific projects is included below.

***Sustainable Rural Economic Development Opportunities in Cape York for Indigenous Australians – Rural Industries Research and Development Corporation (RIRDC) (2009-2010).*** SGS in association with Kleinhardt Business Consultants in Cairns, undertook an assessment of sustainable rural economic development opportunities in Cape York for Indigenous Australians. The study involved the preparation of a regional economic profile, close engagement with community groups and Indigenous employers, and the identification of a range of opportunities for Indigenous economic development in the Cape York region.

***Living on Our Lands Project*** for WA Department of Indigenous Affairs (2011): Involved consultation, analysis and development of land tenure options, and an assessment tool for communities.

***Development of a National Strategic Policy Framework and Funding Model for the Planning and development of Infrastructure in Remote Indigenous Communities (2011)*** – Infrastructure Australia

***Evaluation of Government Business Managers*** – ANAO

***Evaluation of the Indigenous Leadership Program*** - Office of Evaluation and Management, Department of Finance and Deregulation

***Preparation of Baseline Community Profiles for the Groote Eylandt and Bickerton Island communities, and for Tenant Creek*** - FaHCSIA.

***Development of a Community Profile and Three-year CDEP Action Plan*** - Yalata Community Inc.

***Development of a Program Planning, Monitoring, Evaluation and Reporting System for the 'Jimmy Little Thumbs Up! Healthy Eating' Program for the Jimmy Little Foundation*** – Medicines Australia

***Business Planning for an Indigenous Housing Organisation*** - ABIS Cooperative.

***Regional Traditional Owner Land and Sea Management Entity: Feasibility Study*** - North Queensland Dry Tropics. This project included consultation with 16 Traditional owner groups, feasibility analysis, case studies, identification of enablers and barriers and recommendations.

***Alliance options for Indigenous Building Companies in the Murdi Paaki Region of NSW (Brewarrina Business Cooperative 2008-09).*** This project included consultation, research and ideas for the alliance to increase employment for Indigenous people in this region.

***Implications for issuing Freehold Titles in Indigenous Communities in Cape York (Indigenous Business Australia 2008).***

**Preparation of Papers and Reports for International Conference on Indigenous Housing (FaHCSIA, May 2012).**

**NSW Aboriginal Land Council, New South Wales (2011-12)**

This project included consultation and the development and modelling of options for funding the network.

## 4.2 Regional Economic Development Projects

SGS has also undertaken many regional development projects. Examples are included below.

Preparation of the **Gladstone Region Economic Development Strategy (GREDS)**. The GREDS is a high level live document that contains a 20 year economic vision and 5 year implementation plan. The project identified trends in the regional economy, consulting with a wide range of government, industry, institutional and community leaders to determine the region's economic development strengths and weaknesses, articulated priority programs and activities to achieve a desired vision and identified key performance indicators to gauge economic development progress.

**Data Development Project** for the Department of Regional Australia, Regional Development and Local Government (2011). This project focused on the assessment of data needs and sources to inform decision-making and to improve the capacity of Regional Development Australia Committees to profile regions in northern and regional Australia. SGS undertook face-to-face consultation with RDA committees in 10 regions as part of this project and delivered a number of reports within the 3 month timeframe specified. Consultation included face-to-face meetings with representatives of all of the RDAs in Northern Australia.

**Economic Significance of the Food Sector (2008)**. SGS was commissioned by the Victorian Local Government Association to assess the impact of activities relating to the production of food across a wide range of different industries. The cultivation of food is merely the start of the process. Next comes the processing and packaging and distribution to retailers. All of which requires significant input in terms of transportation. Some retailers, such as restaurants undertake significant processing of the food before it is served to the consumer.

As this cuts across a number of industries, extracting the economic contribution of food to the economy from published statistics was not a straightforward process. However, within the National Accounts framework there is the flexibility to produce a set of economic accounts which cut across different industries, via the use of a Satellite Account.

Using this method, a Food Satellite Account for Victoria and Melbourne was developed by SGS. The data used to construct the Food Satellite Account was drawn from a wide range of Australian Bureau of Statistics data sources.

**Bega Valley Shire Council (2013)**. SGS was commissioned by Bega Valley Shire Council to complete a study of infrastructure costs for water and sewerage provision. This study considered the impact on residential and commercial development feasibility of the current and proposed charges as well as comparative assessment of other coastal LGAs. A key component was the sensitivity analysis undertaken through engagement with local developers, major land owners, real estate operators and the building industry.

**Investment Opportunities in the ACT (2013)**. SGS was commissioned by InvestACT to undertake sector analysis and provide information to be used to attract private sector investment to the ACT.

As input to this project, SGS undertook economic analysis, stakeholder consultations and workshops to assess the economic environment in ten chosen sectors. SGS then described the investment opportunities and circumstances in each of these ten economic activity sectors.

This project built on previous work undertaken by SGS as input to a Business Development Strategy (BDS) to facilitate growth, economic diversification and new job opportunities in the ACT. The BDS featured three key themes:

- creating the right business environment;
- supporting business investment; and
- accelerating business innovation.

**Wodonga City Council (2012).** The City of Wodonga issued a brief calling for the development of an Economic Development Strategy that:

- had as its key focus growing, creating and maintaining Wodonga's economic base in a sustainable manner;
- would provide a meaningful action plan and direction for Council's Business Development Unit to pursue over the next 5 years; and
- included longer term strategic directions, i.e. over 10-20 years, given Wodonga's expected industry and population growth.

SGS was commissioned to undertake a six phase approach covering review of existing information, data profiling, stakeholder consultation, detailed analysis and projections, distilling insights from these earlier tasks and, ultimately, setting directions and actions in conjunction with Council.

**Tourism North East (2012).** Tourism North East, the Victorian High Country's peak tourism body, engaged SGS in association with Quantum Market Research to undertake a product gap analysis for the region. Through targeted market research, the gap analysis:

- identified high impact regional products relevant to the target market, focused in the key areas of the region's differentiated strengths;
- provided research into the identified product gaps and understanding to what degree they would impact tourism in the North East and lift the region's profile;
- investigated potential business concepts which would act to address product gaps, based on market research and a selection of relevant case studies; and
- put forward an action plan for Tourism North East, identifying key barriers, opportunities and relative pay offs in addressing the product gaps.

**Clarence Valley Timber Investment Prospectus (2008).** SGS prepared a timber industry investment prospectus for the Clarence Valley, highlighting its strategic positioning as a timber industry investment locale and its existing momentum in this regard.

**Profile of 22 Strategic Industry Sectors.** SGS was commissioned by the Department of Innovation, Industry and Regional Development to profile 22 strategic industry sectors. The objective of the industry profiles were to provide regular, up to date information on each strategic industry. The industry profile report included:

- analysis of Global, Australian and State trends impacting on the current performance or likely to impact on the future performance of the industry;
- comparative and trend analysis of industry specific data, relating to employment, exports, imports, innovation / R&D expenditure etc;
- identification of core themes and issues facing each of the industry sectors including a SWOT analysis for each industry sector;
- identifying areas of market failure and other reasons for intervention;
- identifying activities undertaken by the government to address areas of market failure and other reasons for intervention;
- evaluating if existing government activities have been able to address the market failures and to what extent; and

- identifying future opportunities and potential for government intervention.

### 4.3 Projects associated with planning for climate change and disaster management

Relevant projects undertaken by SGS include the examples below.

#### **Socioeconomic Assessment, Climate Change Impact on Coastal Areas (2006-09)**

SGS was commissioned by Clarence City Council (Tasmania) to prepare an assessment of the social and economic impacts of climate change on coastal areas with specific reference to sea level rise and storm/erosion effects. The study assessed the current perception of the community to risks, responsibilities and possible responses as the foundation for development of a communication strategy that would lead to development of community supported responses.

SGS provided advice to Clarence City Council on the impacts of risk (as identified by coastal hazard modelling by others) and proposed an action plan to manage those risks to acceptable levels over the period during which they are expected to develop. This included a combination of short-term coastal protection works, changes to the planning provisions for development in affected hazard areas with provisions specific for different hazards (erosion, inundation), and the preparation of a long-term strategy for areas expected to be severely affected by increasing coastal risks due to sea level rise before 2100.

SGS prepared and implemented a comprehensive communications strategy for the initial project and subsequent work. The publication of risk maps, with widespread publicity and amendments to the planning scheme attracted essentially no negative response and significant public praise (standing ovations when the results were presented to residents in the most affected communities at two public meetings).

**Lakes Entrance Inundation and Management Project (2010-11).** A comprehensive approach was urgently needed to manage future inundation caused by flooding and exacerbated by sea level rise at Lakes Entrance, Victoria. Recent planning controls imposed by the State Government were unpopular and left the community uncertain of the value of their properties or their rights as landowners. SGS was engaged soon after the imposition of these planning controls to design a project framework that would enable suitable management and adaptation solutions to be developed.

SGS reviewed data on the impact and response to previous flood events in the catchment, data on the hydrology and topography of the Lakes catchment and State policy around flood response and climate change. SGS then developed a detailed project framework for eight projects, with timelines to enable a June 2012 completion for the suite of works.

**Assessment of the Economic and Social Impact of a Proposed Wind Farm.** SGS undertook an assessment of the economic and social impact of a proposed Wind Farm at Silverton, 25km north west of Broken Hill. The economic impact examined the construction and operation of the Wind Farm via the use of a custom built Input – Output Model. Subject to approval processes the project was expected to be the largest wind farm in Australia.

**Werribee Plains Energy Research Study: Towards Zero Emissions.** SGS and Kinesis were engaged by the Australian Conservation Foundation (ACF), in conjunction with the Western Alliance for Greenhouse Action (WAGA), in August 2009 to undertake a research study into the greenhouse emissions and emission reduction solutions for the Werribee Plains Study Area, a region covering seven local government areas between Melbourne and Geelong.



The State Government had developed a vision to transform the Werribee Plains region into a global leader in water management and sustainable development.

Using available data and the International Local Government Greenhouse Gas Emissions Analysis Protocol framework the study estimated a set of greenhouse gas emissions for 2006 and projected them out to 2020. The study report outlined, for the first time, the scale and source of greenhouse gas emissions within the Werribee Plains (the Study Area) and established a holistic policy platform to address the Study Area's greenhouse gas emissions. The report also highlighted a range of possible solutions that could be implemented to reduce greenhouse gas emissions.

**Impacts of Coastal Population Fluctuations (2008).** SGS carried out a study into the impacts of coastal population fluctuations. The study included a desktop survey to identify the key impacts of population fluctuations in coastal areas, which can be broadly categorised as economic, environmental, physical and social infrastructure, housing and social fabric. The study also researched various methodologies to estimate the population at a given time, including water consumption and solid waste production rates. Interviews with relevant stakeholders were conducted in the two case study locations of Philip Island and Torquay, to determine the impacts in each location and to seek out data sources to measure the impacts.

**Review of Coastal Vulnerability Data (2011).** This project assessed maps and data provided by contractors of coastal inundation risk to determine if the results were sufficient to inform coastal climate change planning around Tasmania and to identify means of addressing any gaps. Information was mapped at different resolutions according to the available digital elevation models in different parts of the state. The project also looked at the suitability of proposals to assess and map erosion hazards around the state.

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