

ACARP C22029

Managing Cumulative Impacts in Mixed-Industry Regions

Western Downs (Surat Basin) Case Study Queensland

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1. Context

The Western Downs is located in south west Queensland about 200 kilometres west of Brisbane and 75 kilometres north-west of Toowoomba. It is connected to these centres by the Warrego Highway which runs east to west.

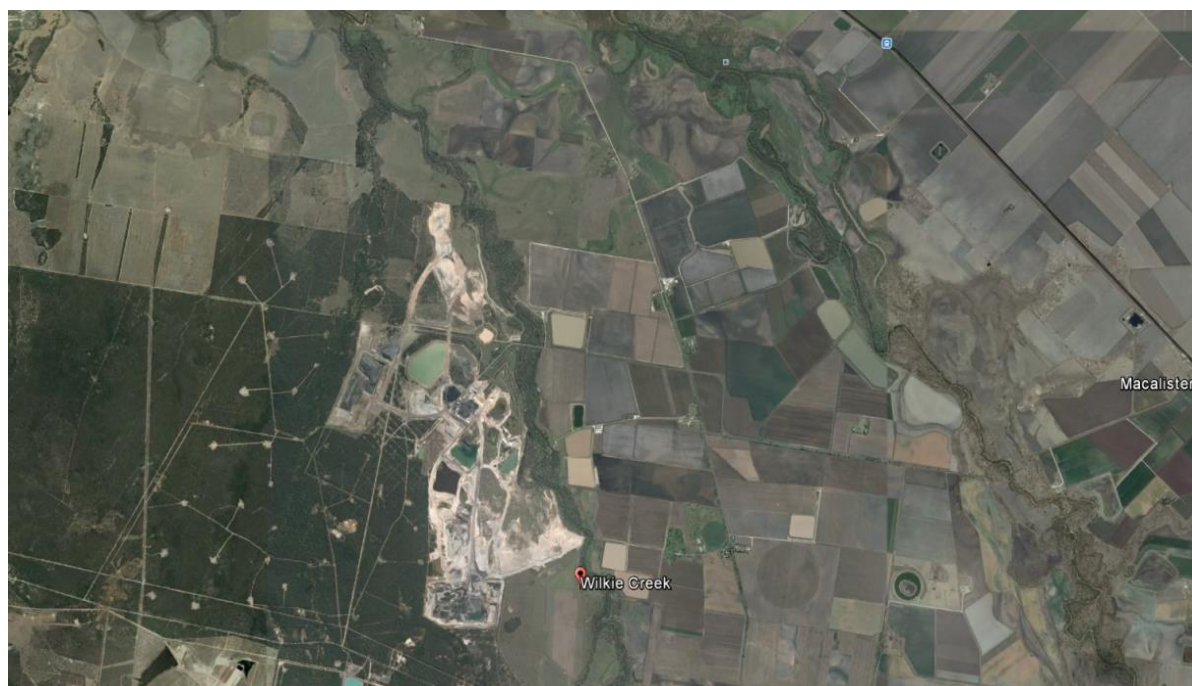
The region comprises six former local government areas, including Dalby Town Council, the Shires of Chinchilla, Tara, Murilla, and Wambo, and a division of the Shire of Taroom (Figure 1) (Western Downs Regional Council, 2012).

Western Downs is a multi-industry hub with continued growth in agriculture, manufacturing, construction and the resource sector (Advance Western Downs, 2013) (see Figure 2). The region's agricultural produce includes livestock, cereal crops, intensive animal industries and forestry activities (Western Downs Regional Council, 2012). Western Downs is also home to a significant proportion of the Surat Basin, which is a rich reserve of energy resources. The region's energy sector includes "coal, coal seam gas (CSG), coal seam gas water, ethanol and power station development" (Advance Western Downs, 2013, p.1).

Figure 1: Map of Western Downs Regional Council local government area



Figure 2: Aerial view of mixed land-uses in Western Downs region (including coal mine, cropping land, grazing land, CSG wells and railway)



Source: Google Earth, Imagery date 18/4/2013 27°05'54.50" S 151°00'48.68"E Eye Alt 18.86km

While Western Downs' good quality agricultural land has shaped much of the region's history and character, its vast reserves of coal and coal seam gas have recently seen the region gain the name the "Energy Capital of Queensland" (Advance Western Downs, 2013).

CSG is the prominent resource industry in Western Downs. There are three main CSG companies operating within Western Downs, including Queensland Gas Company (QGC), Origin Energy Limited, and Arrow Energy Limited. Currently, there is only one coal mine operating in the region (Cameby Downs Mine, Yancoal Australia). However there are a number of coal mine operations that either recently closed (Wilkie Creek Mine, Peabody Energy) or are in advanced stages of development, including the Wandoan Mine (Glencore/Xstrata), Elimatta Mine (New Hope Corporation), The Range Mine (Stanmore Coal), and Collingwood, Taroom and Woori Mines (Cockatoo Coal Limited). CS Energy's Kogan Creek Power Station also operates within the region.

The estimated Gross Regional Product (GRP) for Western Downs was \$2.8 billion in 2012/13. The mining industry (including coal mining and CSG) was the largest contributor to Western Downs' GRP (20.3%) followed by agriculture, forestry and fishing; construction; and electricity, gas, water & waste services (Table 1) (Advance Western Downs, 2013). Figure 3 provides a further breakdown of employment by industry within Western Downs and highlights the ten highest employing industries in the region.

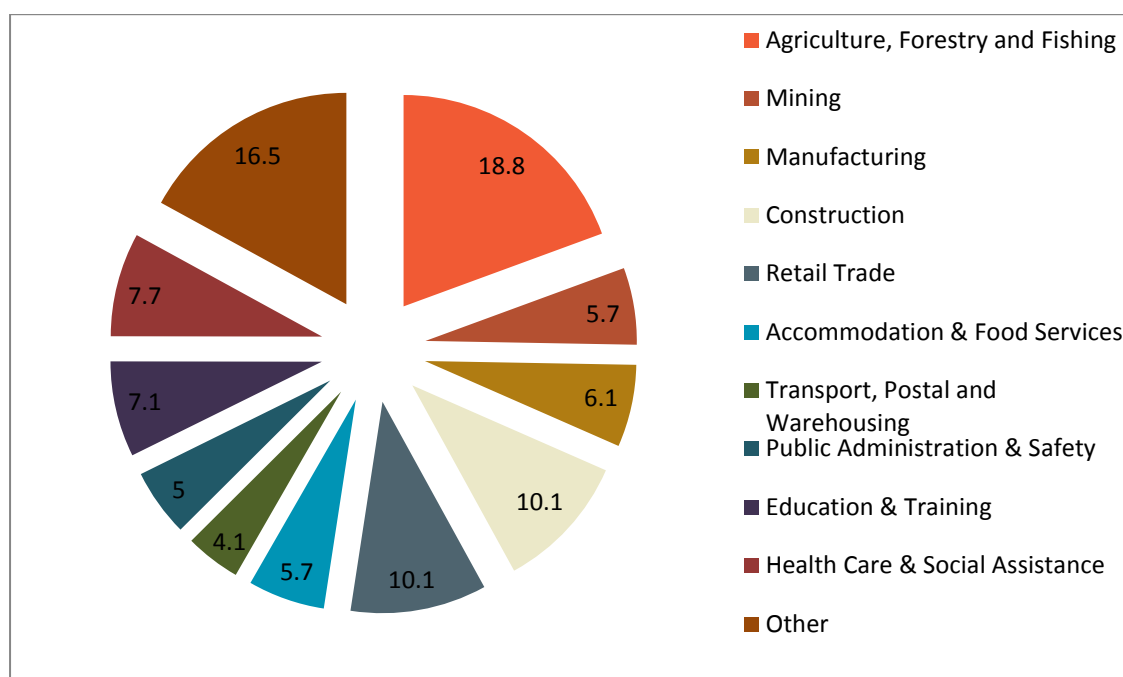
Table 1: Employment and GRP by industry

Industry	Employment numbers	Proportion of regional production
1.Mining	2733 (18.8%)	20.3% (\$567.2 mil)
2.Agriculture, forestry and fishing	828 (5.7%)	14.1% (\$393.0 mil)
3. Construction	1468 (10.1%)	11.2% (\$313.4 mil)
4. Electricity, Gas, Water & Waste Services	334 (2.3%)	5.7% (\$159.4 mil)

Source: Advance Western Downs, 2013; Australian Bureau of Statistics, 2011

According to the Regional Australia Institute (RAI), Western Downs has an economic diversification indicator of 0.43, whereas the average Australian region's economic diversification indicator is 1 (RAI, 2013). Hence, Western Downs is considered somewhat diverse, but less diverse than the Australian average.

Figure 3: Employment by industry



2. Methodology

This report presents a case study of the application of recent initiatives and measures intended to manage cumulative impacts of coal mining in multi-industry regions like the Surat Basin. It involved targeted interview with key identified stakeholders in the Western Downs Regional Council local government area to evaluate the effectiveness of these in the eyes of practitioners from different sectors.

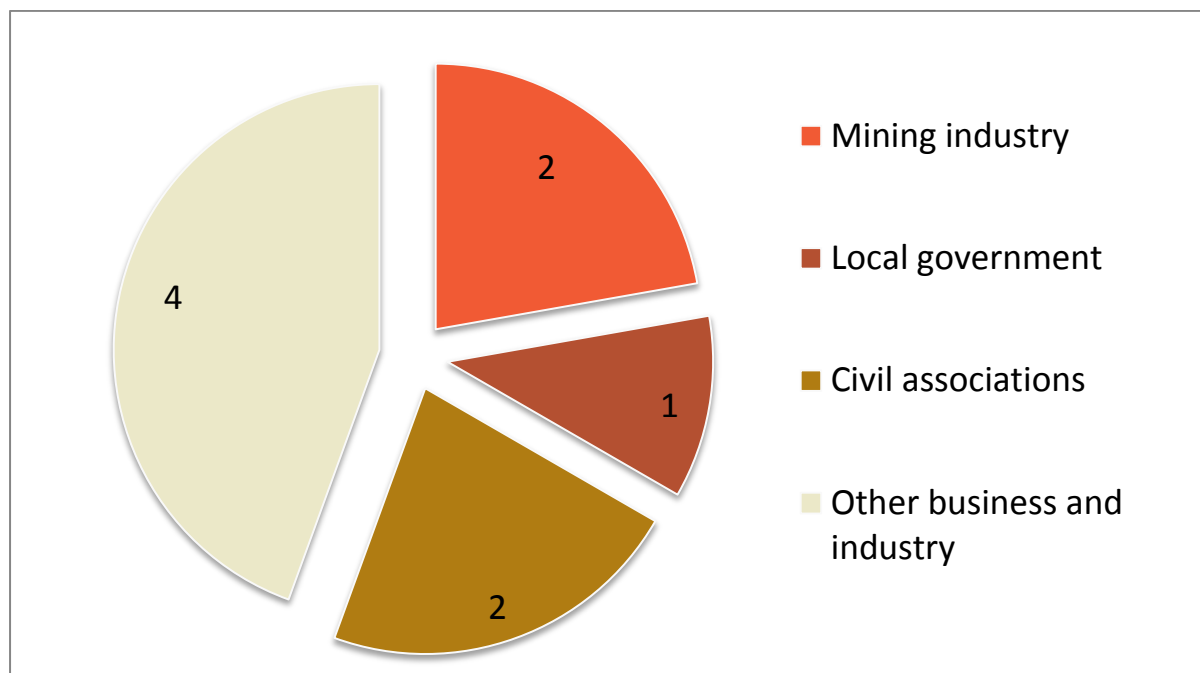
During late June 2014, two CSRM researchers conducted interviews with a range of stakeholders to better understand their experiences and perceptions in applying the policies and measures intended to manage cumulative impacts in practice. Interviewees were asked to discuss their experiences with the identified measures and the overall process of monitoring, assessing and managing cumulative impacts as well as the value or limitations of measures they were familiar with in terms of effectively managing cumulative impacts and industry interactions in mixed-industry regions. Individuals from four stakeholder groups were interviewed, including:

1. Mining industry (2)
2. Local Government (1)
3. Civil associations (2)
4. Other business and industry (4)

These stakeholders were identified through a review of publicly available literature, and through discussions with the ACARP industry monitors and interview participants. In the Surat Basin a total of eight one-on-one interviews and one focus group were undertaken (total 12 participants) (Figure 4). Interviews were undertaken either in person or via the

telephone. All interviews were confidential and followed The University of Queensland ethical guidelines.

Figure 4: Interviews by stakeholder group



A standard questionnaire was designed for this and two other case study regions, with specific questions relating to QLD and NSW as relevant. The questionnaire included a range of open-ended questions relating to their experiences with specific measures and the overall process for assessing, monitoring and managing cumulative impacts (see Appendix A).

This report represents an analysis of the Surat Basin case study interviews.

3. Main impacts with cumulative dimensions and related measures, policies or legislation

3.1 Environmental

3.1.1 Catchments and aquifers

Nearly all participants agreed that water (including surface and groundwater) is a valued asset to protect from cumulative impacts in this agriculturally productive region. Groundwater security was identified a priority in the region given the presence of competing agricultural, CSG and to a lesser degree coal mining activities. Water discharge or runoff from extractive industry activities into catchments and streams was also identified as a prominent issue in the Surat Basin. Further concern was raised about how the development of railway corridors in future and changes associated with this development may affect environmental flows of surface water systems and groundwater systems (Other business and industry 1).

Relevant cumulative impact measures

Given this identification of water as a high priority in Western Downs, respondents were most familiar with water related measures and legislation. The measures identified as most

effective in terms of assessing and managing cumulative impacts on water were those that provided trustworthy information on the changes that were happening, such as the Queensland Water Commission CSG Report (now OGIA). Participants deemed measures that provided ongoing monitoring and those that tried to look at impacts from multiple activities or impacts within a particular area as particularly useful (e.g. they referred to the Fitzroy Partnership for River Health that monitors river health, and the Discharge Conditions in Transitional Environmental Programs and Water Management Plans in a neighbouring region). However, as one environmental consultant participant noted, the Discharge Conditions measure and other measures like it, will only be effective in practice “if everyone complies with their license conditions”. Other factors that some participants thought were important in terms of managing cumulative impacts were those measures that tried to assign responsibilities to address impacts (e.g. Queensland Water Commission CSG Report (now OGIA)). While this is seen as a positive step towards managing cumulative impacts, one civil society participant noted that it can be extremely difficult to define who did what in terms of cumulative impacts and thus difficult to assign responsibilities for particular impacts.

A common issue identified by a number of participants is that while some measures may be a positive step in terms of assessing or managing the cumulative impacts of water, often the outcomes or recommendations are not legislated or binding and thus do not have to be taken into account. For example, some participants commented this was an issue with respect to the “Water Trigger” for Large Coal Mines and CSG, the Independent Expert Scientific Committee and the National Water Initiative.

In terms of government-led modelling, a couple of participants acknowledged that the state government (Qld) is currently conducting drilling to determine groundwater baselines in mining areas as part of a strategic regional assessment. All participants were supportive of this government-led activity, but felt more should be done in terms of ongoing monitoring.

3.1.2 Biodiversity

A number of participants, particularly participants associated with the agricultural sector, highlighted that biodiversity issues were relevant in the Surat Basin region. In this context, biodiversity impacts tend to relate to the spread of weeds and to a lesser degree animal health related issues. These issues are particularly important in the Surat Basin because it is a high value agricultural region, with significant cropping and grazing activities. Concerned participants noted that the resources industry (more CSG than coal mining) and its associated vehicular movement have had a big impact on the spread of weeds in this region, which in turn impacts on crop health. This issue peaks during construction stages as there is high land disturbance and frequent vehicle movement to and from mine construction sites.

Participants noted that in recent times some measures have been introduced to reduce the spread of weeds and that *“companies are starting to take things [their responsibilities] more seriously”* (Local Government 1). For example, companies have developed biodiversity contamination policies and contributed to the development of wash down facilities across the region to minimise contamination (Local Government 1). Despite this effort to reduce weed spread, little is being done to monitor and manage the existing issues or to restore the affected crops and vegetation to its original state (i.e. full productivity) (Civil associations 2).

Relevant cumulative impact measures

In terms of biodiversity, the two most relevant measures highlighted were the Environmental Protection and Biodiversity Conservation (EPBC) Act and Environmental Offsets. While the EPBC Act was recognised as an important and effective measure, multiple participants highlighted that it is only triggered for matters of national environmental significance (MNES) (e.g. the Water Trigger, and mine development impacts on habitats of koalas or endangered species). The Queensland Government's Environmental Offset measure was also highlighted as a key measure that aims to control cumulative environmental impacts in a region. The measure requires companies to deliver offsets (e.g. through financial payments, land-based offsets and/or actions through a Direct Benefit Management Plan) to counterbalance significant impacts on matters of national, state and local environmental significance (Queensland Government, 2014). While it was acknowledged that this measure was a step in the right direction, participants noted that it was only recently implemented so its effectiveness is not yet fully known.

3.1.3 Air quality (dust and airborne emissions)

Given that Surat Basin has relatively few and small operating coal mines at the moment, air quality (including dust and airborne emissions) was not considered a significant issue at the moment – *“it is at the back of the mind, not at the forefront”* (Local Government 1).

3.2 Community and Social

3.2.1 Transport

The state of transport infrastructure in the region was a major issue of concern. Most participants regarded the region's roads (particularly the Warrego Highway – Figure 5) as heavily populated and overused by resource sector trucks, and poorly managed and maintained by local and state government. The CSG sector was identified as the main contributor to this cumulative impact on roads however some participants felt the coal industry had contributed in some way. As one participant from the agricultural sector noted, “at the end of the day it [the coal industry] has the same outcome eventually” (Other business and industry 4). For instance the opportunities for agricultural producers to use rail freight for their produce have reduced (because of demand for more lucrative coal haulage – including from companies further east). This has forced increased use of trucks for transport of livestock and crops.

A representative of the business sector in the area noted that the state of roads and funding to fix them have always been contentious points (Other business and industry 1). There is confusion and disappointment about how funding is allocated and spent on road upgrades. As one interviewee stated “bureaucrats base funding on population which is unfair in our situation as we [are a small town, but] have many trucks traveling through here as it is a thoroughfare” (Other business and industry 2). Further, it is believed that resource companies have provided their required infrastructure funding to Council, but it is just ‘sitting with council’ as they don't have the staff and resources to organise the upgrade work. This highlighted that cumulative impacts management needs to use appropriate indicators of the functions of local assets and of industry activity and not rely simply on indicators like resident population.

Figure 5: Warrego Highway



Source: Department of Transport and Main Roads, Queensland Government

Relevant cumulative impact measures

See 3.3.3 Infrastructure

3.2.2 Housing

Housing supply and affordability was highlighted as a key impact across the Western Downs region. In 2004/2005 rents across the region escalated due to the increased resource activities and exploration. During this time the high demand for rental properties in regional towns from resource companies pushed up the prices of rentals and meant many locals (especially those with low, fixed incomes) could not afford to rent, which led to a rise in homelessness across the region (Civil associations 2).

In an attempt to alleviate the rental price pressures, the government conditioned companies to buy land in regional towns and to establish housing so employees could live in the towns (target of 25% residential workforce). In recent years, the pressure on rents has also eased due to the downturn in the resources industry (Mining industry 2). There has also been pressure on land and property values more generally. It was reported that Glencore/Xstrata originally bought a large amount of land in Wandoan, but since the project is now 'on hold' the company is leasing it back at commercial rates so many local people still can't afford to access it. One participant explained that many local residents have stopped making improvements to their land or renovations to their properties as they are under the impression that the resource companies will eventually buy it. On the other hand, another participant noted the resources sector boom has actually had a positive impact on the standard of housing in many regional towns. She observed that the industry has sparked a number of renovations and a lot of new construction in towns (Figure 6) (Other business and industry 1).

Relevant cumulative impact measures

The Western Downs Housing Trust was established as a trust body to provide affordable housing in the Western Downs region to minimise the pressures the resource boom had on the local housing market. The Trust is responsible for constructing housing to alleviate rental price pressures. Those individuals who were familiar with the trust felt that the body wasn't

particularly effective in terms of alleviating housing pressures in the region as the housing developments they constructed weren't really affordable for local communities and the process had taken too long.

Figure 6: Housing construction in Wandoan



3.2.3 Social Infrastructure

Most participants felt there had been both positive and negative impacts on the region's social infrastructure. One interviewee felt the resource boom had had a positive impact with many businesses doing well and the towns becoming more vibrant and diverse than before (Civil associations 2).

However, a local council representative said that the resource boom has put a number of social services and infrastructure under pressure across the region. He added that the provision of some social utilities and infrastructure "need to be accelerated and brought forward" but questioned council's resources to do so – "where do you go to get the funding to pay for services if not one is interested in delivering the service" (Local government 1).

3.2.4 Noise, vibration, visual amenity

Noise, vibration and visual amenity were not considered significant impacts in Western Downs region at the moment given that there are relatively few operating coal mines in the region. Some visual amenity matters raised related to coal stockpiles (Figure 7) and the prevalence of high visibility vests and resource company vehicles in towns. While some companies have a company standard that prevents workers from wearing protective clothing (e.g. high visibility gear) in town centres (particularly in towns where tourism is prominent), some participants still noted their presence around town centres.

Relevant cumulative impact measures

As previously mentioned there is only one operating coal mine in the Surat Basin region and dust and noise were not deemed to be material issues in the area. Consequently the majority of the participants were not familiar with the identified measures to manage cumulative impacts on air quality and noise. They reported no measures to manage the character of towns or visual amenity as new industries brought change.

Figure 7: Coal stockpile along the Warrego Highway



3.3 Economic and Administrative

3.3.1 Land uses (incl. zoning), key resource areas/critical industry clusters

As previously mentioned, Western Downs (Surat Basin) is an agriculturally productive region. A number of participants reported that there has been increased land competition between agriculture and the resources sector in recent years. A representative from an agricultural organisation highlighted that their members “want to ensure that high value land (e.g. cropping and grazing lands) are not overtaken or lost to coal extractive projects”. The representative added that some resource related infrastructure (e.g. railways, roads etc.) could potentially serve other industries but have not always had that advantage and the infrastructure itself also poses threats such as fragmenting relevant cropping and grazing lands (Other business and industry 4).

Figure 8: Anti-coal sign on grain silos



Relevant cumulative impact measures

There are a number of measures that aim to deal with the pressures of competing land uses (e.g. the Key Resource Areas, Settlement Buffer Zones, Overlapping Tenure Arrangements and Strategic Cropping Land). Many participants agreed that these measures were positive in terms of protecting specific land uses (e.g. Key Resource Areas for extractive resource development, Settlement Buffer Zones for residential towns, and SCL Legislation for prime agricultural land) however the majority of participants felt they did not really assist in assessing and managing cumulative impacts of multiple land uses in one area. It was too early to gain a sense of whether the subsequent incarnation of these separate initiatives, in the Regional Planning Interests Act (2014) that identifies and seeks to protect areas of Queensland that are of regional interest, would manage the impact and support the coexistence of resource activities and other regulated activities in multi-industry regions more effectively.

People were less aware of cross-government measures like the Standing Council on Energy and Resources Multiple Land Use Framework (MLUF) intended by State, Territory and Australian Government Ministers responsible for resources and energy portfolios to provide effective management of competing interests of mining, energy, agriculture, environment, community and other land uses (SCER 2013). Its framework of desired outcomes, principles and considerations is perhaps a bit abstract – and without any linked incentives or penalties it seemed to lack ‘teeth’.

Many participants were, however, hopeful that Queensland's newly released statutory Darling Downs Regional Plan will be a positive and effective framework that takes into account the multiple industries in the region and effectively assesses impacts. Nevertheless, some participants remained sceptical of the planning approach and of the capacity of some government departments to assess or manage impacts.

3.3.2 Local labour force

Nearly all participants agreed that the resource “boom” had a big impact on the local labour market. Over recent years, the Western Downs region has had an unemployment rate which is well below the Queensland rate and most participants attributed this positive impact to the resource sector (predominantly CSG). As one participant highlighted, during the early construction phase of that industry there were opportunities for people *“to go up the [corporate] ladder quickly”* and enthusiastic recruitment meant employees were offered very high wages– *“people were being picked up and offered double [salaries] to get the local buzz going”* (Local government 1).

Despite this positive impact on regional unemployment level, the massive demand for resource sector employees and their associated high salaries created issues for other local industries. As one Business sector participant said, *“it was difficult for other industries to get employees and retain them... [And] hard to get people to work in basic services roles (e.g. shops) as they want to chase the bigger dollars”* (Other business and industry 1). They added that the salaries in the basic service jobs were so low and the rents in the area so high that people couldn't afford to work in the basic service industry even if they wanted to (Other business and industry 1).

Figure 9: The main street in Wandoan



With hardhats and akubras equally representing the workforce composition (Figure 9), another interviewee highlighted that the resource sector has changed agriculture's structure of employment. Prior to the resources sector agriculture predominantly had a permanent labour force, but now farmers rely on backpackers for short-term work and utilise expensive machinery in busier times. The participant added that while this trend had begun prior to mining, it had certainly accelerated because of the resources sector (Civil associations 2).

Although these observations mainly reflect CSG industry impacts, similar observations have been made in the predominantly coal-mining Bowen Basin (particularly during the boom) so, in this respect, impacts of the two industries may be similar and are likely to compound when there is synchronous development.

3.3.3 Infrastructure

Like roads, sewerage was highlighted as a key impact across the Surat Basin. Many participants said that current sewerage facilities are being overused and due for an upgrade. Further, one participant said that resource industry camps around the region don't have the proper facilities to deal with the on-site waste so they are pumping raw waste into adjoining properties, which is creating other issues (Civil Association). One participant said that there

is a council plan that is part funded by resource companies, to upgrade the region's sewerage facilities.

Relevant cumulative impact measures

Many participants viewed positively measures that provided the resources to improve local infrastructure that had been degraded by pressures from the resources sector. The most recognised measures relating to infrastructure included the Proponent Service Delivery Charter, the Regional and Resources Towns Action Plan Infrastructure Program and the Royalties for Regions Program. Most participants agreed that these tools had good intentions. A local council participant highlighted that the Royalties for Regions Program has been hugely beneficial for the local council as it allowed them to *“access funds that wouldn't have been accessed previously...and enabled used us to do activities that otherwise we wouldn't have been able to do”* (e.g. waste management upgrade projects) (Local government 1).

4. General themes in Western Downs region

4.1 Environmental Impact Statement (EIS) and Social Impact Assessment (SIA) processes crucial in cumulative impacts assessments

EISs and SIAs are crucial processes when assessing and managing cumulative impacts as most cumulative impact forecasts/predictions are made and management strategies proposed during these activities. Interview participants from coal mining companies indicated that consultants are usually employed to lead these processes, while companies provide data and high-level management.

The CSRM researchers discussed the EIS and SIA processes in terms of cumulative impacts with three environmental consultants. From the discussions, it was determined that cumulative impact forecasts and assessment are made during the EIS/SIA stage mainly use publicly available data. These assessments are also largely qualitative and broad as the technical data (e.g. about dust, noise, air quality etc.) required to make more accurate and quantitative assessments is not in the public domain (Mining industry 1). The consultants added that technical data from other mines are usually considered commercially sensitive and not released publicly. Further, while the government EIS process requires the initial submitted EIS to be made public, subsequent EISs submitted (which usually contain more accurate and 'finely-tuned' data) need not. Thus companies do not have access to other operators' technical data or projections to model their own cumulative impacts for a region, which makes accurate quantitative cumulative impact assessments difficult (Mining industry 1). This lack of comprehensive data is a major problem in current cumulative impact assessments. However, some companies have recently commenced data sharing agreements with other companies (e.g. a coal company has signed a water data sharing agreement with a CSG company) to help minimise this problem.

In this respect the proposal for strategic assessments in some resource regions has some merit. Strategic assessments are a landscape scale assessment and unlike project-by-project assessments, which look at individual activities (such as a single mine), they can consider a much broader set of actions (e.g. a series of new proposals or developments) over a much larger scale and timeframe. The relevant State Government usually takes the

lead role with Federal involvement too. The prominent example in Queensland is the Great Barrier Reef Strategic Assessment. Interviewees welcomed the notion of government leadership in such assessments as the most feasible way to achieve comprehensive assessments, but few at the local level were familiar with such approaches.

4.2 Government approach to managing cumulative impacts is fragmented

All participants agreed that there was a leading role for State Government in monitoring and managing cumulative impacts. A number of participants from all stakeholder groups felt that while the current government regulation expresses good intentions to manage cumulative impacts (e.g. protecting environmental resources, rights of people and groundwater resources), in practice the legislation is implemented and managed poorly. As one company representative highlighted, the government has a ‘scatter gun’ approach to assessing and managing cumulative impacts. Further he added that impacts are often managed on a project-by-project basis and not across the board as there is, *“no overarching body that looks at impacts individually and pulls it [them] all together”* (Mining industry 2). An environmental consultant echoed this view, *“At the moment each mine has an idea of their impact and this gets reported to government – all the information is currently with government to collate, analyse and model cumulative impacts, but no one is doing it.”* Overwhelmingly participants felt that this process should be the government’s responsibility.

The majority of participants felt that changes to managing cumulative impacts (e.g. moving from site-based to multi-sector or system-focused approaches) would only occur if government regulation is stricter and the government takes the lead in collecting, assessing, modelling, monitoring and managing cumulative impact data. Participants also felt that it is the government’s responsibility to regulate particular cumulative impact measures and to condition coal mining projects through the approvals process. However there was also an argument that this leadership from government could be supportive rather than in the form of tighter controls and more red tape. It related to the value of information-sharing, coordination and defining clear, evidence-based limits. From a company perspective, there was greater sympathy towards the idea that this process should be more outcomes based and not involve more regulations. Specifically, companies felt that they should be given the opportunity to deliver and achieve outcomes and be made accountable by government if they do not. While there is a sense that this is the approach government is shifting towards, non-mining participants remain sceptical that companies and government will be able to adequately monitor and regulate this process.

While the majority of participants focused on state government’s responsibilities, a number of participants also agreed that local government, as a body with close appreciation of the local receiving environment, should be resourced to play a more active role in monitoring and managing cumulative impacts in future (see section 4.5 below).

4.3 Companies and industries tend to work independently when addressing cumulative impacts

From the participants we interviewed it became apparent that companies tend to work independently when addressing cumulative impacts and if coordination occurs between companies or industries, it is usually informal and ad hoc. As one Environmental Consultant explained,

“While there are certainly exceptions, generally companies operate in isolation and in some cases where there is cross-over (e.g. accommodation options) it can be competitive rather than cooperative. However where cooperation generates a commercial and mutual benefit, companies will share things (for example infrastructure)” (Mining industry 2)

One company representative explained that when companies do coordinate together, conversations can be initiated either by the service providers, the companies themselves or in some cases the Department of Natural Resources and Mines or the Co-Ordinator Generals Office (Mining industry 1).

4.4 Regulation of cumulative impacts is vital

Overwhelmingly, participants in the Surat Basin indicated that government requirements are the main drivers for companies to assess and manage cumulative impacts. Therefore as one participant from the business sector suggested, the only way to improve cumulative impact outcomes is to have good legislation *“as compliance is important to the companies”* (Other business and industry 2). Another participant added:

“That’s the only way you are going to be able to deal with them [cumulative impacts] because all industry is commercially driven [and] they’re only going to take responsibilities for their own impacts...government has to take a role in conditioning the project when they go through approvals in order to manage those [cumulative] impacts.” (Mining industry 1)

There was little discussion about what this ‘conditioning’ or regulation may look like in reality, but one participant suggested that regulation should be non-negotiable and should include set thresholds or minimum performance standards (Other business and industry 4).

4.5 Local government should play a bigger role in the planning and approvals process and managing cumulative impacts

The Western Downs Regional Council, like other local councils, does not have a role in the approvals process and believes it should play a more active role during this process – *“we have been pushing for a greater role in the approval process”* (Local government 1). A council representative explained that at present they have the same level of input and authority as any community member – they can provide a submission during the public consultation process. To do this, the council has a Major Development and Economic Strategy Unit that helps coordinate the council’s voice in the approvals process. The unit also provides information to councillors and residents in the region (Local government 1).

A number of participants felt that local government should play a greater role in monitoring and managing cumulative impacts across the region. Currently, state government has primary responsibility for monitoring cumulative impacts, but as highlighted earlier, a number of participants feel that they are not performing well in terms of management and monitoring. In fact, some mentioned potential conflicts of interest since the Coordinator General (CG) (within the Department of State Development, Infrastructure and Planning) is responsible for promoting and facilitating development and also for assessing development applications and environmental impact statements – especially where the CG declares a project ‘significant’ and other regulatory agencies are effectively excluded from the assessment process. Local government is marginalised in these processes too. Multiple participants felt that local government should be given greater responsibilities in managing local cumulative impacts to

help fill these gaps. Specifically, one interviewee said that more case management responsibilities should be handed over to local government (Other business and industry 2).

5. Summary: Assessing and managing cumulative impacts in the Western Downs region

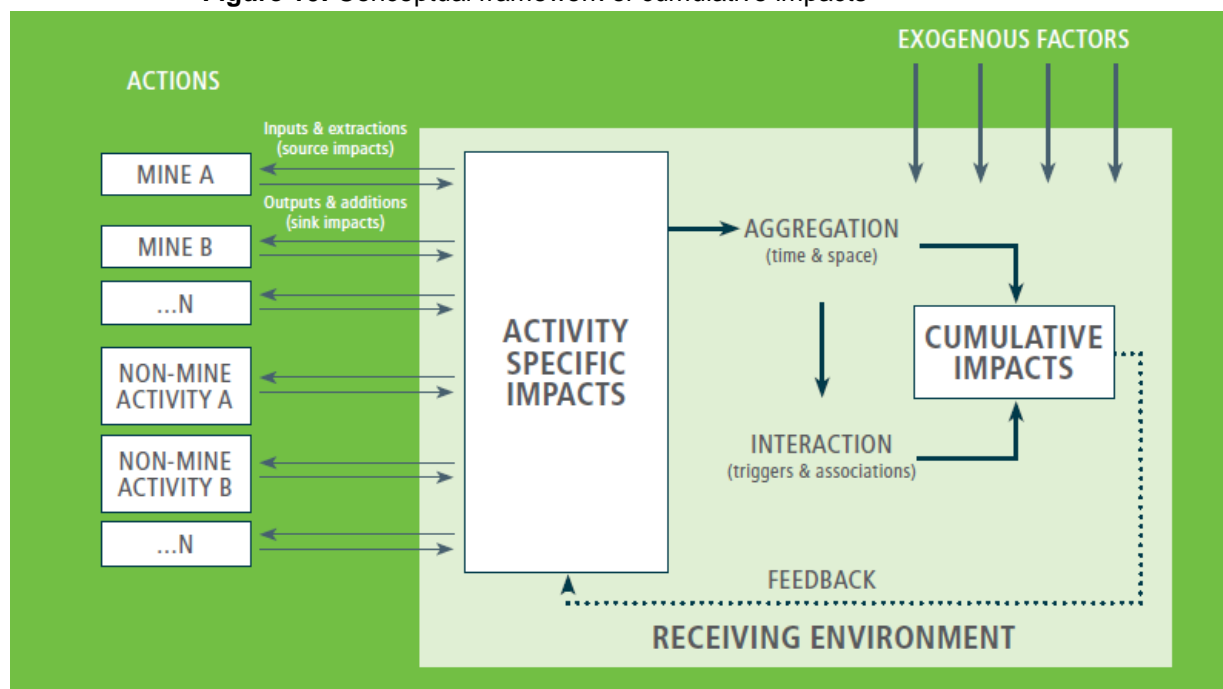
5.1 Understanding of cumulative impacts and target levels of measures

Within Western Downs there tends to be quite a simplistic understanding of cumulative impacts. Generally, cumulative impacts were interpreted as essentially a *lot* of impacts resulting from multiple companies and industries operating in a region (*spatial*) over a period of time (*temporal*). There was limited understanding of how impacts may potentially interact (*linked*) and thus trigger another impact or create multiple contrary or reinforcing effects in a given region.

Further, while most participants acknowledged the differences between the coal and CSG industries, often when speaking about cumulative impacts participants would talk about the two industries as one (e.g. the resource industry) or would refer to their experience with CSG rather than coal (CSG being the dominant industry in the Surat Basin). Given that there is only one operating coal mine in the region at the moment participants' understanding of the cumulative impacts specifically relating to coal mining was relatively limited.

In terms of understanding cumulative impacts in relation to the *conceptual framework of the cumulative impacts of mining* (Figure 10), interpretations were slightly varied in Western Downs.

Figure 10: Conceptual framework of cumulative impacts



Source: Franks, D. M., Brereton, D., Moran, C. J., Sarker, T., & Cohen, T. (2010). *Cumulative impacts - A good practice guide for the Australian coal mining industry*. Brisbane Centre for Social Responsibility in Mining & Centre for Water in the Minerals Industry, SMI, The University of Queensland, ACARP

Companies tend to focus their efforts on mine activities. Specifically companies' adopted measures that focus on assessing and managing sink impacts (e.g. noise, dust, air quality etc.) and source impacts (e.g. ground water, housing pressures and infrastructure) at the individual mine-site or close environs. In other words, companies tend to assess, monitor, plan and implement ways to avoid, minimise, or compensate for the ill-effects of their environmental and social outputs and inputs separately at each site and do not collaborate with other companies or industries to determine their cumulative impacts. As well, with respect to some impacts, companies invest most into estimating impacts, setting goals or standards and suggesting mitigation strategies during the planning stages through mandatory site-based EIS, SIA and subsequent impact management plans or activities (including previously the now redundant SIMP). Further, it is understood that the implementation of the set goals and standards, and monitoring of impacts are also primarily focused at the site level rather than at the regional or whole system level. This focus is largely driven by the way government sets conditions and standards in relation to individual operations. Yet, on the other hand, efforts by governments to manage and assess cumulative impacts themselves tend to look beyond the mine-site level focus. Specific examples of measures that did this include, the "Water trigger" for CSG and Large Scale Coal Mines, the Great Barrier Reef Strategic Assessment and the Queensland Environmental Offset Policy. These measures acknowledge the importance of recognising cumulative impacts and most incorporated this concept into their assessment of different impacts. In terms of the cumulative impacts conceptual framework, the measures focused on assessing the aggregation of multiple impacts from different mining activities in a particular area or region (*spatial*) over time (*temporal*).

5.2 Cumulative impact measures in relation to the adaptive management cycle

The adaptive management cycle endorsed during interviews involves four stages: plan, do, check and revise. Cumulative impacts measures across the Western Downs region and Queensland more broadly are varied in relation to this cycle and fit with different stages of it, which will be discussed below.

The 'plan' stage involves establishing a baseline and setting specific goals, objectives and standards to meet across the project life. In Western Downs, many measures are focused on the planning stage. They involve either companies or the government identifying priority impacts as the basis for developing specific management strategies (Do) and actions to assess (Monitor) and manage them (Revise) down the line. Some specific examples of 'planning' measures relevant to Western Downs include, company developed ESIA's, the Statutory Darling Downs Regional Plan, Standing Council on Energy and Resources Multiple Land Use Framework. During this stage a lack of information was often highlighted as a key obstacle in assessing potential cumulative impacts and developing future strategies to manage them. For example, as discussed earlier, companies highlighted that technical data is often sensitive and not publicly available so it is difficult for them to develop accurate quantitative assessments of cumulative impacts in the region where they propose to operate.

The 'do' stage of the adaptive management cycle involves implementing actions, strategies and measures aimed at achieving the goals identified in the plans. The scope and focus of the systems, guidelines and tools are adopted and applied by Darling Downs operators to aid their environmental and social environmental management varies. The initiatives range in scale from site-based to extractive industry (coal and CSG) focused. In terms of scope,

impacts tend to be issue-specific rather than designed in ways that recognise connections and interactions between impacts on different environmental or community assets in environmental and social systems. While there are a number of cumulative impact measures that focus beyond the site-level (e.g. Water Commission CSG Report, “Water Trigger” for Large Coal Mines, Discharge Conditions, Queensland Environmental Offsets Policy etc.), and some that are multi-issue (e.g. Statutory Regional Planning) the perceived effectiveness of some measures was limited, particularly where the measures:

- are not legislated and companies are not required to implement recommendations/outcomes from particular reports or particular bodies (e.g. Water Commission CSG Report)
- are focused on the CSG industry rather than coal (e.g. Water Commission CSG Report)
- are relatively new or not implemented yet therefore participants were not familiar with them and their effectiveness in terms of measuring cumulative impacts (e.g. Statutory Regional Planning and the related Regional Planning Interests Bill).

Overall participants generally viewed the discussed measures and general direction of recent changes positively, in terms of effectively assessing/managing cumulative impacts if the measures:

- increased available information and made communities more aware of the changes and impacts from particular activities or industries
- looked at impacts and changes collectively and across projects or industries
- got different parties and stakeholders together to acknowledge and speak about a common problem or impact
- fairly assigned responsibilities for addressing experienced impacts
- were mandated or legislated
- were accompanied by clear guidelines.

However it appeared that many of the measures being used do not address synergistic impacts, they use incomplete or otherwise inadequate baseline data, they do not identify critical thresholds and they lack a holistic perspective (in both scale of impacts and scope of them).

Mines and various authorities also engage in assessment and measurement of the inputs and outputs of operations in the Western Downs. For instance they monitor water discharges to ensure compliance with their operating conditions.

Finally some mines are responding to the performance measures with adjusted action strategies for example following specific procedures once a breach occurs or a threshold is passed. However there were no examples of far-reaching revisions and adjustments to systems on the basis of monitoring results.

5.3 Level of collaboration and partnerships

Most companies and industries in the region still tend to work independently when addressing cumulative impacts and if coordination between companies or industries occurs it is usually informal and ad hoc. The standards of most relevance are industry-specific and quite different practices and monitoring arrangements are adopted in various industries so

there is not even a basis for information sharing in any format that could be meaningful and mutually beneficially in terms of understanding and managing impacts.

6. References and useful resources

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<http://www.wdrc.qld.gov.au/c/document_library/get_file?uuid=8166b022-8d0b-4fb0-a1a9-ec2692612b4f&groupId=12392>

7. Appendix A – Questionnaire

Open ended questions – verbal answers

Introduction

Our questions will explore your experience and assessment of recent legislation, policy and practice changes intended to manage the cumulative effects of coal mining – especially in multi-industry regions. We're interested in processes for both *assessing* and *managing* cumulative impacts, whether regulatory or voluntary ones. Although we will not follow a set list of questions, some matters we might discuss are listed below.

Indicative questions

1. **Brief description of your organisation and its role in assessing and/ or managing cumulative impacts?**
2. **Description of the key 'assets' of your community/ region? Its essential characteristics?**
3. **The main industries and the main positive and negative impacts of each on the community/ region?**
4. **What are the priority cumulative impacts for you to manage?**
5. **What are the main drivers for you to take action about these?**
6. **What are the main changes you've noticed lately with respect to cumulative impacts?**
7. **It seems that many requirements for cumulative impacts assessment and management relate to the project EIA and SIA and so take a project-centred approach. What are the pros and cons of a project-centred approach?**
8. **Please tell us about your experiences with any of the recently introduced/ reformed processes and what you regard as the pluses and minuses of them in terms of how feasible they are for companies and other stakeholders to rely on?**
9. **What about their advantages and disadvantages (ie criticisms etc) as far as effectiveness in dealing with the sort of cumulative impacts you need to tackle?**
 - a. **In what ways can you implement these measures to consider the combined stresses on a system and any thresholds and system limits**
10. **Tell us about both unilateral and collaborative initiatives you've been involved in or observed related to managing CIs? (How successful were they?)**
11. **When you're undertaking assessment of cumulative impacts what are your preferred tools and approaches? What about for managing them? – what has worked best for you?**
12. **How would you compare the current requirements and commonly used practices with others you're familiar with?**
13. **What sorts of stakeholder consultation are built into these processes and what's your opinion of how adequate/ useful that is likely to be?**
14. **What sorts of relationships are involved (e.g. with Federal, State, and Local Government, between companies, between industries, with landholders, communities etc) in implementing processes for assessing and managing cumulative impacts?**

Written Questions

- Please detail the main local industries and the scale of them (e.g. lifespan, employment, proportion of regional GDP)

Industry	How long can it produce (lifespan)	Employment numbers	Proportion of regional production
1.			
2.			
3.			
4.			
5.			

- Which of the following components of the socio-environmental system does your operation impact upon? (*Tick all that apply*)

a. Catchment	h. Land uses (incl. zoning)
b. Aquifer	i. Noise
c. Local labour force	j. Airblast pressure
d. Air quality (dust and airborne emissions)	k. Ground vibration
e. Housing	l. Subsidence
f. Social Infrastructure	m. Key resource areas/ critical industries
g. Biodiversity	n. Other (please specify)_____
- Read through the statements below and indicate the extent to which you agree or disagree with them by ticking the boxes on a scale of 1 (Strongly disagree) to 5 (strongly agree).

	Statement	1 Strongly disagree	2	3	4	5 Strongly Agree
1.	Cumulative impacts on infrastructure (e.g. roads, sewage, water supply) are well managed in this LGA					
2.	The various industries in this region complement each other in terms of the resources they need					
3.	The state government has sound regulations and policies to ensure resource companies do the right thing and are held to account					
4.	There is cooperation among industries in the area to address the cumulative impacts of human activities on the environment					
5.	Local industries and operations work to address social impacts beyond their geographic boundaries					
6.	Externally reportable social impact assessments and management plans should be in place for all mining and resource extraction projects					
7.	We have good measures and monitoring of cumulative impacts					

	in this region/ local government area					
8.	A case management approach to development applications (as adopted by DSDIP in Qld) works well.					
9.	It is best to expect proponents to mitigate only impacts that are directly related to their project and Cumulative Impact where the proportion of the impact can be readily and reasonably forecast and/or separated from the total Cumulative Impact					
10.	We need more input from local communities, landholders and scientific experts into assessment of exploration & mining proposals					

4. Each of the measures in the table below was introduced or modified as a way to handle cumulative impacts – especially in multi-industry contexts. Please note that the rows are colour coded with NSW-specific measures shaded grey; QLD initiatives white and Federal ones peach coloured. You may only be able to answer about your own state. For each:

- Tick in **column A** if it deals with issue/s of relevance to your operation or your locality.
 - Tick in **column B** for any of the measures you have experience with.
- (For these two columns please tick all that apply)

In **column C** and **column D** please provide your assessment of the Effectiveness (C) and Feasibility (D) of each measure using the following rating scale:

- 0 I have no sense of whether this could be effective/ feasible or not
- 1 Not at all effective/ feasible for assessing and managing cumulative impacts
- 2 Effective/ Feasible to some degree, or under some circumstances
- 3 Effective/ Feasible to a considerable degree, or a good part of time
- 4 Very effective/ feasible way of assessing/ managing cumulative impacts

	A. This deals with a material issue for this region	B. I have experience working with this	C. Effectiveness for assessing or managing Cumulative impacts	D. Feasibility for us to implement
To assess/ manage cumulative impacts on water (underground aquifers and/ or catchments)				
Aquifer interference Policy (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Guideline on the management of stream and aquifer systems in the Hunter Valley (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Amended SEPP (mining) standards for water pollution (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Water sharing plan for Hunter unregulated and alluvial waters (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
State Water Management Outcomes Plan	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Hunter River Salinity Trading Scheme	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4

Fitzroy Partnership for River Health (Qld)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Discharge conditions; Transitional Environmental Programs and water management plans (last amended 2012, Q)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
'Make Good' provisions (Qld)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
<i>Qld Water Commission CSG Report?</i>	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
			0 1 2 3 4	0 1 2 3 4
"Water trigger" for large coal mines & CSG	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Independent expert scientific committee	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
National Water initiative (Federal)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
To assess/ manage cumulative impacts on land use				
Strategic Regional Land Use Plans (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Just Terms Compensation (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Agricultural Impact Statement (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Strategic Cropping Land Legislation (Qld)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Land acquisition and access clarification (Qld)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
To assess/ manage cumulative impacts on social infrastructure				
Regional Community Funds (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Proponent service delivery charter (Qld)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Regional & Resource Towns Action Plan Infrastructure Program (LAIP)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
To assess/ manage cumulative impacts on air quality and noise				
Upper Hunter Air Particles Action Plan (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Amended SEPP (mining) standards for air quality, and noise	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
NSW Health Development Assessment Guideline on dust emission thresholds	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Upper Hunter Air Quality Monitoring Network	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Moranbah Cumulative Impacts Group (Q)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Clean and Healthy Air for Gladstone (Q)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
To manage cumulative impacts on multiple components				
Land and Water Commissioner (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Critical Industry Clusters (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Integrated rehabilitation plans (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Gateway Process (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Cost-benefit analysis (optional) (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Strategic Assessment of a biodiversity plan for coal mining in the Upper Hunter	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Upper Hunter Mining Dialogue (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Hunter Regional Plan (NSW)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4

Hunter Region 20 year infrastructure plan	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Statutory Regional Planning (Qld) including Guideline on Mining & Extractive Resources	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Royalties for the Regions Program (Qld)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Key Resource Areas (Qld)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Settlement buffer zones (Priority Living Areas) (Qld)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Overlapping Tenures arrangements (Qld)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Resources cabinet committee	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
EPBC – biodiversity protection, – world & national heritage protection, – threatened species protection (Federal)	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4

Supplementary Questions – Case study specific (Surat)

Each of the measures in the table below was introduced or modified as a way to handle some cumulative impacts – especially in Surat Basin. We'd like to know if we've missed any and your experience of each:

- Tick in **column A** if it deals with issue/s of relevance to your operation or your locality.
 - Tick in **column B** for any of the measures you have experience with.
- (For these two columns please tick all that apply)*

In **column C** and **column D** please provide your assessment of the Effectiveness (C) and Feasibility (D) of each measure using the following rating scale:

- 0 I have no sense of whether this could be effective/ feasible or not
- 1 Not at all effective/ feasible for assessing and managing cumulative impacts
- 2 Effective/ Feasible to some degree, or under some circumstances
- 3 Effective/ Feasible to a considerable degree, or a good part of time
- 4 Very effective/ feasible way of assessing/ managing cumulative impacts

	A. This deals with a material issue for this region	B. I have experience working with this	C. Effectiveness for assessing or managing Cumulative impacts	D. Feasibility for us to implement
<i>To assess/ manage cumulative impacts in the Surat Basin</i>				
Sustainable Resource Communities Policy	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Surat Basin Cumulative Impacts Working Group	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Surat Basin Future Directions Statement	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Cumulative Growth Management Framework	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
OESR Cumulative Population Projects	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Western Downs Housing Trust	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
Gasfields Commission	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4
	<input type="checkbox"/>	<input type="checkbox"/>	0 1 2 3 4	0 1 2 3 4