

Our Place, or Mine?

**Sense of Place, Social Impact Assessment
and Coal Mining in Gloucester, NSW.**

by

Warrick Jordan BA.

(University of Tasmania)

A thesis submitted in partial fulfilment of the requirements for an
Honours Degree at the School of Geography and Environmental
Studies, University of Tasmania (October 2010).

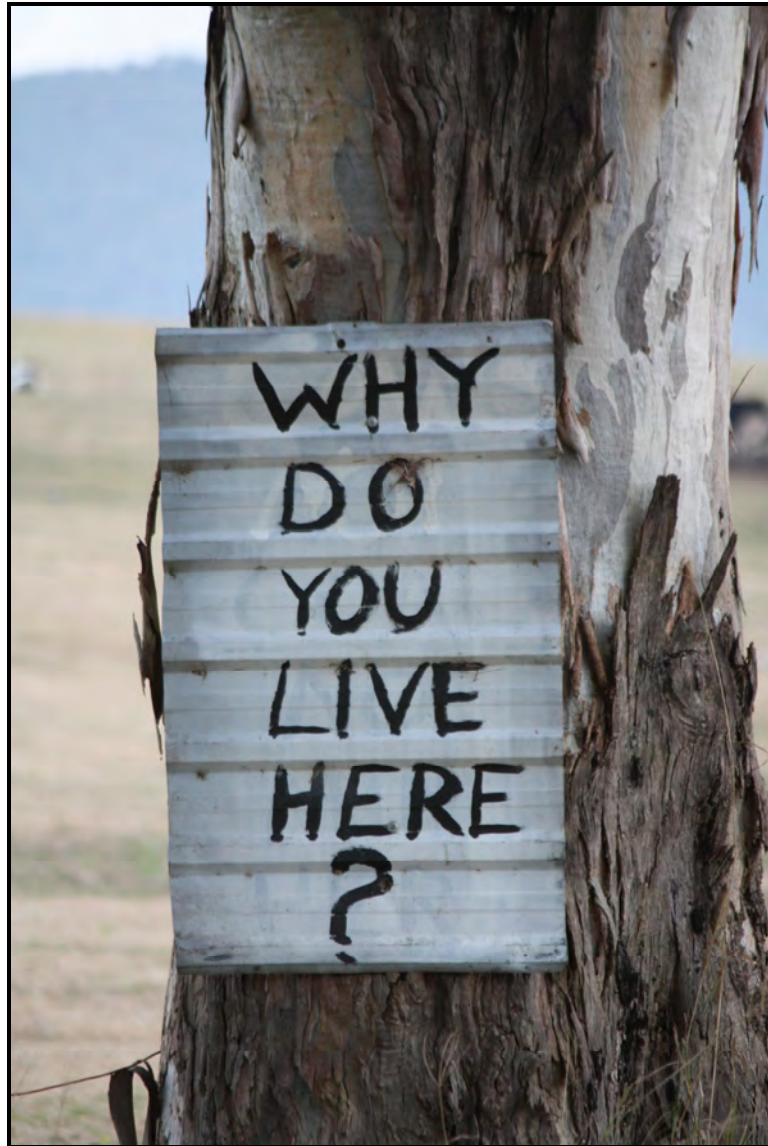


Figure 0.1: Anti-mining signage on a cattle farm subject to a coal exploration lease, Gloucester, New South Wales

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any tertiary institution, and to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

Signed

Warrick Jordan

Date

This thesis is an uncorrected text as submitted for examination.

Abstract

This study examines the impact of coal mining and coal seam methane (CSM) extraction on the 'sense of place' of the people of the Gloucester Shire, New South Wales. The findings derived from Gloucester inform an analysis of the potential for recognising loss of 'place' as a social impact within social impact assessment (SIA). This potential was considered within the geographic context of the Hunter Valley, Gunnedah Basin, and Gloucester Valley, which constitute contiguous and related regions subject to coal development. Previous research in similar contexts indicated that a felt loss of place was likely. A methodology was adopted that combined survey-based quantitative analysis, key informant interviews, and extensive consideration of the literature of place and SIA. Results indicate that loss of place is being felt strongly by the Gloucester community, although considerable divergence exists in both felt loss of place and support for coal-related development. Widespread dissatisfaction with the prevailing levels of community input into development processes also emerged as a significant issue with particular ramifications for the maintenance of place. While a substantial loss of place was in evidence in Gloucester, the recognition of this loss as a social impact is suggested as being hampered by mensuration difficulties, the diversity of 'place attachments', and the nature of impact assessment decision-making. The establishment of place-conscious, participatory SIA processes is suggested as an alternative mechanism for mitigating place loss in the coal mining areas of the Hunter, Gunnedah, and Gloucester regions.

Keywords: sense of place, social impact assessment, loss of place, Gloucester, Hunter Valley, Gunnedah Basin.

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Finally, and most of all, I'd like to thank Liesel for enduring prolonged absences, five a.m. keyboard tapping, all-hours scribbling, and unintelligible, arcane mumblings. I can't do much about the unintelligible and arcane mumblings, but with luck the rest is behind us for a while.

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List of Acronyms

AACo	Australian Agricultural Company
ABS	Australian Bureau of Statistics
CSM	Coal seam methane
EA	Environmental Assessment
EDS	Environmental Distress Scale
EPBC	Environmental Protection and Biodiversity Conservation Act
EIA	Environmental Impact Assessment
EL	Exploration Lease
EP&A Act	Environmental Planning and Assessment Act
GRL	Gloucester Resources Limited
LGA	Local Government Area
Mt	million tonnes

PCA

Principle Components Analysis

SIA

Social Impact Assessment

Chapter 1 – Introduction

1.1 Coal and Place Change in the Northern New South Wales Coalfields

The European history of the Hunter Valley region is inextricably bound to that of coal. In 1797, Lieutenant John Shortland, whilst in pursuit of convicts absconding from the fledgling Sydney Cove settlement to the south, noted coal in the headland guarding the entrance to the Hunter River (Cushing, 1998). Like a shingle reading “coal, this way”, hung for King and Empire, this deposit drew the colony’s gaze to the rich seams underlying the floor of the Hunter Valley. These seams, and the wide harbour located at the river’s mouth, have in large measure defined the region’s past. They also look set to be the primary shapers of its future.

After an earlier abortive attempt to establish a mining camp at ‘Coal River’, Governor King, the commandant of the Sydney colony, ordered a settlement be created, the primary purpose of which was to mine coal. The settlement party, sent in 1804, consisted of the surviving leaders of the Irish rebellion at Vinegar Hill, newly-arrived English convicts, and a detachment of soldiers (Cushing, 1998).

The party commenced extracting coal from an outcrop they called ‘Coal Island’, and which is known today as ‘Nobby’s’ (Newcastle City Council, 2009). The distinctive rocky headland was, however, already named. The indigenous Awabakal people called it *Whibay Gamba*. It was the eternal prison of a kangaroo, incarcerated for a transgression in the Dreaming, and it shook when he thumped his tail in anger (Newcastle City Council, 2008). As the failed rebels tore apart that gaol, in an act both historically portentous and unwittingly profane, they struck the first blows in an enduring battle for the Hunter Valley’s places. That continuing battle has been

punctuated by the displacement of Nations¹, violent class conflict², and the lumbering of machines across rolling hills, fertile flats, and mountain ranges, and it has occurred above all else in the pursuit of dull black fragments of ancient swamp.

As 'Coal River' became 'Coal Harbour', then Newcastle, and in flights of colonial loquacity, 'Coalopolis', numerous identities were manufactured, tried, imposed, and adopted (Cushing, 1998). The frangible black rock that first drew Europeans has, however, continued through to contemporary times as a talisman, and a foundation stone of the region's prosperity and identity.

Newcastle, now a city of 290,000 people, is the largest coal export terminal on earth (Port Waratah Coal Services, n.d.; Australian Bureau of Statistics, 2007a). The coalfields of the Hunter Valley and the neighbouring Gunnedah Basin form the northern section of the Sydney-Gunnedah coalfield. These areas, with the addition of the separate Gloucester Basin (Figs. 1.1, 2.1), comprise the supply exported from Newcastle and used in the region's power stations.

While many areas in the region have been subject to coal extraction historically, and have seen some form of industrial mining in recent decades, the current rapid expansion of the industry has witnessed an intensification of negative impacts and significant changes to the landscapes, ecologies, communities, and economies of the region (Evans, 2008; Higginbotham *et al.*, 2010).

¹ For a brief history of the displacement of the indigenous nations of the Hunter region, see Roberts *et al.* (2002).

² A period of tumultuous conflict between colliery owners and trade unions culminated in the 'Rothbury Riot' of 1929. Norman Brown was shot and killed and 45 other miners injured by police as they violently broke up a miner's march on a pit in Rothbury (Dixson 1969). In 1949 Labor Prime Minister Ben Chifley also sent in troops as mine-workers to break a strike in the South Maitland fields, with this the first time the military had been used to break a union strike in Australia (Deery 1995).

One impact that appears emergent from the increasing changes being wrought on the Hunter and Gunnedah regions, but is as yet unrecognised institutionally, is the degradation or loss of individual and community 'sense of place' (Connor *et al.*, 2004; Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b; Brereton *et al.*, 2008). 'Sense of place' is comprised of the "meanings, beliefs, symbols, values, and feelings that individuals or groups associate with a particular locality" (Williams and Stewart, 1998:19), with attachment to 'place' being posited by the seminal place geographer Edward Relph (1976:141) as a human need, and a basis for emotional wellbeing.

As the expansion of coal mining continues throughout the Hunter Valley, and the coal 'chain' unrolls itself along the railway lines, through the mountain passes and up the valleys that conjoin it to the surrounding regions, the conflicts between new conceptions of place and those already being experienced will spread. It has been suggested that an outcome of such contests, more often than not, is the replacement of the unique identities of place with new, universalised, bland and imposed "non-places" (Relph, 1976:33; Harvey, 1996).

What then does this mean for the individuals and communities who have created those places – for the already damaged places of the Awabakal, the Worimi, the Biripi and the Wanarua; for the settler families of the Liverpool Plains; the thoroughbred breeders of Scone; the 'tree-changers' and 'old-timers' of Gloucester; and the struggling cattle farmers of Jerry's Plains? How can the latent values invested in places and the suppressed fears of people on shifting ground be uncovered and respected in a context that is increasingly defined by rapid change? While *Whibay Gamba* was not respected, in the same way that many other places are not, the institutions of the present day offer potential for the recognition and consideration of places, and it is with such structures and processes that this thesis is concerned.

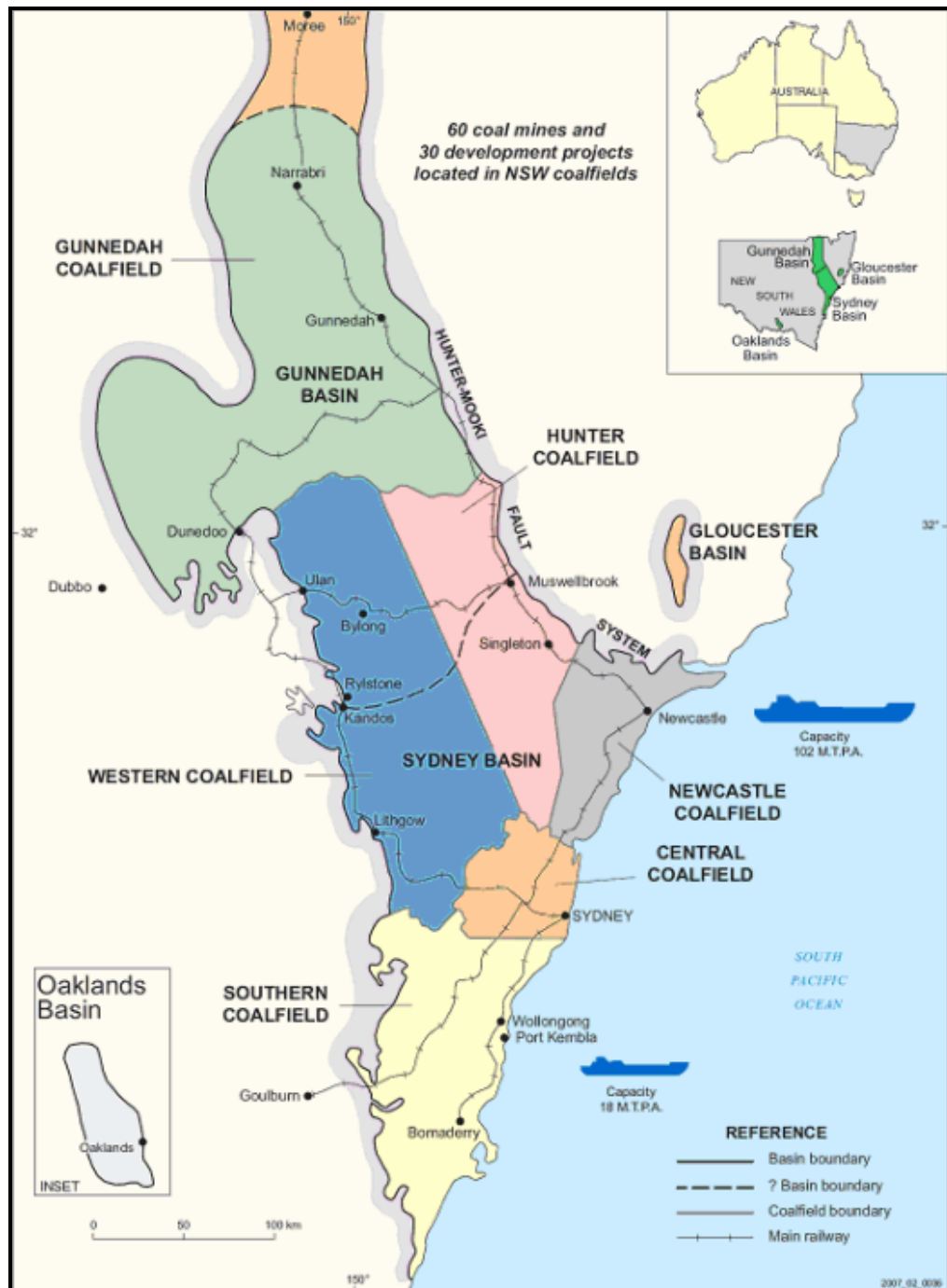


Figure 1.1: Map of the New South Wales Coalfields [Source (New South Wales Department of Primary Industries, 2005)]

1.2 Research Questions

Existing research suggests that mining-induced loss of sense of place may be of significant concern to people living in areas of the Hunter Valley (Connor *et al.*, 2004; Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b; Brereton *et al.*, 2008).

The literature regarding sense of place and resource and land management also suggests that sense of place deserves stronger consideration in management practice (Williams *et al.*, 1992; Williams, 1996; Kaltenborn, 1998; Williams and Stewart, 1998; Manzo and Perkins, 2006), and that social and environmental impact assessment should consider the loss of sense of place (Kaltenborn, 1998; Vorkinn and Riese, 2001; van Schooten, 2003:87; Burdge and Johnson, 2004:25; Smaldone *et al.*, 2005; Albrecht *et al.*, 2007; Brereton *et al.*, 2008).

The Gloucester Shire, located 120 kilometres north of Newcastle, contains a number of attributes which render it favourable to explorations regarding coal and sense of place. These include an active and strong community, a defined political if not communal boundary, relatively recent and expanding coal and coal seam methane (CSM) development, cultural and geographic ties with the broader Hunter/Gunnedah region, and a biophysical and cultural context that engenders a considerable likelihood of strong senses of place. Gloucester was thus adopted as a case study which facilitates examination of the impacts of coal development on sense of place, with identified regional affinities allowing the findings particular to Gloucester to be inducted to a broader regional context.

The following research questions are thus posed:

1. Is the Gloucester community concerned about loss of sense of place as an impact of coal and coal seam methane development and expansion? and
2. If so, does this warrant the explicit inclusion (or more effective articulation) of sense of place as a social impact in Social Impact Assessment (SIA), as the primary mechanism for predicting and managing the social impacts of coal mining developments in the context of the Hunter/Gunnedah/Gloucester region?

1.3 Scope of Research

A regional context has been selected as the cultural, geographic, historical and economic affinities of the Hunter, Gunnedah, and Gloucester regions, and pre-

existing research in the area, allows easier induction of findings than for broader spatial groupings, with this especially important given the particularistic nature of sense of place. As Barrow (2010:299) suggests: "SIA ... [is] often best pursued at a manageable project, community, sector, or regional level where there is some sense of 'context of place'". This is not to preclude however, the possibility, given positive findings, that there are implications for other regions within the institutional boundaries of New South Wales, or in other areas subject to similar processes, such as Queensland's Bowen, Surat, and Galilee Basins.

The case study area is confined to the political boundaries of the Gloucester Shire. Although coal and CSM operations extend to adjoining areas in the Gloucester Valley, this demarcation has been adopted in order to restrict the study area to a defined and self-recognised community, and for sampling purposes.

The study does not seek to conduct a social impact assessment. The complex and interrelated processes of SIA, such as profiling, scoping, and consideration of higher-order effects, are beyond the scope of the research, and beyond the time and resource constraints of the study. Similarly, the primary determinant of the community's tolerance of social change, and thus whether an impact has occurred, is the concept of 'significance', with this determined primarily by the professional judgement of SIA practitioners and decision-making authorities (Joyce and Macfarlane, 2001). No claim is made with regards to determining the 'significance' of loss of sense of place as an impact in the specific case of Gloucester; the aim is to assess whether the community is concerned about loss of place, and thus whether this loss should be considered in social impact assessment processes.

The study does, however, employ social science techniques to answer the research questions, whilst giving reference to the relevant SIA concepts of impact identification and prediction. Additionally, consideration is given to the suggestion of potential techniques and areas of research that could be undertaken should findings indicate loss of place as warranting consideration within SIA. The study

adopts a case study approach, with the aim of inducting findings from the Gloucester Shire to the surrounding region. A mixed methods approach has been undertaken which seeks to triangulate reviews of sense of place and SIA literature with survey-based quantitative techniques grounded in the place literature (such as Albrecht *et al.*, 2007; and Higginbotham *et al.*, 2007a; b), and qualitative interview-based analysis using the methodological framework of Layder's (1998) *adaptive theory*.

1.4 Thesis Overview

Chapter 2 (*The Geographical Context of the Hunter, Gunnedah, and Gloucester Coalfields*) grounds the study in the geographical context of the Gloucester area, and describes the affinities between Gloucester and the broader Hunter/Gunnedah region, with this discussion contextualised in relation to the coal industry.

Chapter 3 (*Establishing Place*) focuses on the theoretical bases of sense of place, and discusses how loss of place can occur. The major disciplines of place research are discussed and the processes and outcomes of place formation and degradation broadly described.

Chapter 4 (*Integrating Place into Social Impact Assessment*) reviews the extensive literature of place research as applied to natural resource and land management contexts. It subsequently discusses the relationship between place and SIA, including the foundations of social impact assessment; SIA in relation to the coal mining industry; and the possibility of identifying loss of place as a social impact in the context of coal development in the study area.

Chapter 5 (*Data Collection and Analysis Techniques*) describes the quantitative and qualitative methods applied to answering the research questions, with reference given to mixed methods integration. The use of case studies is discussed, as are the respective merits of particular place research methodologies, with reasons provided for the adoption or otherwise of specific methods.

Chapter 6 (*Results of Data Analysis*) analyses the results of the methodology

employed. Chapter 7 (*Discussion*), informed by the literature and the results of the primary data gathered, addresses the question of whether coal mining and CSM extraction have caused a loss of place in Gloucester, and, thus, whether loss of place should be considered to be a social impact in SIA in the broader Hunter/Gunnedah/Gloucester region. Chapter 8 (*Conclusion*) provides a brief summation and conclusion of the study and suggests further areas of research.

Chapter 2 – The Geographical Context of the Hunter, Gunnedah, and Gloucester Coalfield

2.1 Coal in the Hunter, Gunnedah, and Gloucester Regions

The Port of Newcastle is currently the world's largest coal export terminal, handling most of what is New South Wales' largest export commodity (New South Wales Minerals Council, n.d.-a; Port Waratah Coal Services, n.d.). Exports from Newcastle grew by 32 percent in the decade to 2010, with output projected to increase from 91 million tonnes (Mt) per annum in 2009 to 180 Mt in 2016 (Port Waratah Coal Services, n.d.; Wilson, 2009). Significant volumes of coal (24 Mt in 2007-08) are consumed in the six power stations that are located in the Hunter Valley and Lake Macquarie areas (New South Wales Department of Primary Industries, 2009b:257). The establishing coal seam methane industry is also emerging as significant, particularly in the Gunnedah and Gloucester Basins.

There are a number of geographically and historically linked regions which supply coal to both the Port of Newcastle for export, and for local consumption (Figs. 1.2, 2.2). Within the Hunter Valley, the Gloucester Valley, and the Gunnedah Basin, there are currently 42 coal mines and four CSM projects operating or under development (New South Wales Department of Primary Industries, 2009a; Geoscience Australia, 2010).

The Hunter Valley, consisting of the catchment of the Hunter River and a number of tributaries, is New South Wales' primary coal producing region (New South Wales Department of Primary Industries, 2009b:35). Extraction is focused on the Upper Hunter (23 mines, 112.5 Mt of raw coal in 2007-08), with substantial mining also occurring in the Newcastle Coalfield, which encompasses Lake Macquarie and the Cessnock local government area (LGA) (seven and four mines respectively, 21.6 Mt in 2007-08). Ulan-Bylong, on the western boundary of the Hunter, has three mines (New South Wales Department of Primary Industries, 2009b:35; Geoscience Australia, 2010). There is also a CSM operation under development in the Singleton

area (AGL, 2010). The Upper Hunter, where mining is primarily concentrated, is historically an agriculturally-based region, although large parts of the Upper Hunter landscape have become industrialised. The Lake Macquarie region is significantly urbanised. The expansion of the Newcastle export terminal and the significant number of pending mine development and expansion applications portends the continued growth of the industry (New South Wales Department of Primary Industries, 2009b:20) and the subsequent alteration of existing land uses.

The Gunnedah Basin is separated from the Hunter Valley by the Liverpool Ranges section of the Great Dividing Range. The basin is located approximately 300 kilometres north west of Newcastle and has an area of 15,000 square kilometres (New South Wales Minerals Council, n.d.-b). Coal mining has occurred continuously in the area since 1877, although at a small scale relative to the Hunter region (New South Wales Minerals Council, n.d.-b). There currently exist five mines (producing 4.3 Mt in 2007-08) and two CSM operations in the Basin, with further expansion of both industries underway (New South Wales Department of Primary Industries, 2009a; b:22; Geoscience Australia, 2010). It is estimated that the Basin may contain 30 billion tonnes of recoverable coal, or 40 percent of the NSW total (New South Wales Minerals Council, n.d.-b). Although relatively large underground mining operations have existed for several decades, new operations are encountering significant resistance as conflicts emerge with well-established high value cropping and grazing industries³.

The Gloucester Basin consists of a separate, smaller seam located in the Gloucester Valley, adjacent to the Hunter Valley. No large-scale exploitation of the Gloucester seam had occurred until the development of two open-cut operations over the past fifteen years (McCalden, 2010). The Basin is currently subject to the expansion of

³ An example of such conflicts is that occurring on the Liverpool Plains, where multi-national miners BHP Billiton, Shenhua, and Santos are seeking to establish operations on highly fertile farm land. This particular situation is well-described in the ABC Four Corners television documentary 'The Good Earth' (Ferguson, 2009).

existing operations, the likely establishment of further mines, and well-advanced plans for CSM extraction. The geographical orientation of the coal resource puts the industry in direct competition with other land uses, such as grazing, tourism, and urban/rural residential.

Coal mining in the Hunter, Gunnedah and Gloucester regions has been recognised as having a broad array of impacts and a number of these have dominated regulatory processes and public discourse. These include damage to people's health, landscape change, water issues, changes to local economies, the disproportionate flow of benefits out of local areas, the loss of prime agricultural land, and climate change (Connor *et al.*, 2004; , 2008; Albrecht *et al.*, 2007; Brereton *et al.*, 2008; Evans, 2008; Higginbotham *et al.*, 2010). Of considerable concern to local communities are the cumulative impacts of multiple mines. One or two operations are often viewed as beneficial, but as mines come to dominate the landscape, the magnitude of impacts are seen to increase (Brereton *et al.*, 2008; Franks *et al.*, 2009). CSM operations, which involve the use of chemically treated water for exploration and extraction, have also added further concerns regarding underground water supplies and safety (Manusu, 2010).



Figure 2.1: Upper Hunter coal mine adjacent to rural and residential land uses [Source (Rhiannon, n.d.-a)]

2.2 *Gloucester*

2.2.1 The Gloucester Valley

The Gloucester Shire Local Government Area occupies an area of approximately 2,952 square kilometres (Gloucester Shire Council, 2009a). It is located on the mid-north coast of New South Wales, on the north-eastern edge of the Hunter region, and in the foothills of the Barrington Tops World Heritage Area (Fig. 2.2). The Shire contains four main river systems, the Gloucester, Barrington, Barnard and Avon rivers, which form a significant component of the Manning River catchment (Gloucester Shire Council, 2009a).



Figure 2.2: Research Area – LGAs in the Hunter Valley, Gunnedah Basin, and Gloucester areas of New South Wales. The township of Gloucester is marked within the Gloucester Shire [Source – adapted from Raue (2008)]

The original inhabitants are the Worimi and Biripi. Europeans first arrived with the Australian Agricultural Company (AACo), the AACo securing title to the Gloucester Valley and adjacent areas around Stroud and Port Stephens in 1824 (Budge, 2003). The first Europeans, employees of the AACo, entered the area in 1826, with low-intensity settlement associated with agriculture persisting until the early twentieth century, when the population of the Gloucester area rose significantly (Smith, 2009)

The principal town is Gloucester, population 2436, while the Shire has a population of approximately 5000 (Fig. 2.3) (Australian Bureau of Statistics, 2007b). The area's economy is sustained by agriculture, tourism, a declining forestry industry, and in

recent years, coal mining. Gloucester Shire has a mixed, though largely aged demographic of multi-generational residents and more recent lifestyle-focused ‘tree-changers’ (McCalden, 2010).



Figure 2.3: The main street of Gloucester

Geophysically, the Gloucester Valley consists of river plain flats broadening from south to north, with ranges delineating the east and west sides of a number of linked river valleys which drain to the coast, approximately 50 kilometres east. The river flats are largely cleared although significant areas of vegetation exist in State Forest, a World Heritage Area, and other reserves in the surrounding ranges (Gloucester Shire Council, 2009a). The town of Gloucester is dominated by the geophysical feature known as ‘The Bucketts’, apparently a corruption of a word from the Khattang language of the local indigenous people (Fig. 2.4) (Budge, 2003).



Figure 2.4: View to 'The Bucketts', Gloucester

2.2.2 Coal and Coal Seam Methane in Gloucester

In the early 1970s exploration for coal was carried out in a number of areas of the Gloucester Valley, with plans for open cut mining in the early 1980s failing to eventuate (McCalden, 2010). The first large-scale mine to be opened in the area was the Stratford mine at Craven, ten kilometres south of Gloucester, in 1995 (Figs. 2.5, 2.6, 2.8) (McCalden, 2010). The mine, owned by Gloucester Coal, was initially intended to operate until 2000, however expansions at Bowen's Road North and Roseville West have seen mining continue (New South Wales Government Department of Planning, 2007; Gloucester Coal, 2010e; McCalden, 2010; Resource Strategies, 2010).

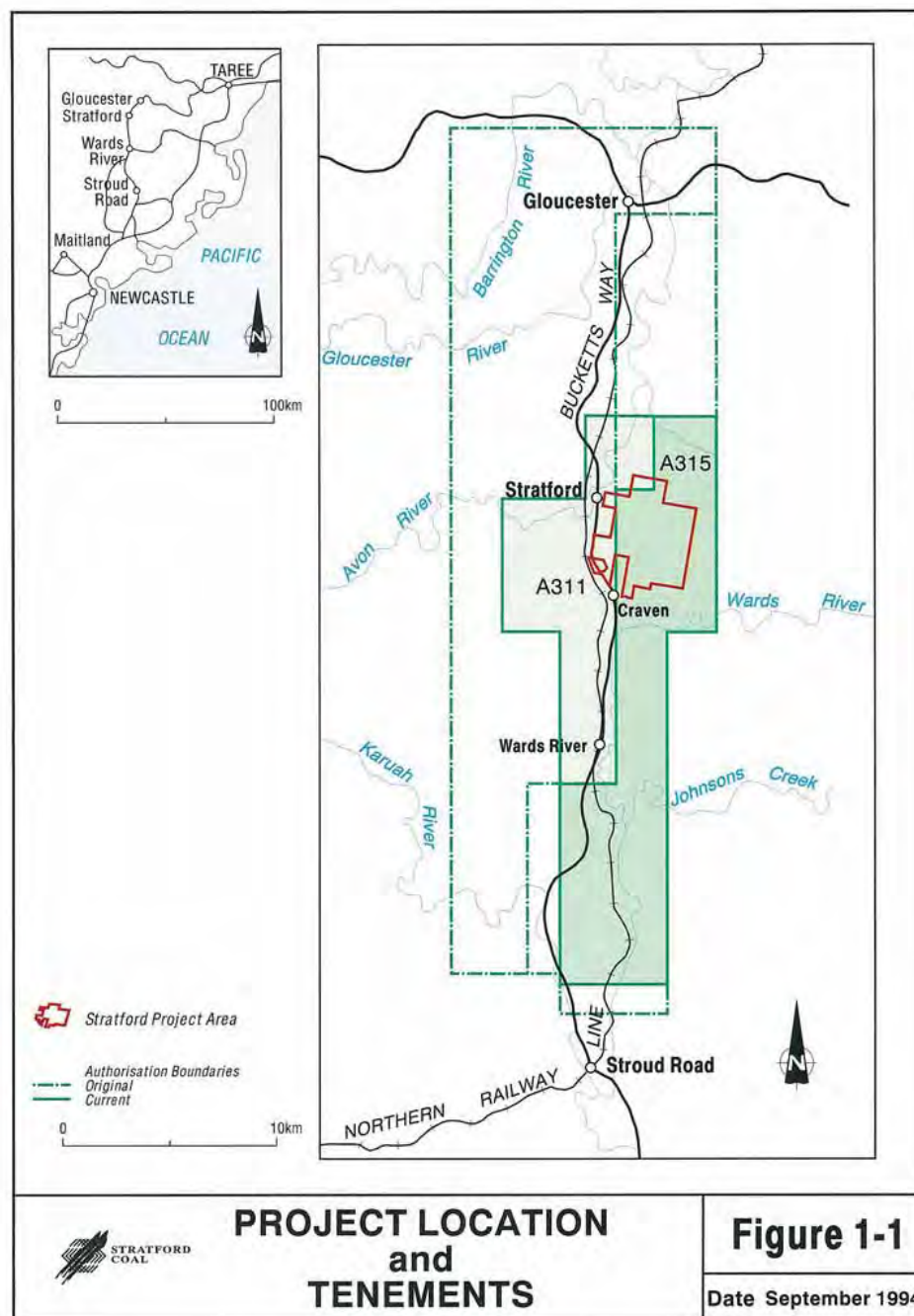


Figure 2.5: Location of original Stratford mine and exploration leases [Source (Ryan and Ellis, 1994)]

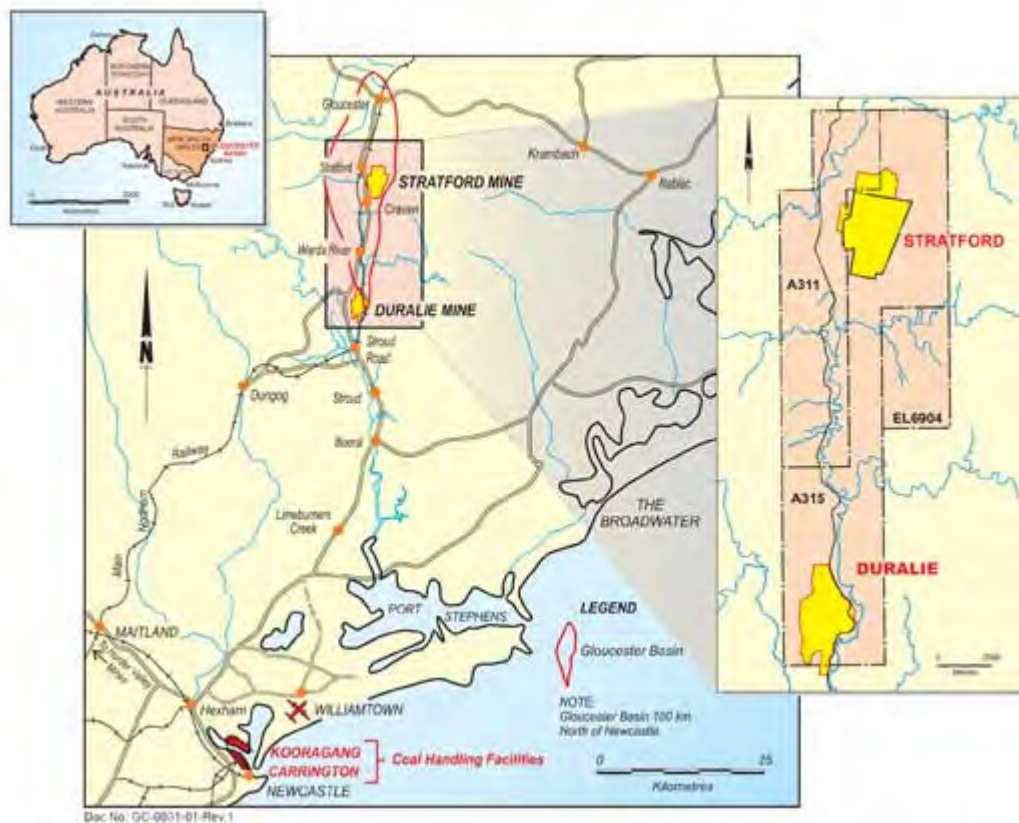


Figure 2.6: Gloucester Coal operations – image on right shows existing operations (yellow) and exploration leases (pink) [Source (Gloucester Coal, 2010c)]

A second Gloucester Coal-owned open-cut mine, Duralie, outside the Gloucester Shire but in the geographically and culturally-linked Stroud area, around 30 kilometres south of Gloucester, opened in 2003 (Fig. 2.6) (Gloucester Coal, 2010a). In the financial year 2009-10, the combined output of the Duralie and Stratford operations was 3.1 million tonnes of run-of-mine coal, with a planned increase to five Mt per annum by 2013 (Gloucester Coal, 2010e).

Exploration for CSM also occurred during the 1990s (McCalden, 2010). In recent times, gas company AGL has undertaken extensive exploration drilling, and has well-advanced plans for the commencement of operations (Manusu, 2010). In 2006, a second coal company, Gloucester Resources Limited (GRL), began obtaining exploration licences and acquiring properties, many in close proximity to Gloucester township (McCalden, 2010). Much of the floor of the Gloucester Valley, running from south of the town of Booral to the northern edge of the Gloucester township,

is under coal and/or CSM exploration leases (Figs. 2.5, 2.6, 2.7).

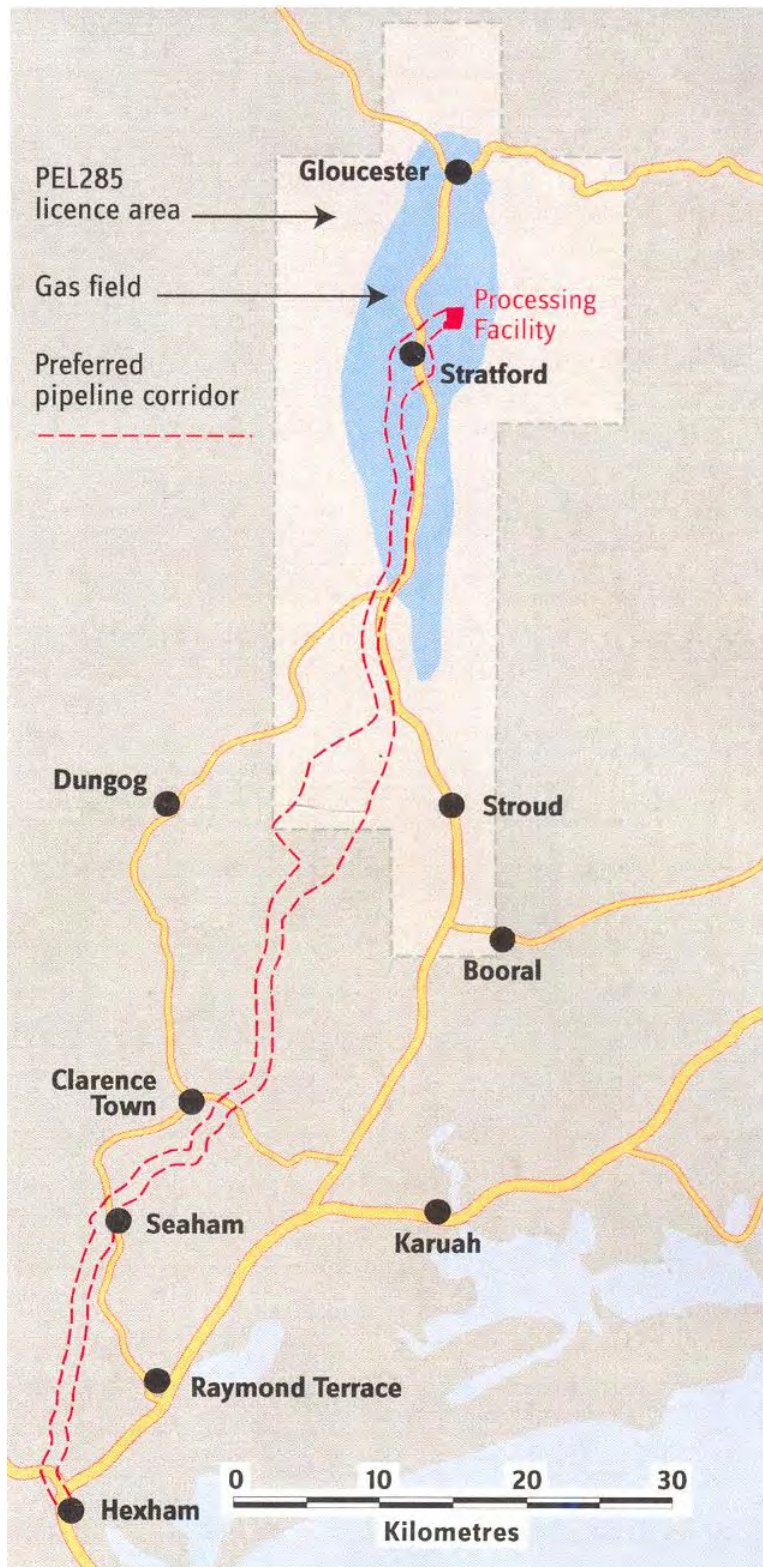


Figure 2.7: Proposed AGL Gloucester coal seam methane project [Source (Gloucester Coal Seam Gas Project, n.d.)]

There are current plans for expansion of both existing mines, and well-advanced plans for CSM extraction (Gloucester Coal, 2010e; Gloucester Shire Council, 2009b; Manus, 2010; Resource Strategies, 2010). Continuing intensive exploration by Gloucester Coal, GRL, and AGL indicates that coal mining and CSM extraction will also expand in the longer term within the Gloucester Valley, with Gloucester Coal's known reserves facilitating mining until 2030 (Gloucester Coal, 2010d; e).

The imposition of coal developments on landscapes previously composed solely of agricultural, forestry, residential, and protected area uses has engendered significant community opposition (Gloucester Shire Council, 2009b). A number of residents' groups have been formed to oppose coal and gas mining in the Gloucester Valley and surrounding areas, although many in the community do perceive coal as beneficial (Gloucester Advocate, 2009; Manus, 2010).

2.2.3 Suitability as a Regionally-representative Case Study

Gloucester is linked to the other coal-producing regions of Northern New South Wales in a number of ways. There are significant historical links through the AACo (the dominant exploiter of coal in the region through the nineteenth and early twentieth centuries) and through agricultural pursuits, such as stock routes. Historical patterns of settlement, limited cultural change and continuing transport and economic relationships have resulted in similar, if not shared, rural cultural identities.

Significant geographic, economic and administrative linkages exist between Gloucester, the Hunter Valley, and the Gunnedah Basin, with strong economic relationships retained through coal, agriculture, and tourism. The Gloucester Shire is situated adjacent to the Upper Hunter Shire, while the Liverpool Plains/Gunnedah Basin area is linked to Gloucester through the Barrington Tops/Mt. Royal/Liverpool Range mountain chain. There is also a recognition amongst some in the community that the impacts of coal are shared with other regions of the Hunter Valley and

Gunnedah Basin (Gloucester Shire Council, 2009b).



Figure 2.8: Stratford Coal Operations [Source (Gloucester Coal, 2010b)]

For several reasons, Gloucester provides a suitable regionally-representative case study regarding the potential impacts of coal on sense of place. It has an active community, many of whom appear to strongly appreciate the landscape. Coal developments are of a scale significant enough, and established long enough, for impacts to emerge. Unlike areas of the Upper Hunter, however, such as Singleton and Muswellbrook, coal has yet to overwhelm the local landscape or economy.

While other areas, such as Bickham in the Upper Hunter and Caroon in the Liverpool Plains, share some of these characteristics, they have several drawbacks in regards to the extrapolation of research findings to other places. These include the lack of existing mines, with residents having little direct experience of mining impacts; and scattered and small populations which limit the possibilities of conducting meaningful survey analysis.

Chapter 3 – Establishing Place

3.1 *Constructing Place*

3.1.1 What is 'Place', and Why Does it Matter?

This chapter seeks to explain the foundations of sense of place as identified in both humanistic geography and environmental psychology, with a focus on how attachments to place are recognised and created. These discussions provide the background necessary to explain how and why places are lost, and what the repercussions of that loss are.

'Sense of place' is a concept that encompasses a variety of theoretical perspectives from disciplines as diverse as philosophy, humanistic geography, architecture, sociology, environmental psychology, and planning (Stedman, 2003b). "Places," writes Edward Relph (1976:141), are "important sources of individual and communal identity, and are often profound centres of human existence to which people have deep emotional and psychological ties." Yi-Fu Tuan (1977:4) defines places similarly, if a little more prosaically, as "centers of felt value where biological needs, such as those for food, water, rest and procreation are satisfied." Low and Altman (1992:4) describe place as "space that has been given meaning through personal, group, or cultural processes," while Williams and Stewart (1998:19) identify place "as the collection of meanings, beliefs, symbols, values, and feelings that individuals or groups associate with a particular locality."

The variety of vernacular usages of the word 'place', and the situation of places as part of the everyday milieu of existence may suggest that its meanings are self-evident, and that the widespread interest in further articulation is arcane and unnecessary. It is precisely this relevance to the world of the everyday, however, that sees place emerge from the minds of philosophers, social scientists, architects, farmers, miners, loggers, and poets (amongst others), and coalesce into an articulated theory of universal, accelerating, and, many suggest, fundamental relevance (Harvey, 1996). The ubiquity of place is, as Malpas (1999:13) notes, what

confirms its relevance; place is not “a particular idiosyncrasy to be found in works of literature, nor a leftover from pre-modern societies.” As Lukerman (in Cresswell, 2004:23) elucidates:

The study of place is the subject matter of geography because consciousness of place is an immediately apparent part of reality, not a sophisticated thesis; knowledge of place is a simple fact of experience.

Edward Relph (1976:141), in his ground-breaking work *Place and Placelessness*, confirms this relevance:

Places are not abstractions or concepts, but are directly experienced phenomena of the lived-world and hence are full with meanings, with real objects, and with ongoing activities.

Relph (1976) and Proshansky *et al.* (1983) argue that places are crucial for the generation of individual and community identity. Relph (1976:38,41) also suggests that “to have roots in a place is perhaps a necessary pre-condition for the other ‘needs of the soul’”; that without deep relationships with place “human existence, while possible, is bereft of much of its significance”; and that, following Simone Weil, attachment to place “is an important human need...at least equivalent to the need for order, liberty, responsibility, equality, and security.”

The existence of a sense of place has also been recognised as a basis for achieving particular ends. Amongst these aims are the maintenance of a responsibility towards nature (Harvey, 1996; Hay, 2002a); the positive re-situation of humankind’s place within nature (Williams and Stewart, 1998); the continuation or establishment of desirable social, environmental, and economic relations between communities and the wider world (Relph, 1976; Harvey, 1996; Hay, 2002a); the amelioration of internal conflicts engendered by rapid or externally-imposed change (Yung *et al.*, 2003; Davenport and Anderson, 2005; Manzo and Perkins, 2006); and the maintenance of place identities in a globalised world (Relph, 1976; Harvey, 1995, 1996; Williams and Stewart, 1998).

3.1.2 The Phenomenological Place Tradition

The development of conceptions of 'sense of place' has leaned heavily on the phenomenological tradition, with key theorists such as Martin Heidegger, Edward Relph, Yi-Fu Tuan, and Christian Norberg-Schulz formalising and stimulating place knowledge⁴. This approach conceptualises place around the experiential relationships established between people, physical environments, and communities, and the values thus generated (Williams and Stewart, 1998; Stedman, 2003b; Jorgenson and Stedman, 2006).

Those felt values and meanings are derived as functions of experienced history, external forces, physical environments, psychological and emotional needs, and the essential nature of places (Proshansky *et al.*, 1983; Cresswell, 2004). Relph (1976:141) argues for the primacy of experience in forming places; they “are defined less by our unique locations, landscapes, and communities than by the focusing of experiences and intentions onto particular settings,” while Tuan (1977:6) similarly grounds place formation: “what begins as undifferentiated space becomes place as we get to know it better and endow it with value.”

The individual senses of place thus derived are combined through processes of agreement and conflict from which communal place identities emerge (Relph, 1976; Harvey, 1996). Additionally, while places are constituted by the humans that exist in them, they are also possessed of an emergent, temporally-persistent, and environmentally-grounded uniqueness that extends beyond the relationships occurring in a physical space at a particular point in time (Seamon, 1984).

⁴ For histories of the development of phenomenological place understandings, see Hay (2002a) and Cresswell (2004).

3.1.3 The View from Environmental Psychology

The humanistic geographer's phenomenological approach is theoretically rich, and is epistemologically-grounded in the understanding that truly-lived place is unselfconscious and unknowable (Seamon, 1984). It has been suggested, however, that this richness and ontological inflexibility obscures a lack of clarity and potential for application (Stedman, 2003b). The phenomenological perspective "implies that place-identity in its full meaning cannot be communicated," except when this latency is reversed in response to threatening processes (Proshansky *et al.*, 1983:61).

The place-focused stream of environmental psychology provides a remedy for this restriction by examining the internal human construction of places. It attempts to understand how particular psychological needs, cognitive structures, individual experiences and behavioural processes create individual in-place identities, dependencies and attachments (Proshansky *et al.*, 1983). The concept of place attachment, being "a positive emotional bond that develops between people and their environment," is at the core of this approach (Stedman, 2003a:672).

Stedman (2003b:823) asserts the contribution of cognitive influences on place, writing that "sense of place is based on thoughts as well as meanings: it involves the interplay of cognition and emotion." Stedman (2003a) also emphasises, however, that the psychological aspect of place is not privileged over other components, with the relationship between human behaviours, the physical environment and the socio-psychological aspects of place constituting the woven framework of places. Proshansky *et al.* (1983) also recognise that formed place identities are not inflexible, but dynamic and influenced by many external factors.

Both the phenomenologists and psychologists recognise place as arising from the interplay between the environment, communities, and individual needs, actions, thoughts and behaviours. Such affinities can be seen in the convergence of meaning between terms such as 'sense of place' (humanistic geography/phenomenology)

and 'place attachment' (environmental psychology), with the latter being treated as an explicative and constitutive synonym of the former (Williams and Stewart, 1998). This convergence of meanings has allowed ready extrapolation across disciplines, contributing significantly to the development of place knowledge (Manzo and Perkins, 2006), although it should be noted that a lack of conceptual and cross-disciplinary clarity has been suggested as an impediment to place research (Stedman, 2003b). Criticisms have also been levelled at the empiricism associated with some psychological approaches to place (Seamon, 1984; Gunderson and Watson, 2007), while significant epistemological conflicts remain, particularly regarding methodological approaches to explicating place (Patterson and Williams, 2005)⁵.

3.2 *The Foundations of Place*

3.2.1 Understanding Places

The formative elements and processes of place are widely discussed and contested. Such contestations include the possibilities of integrating individual experiences into strongly-forged, coherent, yet non-exclusive social identities; the role of external forces and flows in place construction; the necessity of internalised histories and of an anchoring in the physical landscape; and the existence or otherwise of an essential nature, 'permanence', or '*genius loci*' (Massey, 1994; Harvey, 1996; Hay, 2002a)⁶.

⁵ See section 5.2.3 – '*Measuring*' Place, for further discussion on these methodological issues.

⁶ The concept of a '*genius loci*' or similar essence or 'permanence' has been a significant object of discussion and debate in place theory. There has been much discussion as to whether places have an essence irrespective of human projection, or indeed whether they have an essential nature at all. Dianne Massey pre-eminently disputes this. For further discussions see Norberg-Schulz (1980), Seamon (1984), Massey (1994), Harvey (1996) and Hay (2002a).

There are numerous ways of understanding senses of place. At larger scales exists Massey's (1994) entreaty for the generation of a 'global sense of place'; the global 'time-space compression' and 'placelessness' that Harvey (1996) and Relph (1976) identify as threatening places; and the linked local resistances to those threats that characterise Harvey's (1995, 1996) 'militant particularism'. While these processes contribute to the creation and dissolution of places, the foundations of place arise from the relationships that occur *in places*, as cognitive and experiential processes in individuals, and as interactions between those individuals, the environment, and the socio-cultural context (Proshansky *et al.*, 1983). The numerous and varied attempts to characterise and elicit these processes and their outcomes, from Relph's (1976) semi-systemised categorisation of places, to the current proclivity for psychometric analysis, provide an expansive yet uneven theoretical platform from which the variegated topography of place can be viewed.

3.2.2 How are Places Created?

Low and Altman's (1992:4) statement that "place attachment has many inseparable, integral, and mutually defining features, qualities, or properties; it is not composed of separate or independent parts, components, dimensions or factors" illustrates the difficulties in recognising how attachment to places are generated. Equally difficult to determine are the ways in which individual place attachments can combine to form shared senses of place.

Stedman (2003a:671) reviews the many extant place definitions and finds them in common recognition of a tripartite formative structure "that weaves together the physical environment, human behaviours, and social and/or psychological processes." Low and Altman (1992:8) identify "four processes associated with the formation and/or maintenance of place attachments: (1) biological, (2) environmental, (3) psychological, and (4) sociocultural" which interact in complex ways. Others have identified variations in the formation of attachments based on intensity, length of association, motivation, and variable combinations of environmental, social, political, cultural and economic factors (Riley, 1992; Williams

and Stewart, 1998; Beckley, 2003; Williams and Vaske, 2003; Jorgenson and Stedman, 2006; Brown and Raymond, 2007).

The physical environment is widely recognised as a key factor in place-making (Relph, 1976; Harvey, 1996; Williams and Stewart, 1998; Stedman, 2003a). Relph (1976:31,33) determines that landscapes, as physical or meaning-laden expressions of place construction, are “an important feature of all places”, while recognising that the landscape is also “an expression of communally held beliefs and values and of interpersonal movements.” Others, such as Massey (1994), in counterpoint to many foundational understandings of place, reject the necessity of a physical basis for place. The inimicality of this conception to experientially-constructed place is noted by Stedman (2003a:671), however, who observes that “although social constructions are important, they hardly arise out of thin air: The local environment sets bounds and gives form to these constructions.”

The psychological component of place attachment is also broadly recognised. Place identity is described by Proshansky *et al.* (1983:59) as consisting of values, meanings, personal histories, and “cognitions about the physical world in which the individual lives.” Place identity is conceived as an integral component of a person’s cognitively-constructed self-identity. This identity is constructed in relation to the physical world on the basis of psychological and emotional needs, in the same way that a child establishes its sense of self in relation to the human beings around it (Proshansky *et al.*, 1983).

The social component of place-making consists of both the socio-cultural context in which an individual exists (Proshansky *et al.*, 1983; Williams and Stewart, 1998), and the way in which senses of place are formed communally (Relph, 1976; Harvey, 1996). Relph (1976:45) focuses on shared, continuous, coherent, dynamic and adaptive perceptions as constituting place, and determines that common experiences, activities, landscapes, and cultures can overcome differences to a degree where shared identities can be formed (Hay, 2002a:158). Harvey (1996), however, cautions that places, necessarily coalesced at what Relph (1976:58) calls

the “lowest common denominator”, can often involve internal repressions and exclusions, and that place construction often involves strong internal contestations (Cresswell, 2004:62).

A coherent internalised history has also been commonly recognised as a foundation of a strong sense of place (Relph, 1976; Tuan, 1977; Harvey, 1996; Cresswell, 2004). Relph (1976:33) emphasises the role of tradition and history as anchoring cultures through time, and that without such a base places become “non-places” (Cresswell, 2004:22).

Perhaps the dominant discussion regarding place formation is the relationship between external processes and the maintenance of coherent, internal histories, cultures and places. The threats to places posed by ‘time-space compression’ and externally-imposed development, investment and culture are widely recognised (Relph, 1976; Harvey, 1996; Williams and Stewart, 1998). Harvey (1995, 1996) identifies such threats as re-energising places, as attachments to place are made explicit and communities resist imposed change. Against this, Massey (1994) attempts to dramatically re-map the epistemological boundaries of place away from the rooted, essentialist conceptions that she sees as reinforcing relationships of domination, and to re-situate a ‘global sense of place’, not in physical and social contexts, but at the meeting points of global cultural, investment and information flows⁷.

Tuan (1977) and Relph (1976), in counterpoint to Massey's (1994) charge of stasis being endemic to phenomenologically-imagined place, are cognisant of the change

⁷ The relationship between external change, and place maintenance, alteration and loss is a complex one. For example, coal mining has been identified as generating strong place identities in some places, such as the United Kingdom (Massey, 1994), while the same industry has been cited as a threat to place identity in others, such as the Hunter Valley (Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007; Brereton *et al.*, 2008).

inherent in place construction. They recognise, however, a threshold beyond which “processes and forms of movement [are]... quite antithetical to the construction of places” (Cresswell, 2004:74)⁸. As Tuan (1977:195) notes, “when... a people perceive that changes are occurring too rapidly, spinning out of control, nostalgia for an idyllic past waxes strong.”

3.3 *Loss of Place*

3.3.1 The Significance of Loss to Understanding Place.

The loss of individual and communal sense of place has been one of the primary motivators of place scholarship. Proshansky *et al.* (1983) suggest that threats to place are the primary way in which phenomenological place theorists explicate the otherwise latent constituents of place. Further, this process not only allows the articulation of place, but also serves to confirm its relevance, as people rally in defence of their places, strengthening community bonds and attachments to place (Relph, 1976; Harvey, 1996; Williams and Stewart, 1998; Hay, 2002a).

Innumerable conflicts exist between communities seeking maintenance of place and those external forces which seek to impose change. It is in these conflicts, in a world subject to increasing time-space compression and placelessness, that loss of place is most manifestly relevant (Relph, 1976; Harvey, 1996). Hay (2002a) recognises the place-centrism of many conservation campaigns, while Harvey (1996:302) situates “the search for an authentic sense of community and of an

⁸ The point at which this threshold is defined is difficult, if not impossible to grasp, although the level of community control over the nature and velocity of change appears a key factor. A number of studies have identified that a measure of influence over planned place-altering interventions may serve to moderate change to the extent needed for places to be maintained (Cheng *et al.*, 2003; Yung *et al.*, 2003; Davenport and Anderson, 2005; Manzo and Perkins, 2006; Albrecht *et al.*, 2007; Gunderson and Watson, 2007).

authentic relation to nature” as foundational to many environmental and social movements.

Despite the intellectual support, broad adoption, and on-ground utility of such positive action, Harvey (1996) recognises that even coherent responses to threats have engendered a very limited capacity to slow the loss of places. Thus, more commonly, the outcome of the greatly mis-matched forces of place and external change is the end of places and the installation of imposed and universalised “non-places” (Relph, 1976:33). These ‘non-places’ are deemed to remove the possibility of the spiritually, emotionally and historically-grounded, ecologically-respectful, and fully-lived existences which are posited as requiring solid roots in place (Relph, 1976; Williams and Stewart, 1998; Arefi, 1999).

3.3.2 What Drives the Loss of Places?

Relph (1976) and Harvey (1996) ascribe loss of place to rapidly increasing global investment, information, and cultural flows. They describe an epidemic of almost unbrakeable momentum, with place subsumed to economic interests, and unique identities subducted under cultural pavements laid down to facilitate economic growth. Articulating the rise of 'placelessness', Relph (1976:79) recognises that:

Cultural and geographic uniformity is not... an entirely new phenomenon... What is new appears to be the grand scale and virtual absence of adaptation to local conditions of the present placelessness, and everywhere the shallowness of experience which it engenders and with which it is associated.

Harvey (1996), Relph (1976) and others detail the ubiquitous loss of places as global investment flows facilitate “the destruction, invasion, and restructuring of socially constituted places on an unprecedented scale”, without heed to the “political, social, or ecological consequences” (Harvey, 1996:323). Indeed, the maintenance of places is often cited as inimical to the effective expansion of industry and investment, as coherent place identities provide a fertile bed in which conceptions

alternative to those of developers and industry can be anchored. The efficiencies of scale required to attain and sustain modern methods of production and extraction are also posited as being unachievable at the scales at which places exist (Relph, 1976; Harvey, 1996; Williams and Stewart, 1998). As Relph (1976:117) writes: “sense of place and attachment to place are not merely unimportant, but their very absence is an economic virtue.” Additionally, the sheer scale of modern economic developments, and their footprint on the physical landscape, is seen as a virtual guarantor of the loss of place (Relph, 1976).

Accompanying the economic necessity of the destruction of authentically, locally-constructed places, is the replacement of unique and valuable place identities with meaningless mass identities:

Mass identity is indeed little more than a superficial cloak of arbitrarily fabricated and merely acceptable signs. It provides no roots, no sense of belonging to a place. It is in marked contrast to those place-identities which have developed through profound individual and social experiences (Relph, 1976:61).

Whilst it is apparent that altered place identities often occur as new industries are introduced (Massey, 1994; Harner, 2001), it is recognised that if those industries are imposed, if they have unseen social or environmental outcomes, or if the rate of change is unacceptable to communities, then loss of place is likely to occur (Relph, 1976; Harvey, 1996; Albrecht *et al.*, 2007).

Relph (1976:60) recognises that communal place identity can cease to be plausible under two processes; changing environmental conditions, and alterations in attitudes, values or belief systems. Thus, mass identities, as disseminated in compressed time and space, serve to protect and nourish the economic roots of physical place obliteration, replacing local place identities; a pervasive process “which can only be transcended by a considerable intellectual or social effort” (Relph, 1976:59).

The movement of global investment, the compression of time and space, and the reproduction of mass identities thus provide both mechanisms and motivations for the continuous obliteration of places. In seeking to understand the mechanisms of loss of place, it is critical, however, to examine how these processes are functionally actualised at the scale of places⁹.

Harvey (1996:295) writes that imposed changes “affect internalised processes of place construction, sustenance, and dissolution”. Loss of place has been attributed to a number of in-place processes, including environmental and landscape degradation (Relph, 1976; Brown and Perkins, 1992; Harvey, 1996; Read, 1996; Williams, 1992; Hay, 2002; Hay, 2008), uninvited development (Harvey, 1996; Yung *et al.*, 2003), displacement (Brown and Perkins, 1992; Fullilove, 1996; Read, 1996), rapid social change (Yung *et al.*, 2003), and unconsulted regulation (Yung *et al.*, 2003; Davenport and Anderson, 2005).

The physical environment is a fundamental component of sense of place (Relph, 1976; Stedman, 2003a)¹⁰. Degradation of that environment, then, is a key process in the destruction of place¹¹. Loss of place can be caused by the degradation of

⁹ It should also be recognised that loss of place can be caused by other macro-scale processes or events, such as war or natural disaster (Brown and Perkins, 1992; Fullilove, 1996; Read, 1996; Manzo and Perkins, 2006).

¹⁰ See section 3.2.2 – *How are Places Created?*

¹¹ Environmental damage is not, however, in itself a guarantor of loss of place. It is broadly recognised that strong place attachments engender strong environmental ethics and a desire to maintain environments as they are, and can facilitate preservation and sustainable environmental management (Harvey, 1996; Williams and Stewart, 1998; Hay, 2002; Cheng *et al.*, 2003; Yung *et al.*, 2003; Davenport and Anderson, 2005; Hay, 2008). Some attachments to place, however, are predicated on the continuation of environmental damage. Examples include the coal-mining centred sense of place that existed in the coal towns of northern England in the first half of the twentieth century (Massey, 1994) and the desired maintenance of mining damaged landscapes in Queenstown,

physical ecosystems, urban spaces, rural landscapes, or any other manifestation of human habitat. Environmental philosopher Glenn Albrecht, after observing the psychological impacts of the coal-related industrialisation of the Upper Hunter, created the concept of 'solastalgia'. Solastalgia refers to the emotional and psychological distress that occurs "when there is the lived experience of the physical desolation of home" (Albrecht *et al.*, 2007:S96)¹². Although the directly-experienced aspects of landscape degradation are often recognised as causing loss of place, knowledge of damage to ecosystem processes and non-human life can also cause an individual's attachment to a place to be damaged¹³.

Additional to environmental damage itself is the imposition of environmental change from outside. Those existing in place seldom have the same desire or capacity to cause the magnitude of environmental change that external forces are capable of (Relph, 1976). The vigorous and widespread opposition to externally-

Tasmania (Hay, 2002b), while other attachments to place may tolerate or consider environmental damage inconsequential (such as rural existences based on intensive grazing).

¹² The concept of solastalgia is posited as being of global relevance in an era of unprecedented and accelerating changes to physical and hence cultural environments (Albrecht *et al.*, 2007). Solastalgia has provided a structure for consideration of the loss place attachment and related mental health issues, and has been considered in number of studies, including those related to rural decline, drought, land degradation, and hardship (Higginbotham *et al.*, 2007; Jardine *et al.*, 2007; Stain *et al.*, 2008; Speldewinde *et al.*, 2009); climate change (Berry *et al.*, 2008; Horton *et al.*, 2010; Hunter, 2009), indigenous loss of place (Parlee *et al.*, 2007; Hunter, 2009) and coal extraction (Connor *et al.*, 2004; Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b). Further discussion of solastalgia is provided in section 4.3.3 – *Loss of Place in the Coalfields*.

¹³ Peter Read (1996) describes the loss of place attachments that occurred as a result of the flooding, for a hydroelectric dam, of Lake Pedder, in south west Tasmania, despite the fact that many had not witnessed the inundation of the lake or visited it subsequently.

imposed change (Harvey, 1996; Hay, 2002a), the commonly perceived lack of understanding with which outside developers, governments, individuals or social groups seek to implement change (Hay, 2008), and the posited benefits of developing place-based consultation processes which can mediate natural resource management conflicts (Williams and Stewart, 1998; Cheng *et al.*, 2003; Yung *et al.*, 2003; Davenport and Anderson, 2005; Manzo and Perkins, 2006) all suggest that a lack of control over change is at the core of loss of place. Albrecht *et al.* (2007) make this idea explicit, suggesting that the loss of place engendered by environmental change can be magnified by a lack of community control over change-inducing processes.

While large, externally-imposed developments are commonly recognised as obliterating place, uninvited regulation may also damage places by restricting access or changing a place's symbolic or practical function. This can occur in cases where regulation may appear to be otherwise concordant with the environmental ethic often associated with place. For example, Davenport and Anderson (2005) and Yung *et al.* (2003) provide evidence suggesting that government designation of protected areas in the U.S. has served to degrade the place attachment of some local residents. Read (1996) found similar issues afflicting indigenous people and highland graziers in the Australian Alps, while Cocklin and Wall (1997) identified New Zealand government incentives for erosion-controlling plantation forestry as creating place conflicts.

Rapid social changes, when compared to gentler rates of place change, are also recognised as altering extant senses of place. Yung *et al.* (2003) identify the process of rural gentrification, subdivision and cultural change that has occurred in areas of the Rocky Mountains as causing loss of place amongst long-term residents. Carter *et al.* (2007) describe the imposition of external place changes as being driven by similar 'sea-change' processes on Queensland's Sunshine Coast. They suggest that the process of place loss is abetted by the imposition of mass identities, the marginalisation of non-urban places, and the domination of disenfranchised sections of the community by politically powerful groups who actively encourage

place disruption.

Displacement, as caused, for example, by conflict, famine, urban renewal, forced resettlement, or natural disaster, is also a significant generator of loss of place (Brown and Perkins, 1992; Fullilove, 1996; Read, 1996). Read, in his impressive documentation of the relationship between people and lost Australian places, *Returning to Nothing – The Meaning of Lost Places* (1996), records the impacts of displacement on place attachment resulting from such events as Darwin's Cyclone Tracy, the planned inundation of the town of Adaminaby, the demolition of the coal town of Yallourn, and bushfire events in Victoria.

Loss of place is felt both individually and collectively, and is subjective, highly variable, and complex. Despite the difficulties thus engendered in clearly identifying how these losses are felt, it is nonetheless apparent that there are a number of significant repercussions which result from the degradation and loss of attachments to place.

3.3.3 The Impacts of Place Obliteration.

Edward Relph (1976:141), positing a sense of place as a fundamental human need, perceives that, in its absence, "human existence, while possible, is bereft of much of its significance". Jeff Malpas (1999:15), in *Place and Experience: A Philosophical Topography*, writes that "there is no possibility of understanding human experience... other than through an understanding of place."

Examining the causational processes of place alteration and dissolution, Relph (1976) and Harvey (1996) posit an epidemic of placelessness, with severe consequences for the spiritual lives of the human species:

there is a much deeper crisis of homelessness to be found in the modern world; many people have lost their roots, their connection to homeland... If we lose the capacity to dwell then we lose our roots and find ourselves cut off from all sources of spiritual nourishment (Harvey, 1996:301).

This broader concern for the richness of human lives is foundational to the characterisation of 'lost' places, and to the identification of place maintenance as desirable (Relph, 1976; Read, 1996). In more specific terms, however, a number of impacts that result from the loss of place have been identified, both in individuals and in communities. These include psychological damage as a result of displacement (Fullilove, 1996), 'solastalgia' (Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b), the fragmentation of previously strong communities (Yung *et al.*, 2003), the loss of existing and potential frameworks for place-based environmental stewardship (Hay, 2008), the loss of unique cultures (Hay, 2008), damage to both indigenous and non-indigenous place-grounded spirituality (Read, 1996; Windsor and McVey, 2005), and the imposition of repressive economic, political and social structures (Harvey, 1996).

Fullilove (1996:1516, 1517), in examining the psychological impacts of displacement, assumes that psychological well-being "depends on strong, well developed relationships with nurturing places", with places setting "the conditions for human consciousness", and argues that displacement is generating a potentially unrecognised epidemic of mental health issues. Albrecht *et al.* (2007) posit the psychological impacts of displacement as capable of occurring in place, as environmental degradation and community change fundamentally alter attachments to place.

The loss of unique cultures also appears significant as an outcome of place loss. Places provide the physical and social context for the generation and maintenance of unique cultural identities. Often these cultures cannot be transposed to other physical contexts; they are reliant on places, and once those places are altered, the culture is destroyed. Snyder *et al.* (2003) describe the integration of physical landscapes and culture in subsistence societies; meaning, sustenance, kinship and culture are intertwined and dependent on a particular physical and cultural place context. Hay's (2008) description of the loss of a unique timber harvesting and sawmilling-based culture in the north-east of Tasmania, due to the onset of

industrial logging practices, provides an example of the loss of a place-dependent culture in a western context. As Relph (1976:139) writes:

Places with settings which are not only distinctively local and reflect a continuity of style and tradition, but also constitute profound centres of care and existence, are indeed part of an old cultural order; and although we may look back to them nostalgically they have no active part to play in the new landscape.

Such degradation extends acutely into those cultures with defined spiritual and religious place dependencies. Windsor and McVey (2005) examine the loss of place of the Cheslatta T'En Canadian First Nation as a consequence of a hydroelectric dam development. They argue that loss of place is more devastating to indigenous groups as they have stronger spiritual connections, whereas (Canadian) Europeans have lost much of their place identity. Alternatively, Read (1996) suggests that it is futile to attempt to compare the magnitude and repercussions of place loss between indigenous and non-indigenous, as loss of authentic place attachments has severe impacts no matter what cultural context they are felt within.

Communities can also become fragmented and social breakdown engendered as developments, policies and processes cause places to be altered, dissolved and forgotten. The situation of the Cheslatta T'En starkly illustrates this issue; within several years of the flooding of their ancestral lands, a healthy, self-sufficient and admirably-functioning community had become afflicted with alcoholism, suicide, welfare dependency, and a crippling nostalgia (Windsor and McVey, 2005).

These breakdowns in culture and community are not only impacts within themselves; they have significant implications for the spiritual, emotional, and mental health of people, and also for the biophysical environment, as commonly posited notions of place-based care and stewardship are usurped by profit-focused economic rationalism (Harvey, 1996; Williams and Stewart, 1998; Hay, 2002a).

The impacts detailed by no means constitute an exhaustive list; the nature of impacts and the significance to each affected individual and community will vary depending on their sense of place, the magnitude and rapidity of change, the level of community involvement in that change, and a host of other unique factors. There is broad recognition within the literature of place that the impacts of such place loss are significant. The question arises, then, as to ways in which that loss of place can be both recognised and mitigated. A number of methods and concepts have been posited as potentially ameliorating place loss. One approach that appears well-suited and capable of addressing the causational processes and negative outcomes of place loss, as a discipline that both predicts and mitigates the human impacts of planned change, is social impact assessment.

Chapter 4 – Integrating Place into Social Impact Assessment

4.1 Making Place Count in Institutional Settings

4.1.1 Searching for Praxis

The study of place has often been grounded in issues related to the management of land and natural resources¹⁴. Recent decades have witnessed significant efforts in defining, recognising, and refining the understanding of place values in ways which allows their syncretisation into planning and management frameworks.

This chapter briefly reviews the literature regarding the integration of place into resource management, before examining the discipline of SIA as an appropriate legislative and technical framework within which to achieve this integration. The institutional SIA structures relevant to the study area are described, as is the application of SIA to the coal industry. Finally, the recognition of loss of place as an impact of coal development in the Hunter/Gunnedah/Gloucester region is discussed.

4.1.2 The Recognition of Place in Natural Resource Management

Gunderson and Watson (2007:706) observe that “the connectivity between people and places is often described as powerfully emotional sentiments that influence how people perceive, experience, and value the environment”, and posit this as a key reason for recognising sense of place in environmental management frameworks. Williams and Stewart (1998:18) suggest that sense of place provides a way in which people, usually viewed as overwhelmingly negative influences on the natural world, can be recognised as rightfully existing within ecosystems:

¹⁴ For examples, see Relph; 1976; Harvey, 1996; Williams and Stewart, 1998; Hay, 2008.

By initiating a discussion about sense of place, managers can build a working relationship with citizens that reflects the complex web of lifestyles, meanings, and social relations endemic to a place or resources. Sense of place can be the shared language that eases discussions of salient issues and problems and that affirms the principles underlying ecosystem management.

The project identified by Williams and Stewart (1998) is also “motivated by a desire to replace mechanistic, reductionist, commodity-oriented social science with more holistic, integrated social assessments” (Yung *et al.*, 2003:856). Beckley (2003:107) recognises that an understanding of the human values inherent in place “may have tremendous consequences for policy issues” whilst validating the importance of place, and several other studies posit recognition of place as potentially ameliorating resource conflict (Cheng *et al.*, 2003; Yung *et al.*, 2003; Wester-Herber, 2004; Davenport and Anderson, 2005; Manzo and Perkins, 2006).

The relationship between place and resource management and planning has thus become a significant field of study. Environmental psychologists in particular have expended significant effort in understanding how change to and management of physical landscapes affects conceptions of place, and how and why people respond to change. Such research has focused on a number of resource management and planning issues, primarily forestry (Williams and Stewart, 1998; Kruger and Jakes, 2003; Stedman, 2003b), protected area management (Williams and Vaske, 2003; Yung *et al.*, 2003; Davenport and Anderson, 2005; Brown and Raymond, 2007; Gunderson and Watson, 2007), tourism and recreation (Williams *et al.*, 1992; Kyle *et al.*, 2003; Kyle *et al.*, 2004; Farnum *et al.*, 2005; Gua and Ryan, 2008), and the utility of place as a unifying principle for managing resource management conflict (Cheng *et al.*, 2003; Yung *et al.*, 2003; Wester-Herber, 2004; Davenport and Anderson, 2005; Manzo and Perkins, 2006).

Research regarding place and land use and resource management issues in Australia has focused on several contexts, including forestry in Tasmania (Hay, 2008), regional land use in the Otway ranges, Victoria (Brown and Raymond, 2007), coastal

development on Queensland's Sunshine Coast (Carter *et al.*, 2007) and the conservation behaviour of farmers (Gosling and Williams, 2010). A significant focus of applied place-orientated research has fallen on the consequences for place of large-scale coal mining and coal-fired electricity generation in the Upper Hunter Valley, New South Wales (Connor *et al.*, 2004; Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b).

A significant amount of place and resource management scholarship examines the nature and magnitude of place attachments in determining responsive behaviours to particular management actions, or the potentiality of place in facilitating improved community participation in resource management. Much of this research accentuates the positive benefits of understanding places for environmental planning and management, while the causes and outcomes of loss of place appear less examined.

Research which focuses explicitly on loss of place as a direct impact of a particular activity or development has been carried out in fields such as psychology (Fullilove, 1996), geography (Windsor and McVey, 2005), history (Read, 1996), resource management (Cocklin and Wall, 1997) and impact assessment (Kaltenborn, 1998). Other studies, such as Hay (2008), and those addressing solastalgia (Connor *et al.*, 2004; Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b), have taken a multi-disciplinary approach, combining such fields as psychology, geography, anthropology, sociology, and history.

Despite considerable research relating place to resource management, and the recommendation of methods through which this relationship could be applied (such as by Williams and Stewart, 1998; Beckley, 2003; Cheng *et al.*, 2003; Davenport and Anderson, 2005; and Farnum *et al.*, 2005), there is virtually no reported uptake by planning and environmental management agencies, the posited benefits notwithstanding. A means of bridging the gap between the increased understanding of particular place loss engendered by applied research, and potential methods with

which to integrate that knowledge into management and planning frameworks is thus suggested.

Social Impact Assessment provides a ready-made institutional framework for such an integration. SIA is the primary process for assessing the social impacts of projects and plans, and is an applied discipline that recognises that “the entire matrix of community beliefs, values, attitudes, norms and practices will be affected” by such planned interventions (Burdge and Johnson, 2004:16). This recognition is implicitly, and occasionally explicitly (van Schooten, 2003:87; Burdge and Johnson, 2004:25), inclusive of place meanings and values, and there exists some limited discussion regarding the desirability of such a praxis (Kaltenborn, 1998; Vorkinn and Riese, 2001; Smaldone *et al.*, 2005; Albrecht *et al.*, 2007).

4.2 Social Impact Assessment and Mining

4.2.1 Social Impact Assessment: Definitions, Foundations, and Legislative Status

A widely used definition of Social Impact Assessment is that developed by the International Association for Impact Assessment (Vanclay, 2003:5):

Social Impact Assessment includes the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment.

Social impacts refer to “changes to individuals and communities due to a proposed action that alters the day-to-day way in which people live, work, play, relate to one another, organise to meet their needs and generally cope as members of society”, with this definition inclusive of cultural values and meanings as well as economic, social, demographic and psychological impacts (Burdge, 2004:3). Barrow’s (2000:3)

broad definition of SIA interprets it as the “systematic, iterative, ideally ex-ante assessment of such changes.”

SIA is multi-disciplinary, utilising the social sciences to identify the impacts of a project and potential alternatives in advance of implementation (Howitt, 2001; Burdge, 2004). It is often considered a sub-field of the Environmental Impact Assessment (EIA) process¹⁵, with considerable methodological and legislative affinities existing. There are also significant differences, however, in disciplinary lineage, some aspects of technique, and legislative and financial support, SIA being commonly neglected in comparison to consideration of biophysical impacts (Barrow, 2000; Burdge, 2002).

In Australia, impact assessment was first legislated for by the Whitlam Government in 1974, responding to the example of the U.S. *National Environmental Protection Act*. The current federal impact assessment legislation, the *Environmental*

¹⁵ Assessment of the way in which major projects and plans alter existing environmental conditions has become a permanent and legislated fixture in many jurisdictions (Howitt, 2001). EIA was institutionalised with the passage of the *National Environmental Protection Act (NEPA)*, in the United States, in 1969 (Burdge, 1995; Howitt, 2001). The initial focus of the seminal *NEPA* legislation was solely on biophysical impacts. It became rapidly apparent, however, that this focus neglected impacts on social and cultural environments, a situation which was crystallised by the approval of a Trans-Alaskan pipeline which, after considerable analysis of environmental impacts, completely ignored the immense changes imposed on local indigenous and non-indigenous people (Howitt, 2001; Burdge, 2004:4,5). SIA moved to centre stage during the inquiry investigating the approval of the Mackenzie Valley gas and oil pipeline in Canada in the mid-1970s. This was the first formal consideration of social impacts to be undertaken anywhere, and resulted in a recommendation that the project be postponed for ten years to settle indigenous land claims and build social infrastructure (Joyce and Macfarlane, 2001; Burdge, 2004:4,5).

Protection and Biodiversity Conservation Act (EPBC Act) (1999), is concerned primarily with biophysical, as opposed to social, impacts¹⁶.

Assessment and planning processes in Australia are, however, largely legislated for and implemented at the state level (Thomas and Elliot, 2005). In New South Wales, impact assessment was institutionalised in the planning process with the passage of the 1979 *Environmental Planning and Assessment Act (EP&A Act)*. The *EP&A Act* does explicitly consider the human impacts of developments, with Object 5(a)(i) encouraging “the proper management, development and conservation of natural and artificial resources... for the purpose of promoting the social and economic welfare of the community and a better environment” (New South Wales Government, 2010a:13). The impacts to be assessed for a particular project, including social impacts, are decided by the Director-General of the Department of Planning after consultation with relevant public authorities (New South Wales Government, 2010a:60), with social impacts considered within an EIA framework.

¹⁶ Although restricted to matters of Commonwealth jurisdiction, this legislation asserted federal control over some development projects. The original legislation was succeeded by the *EPBC Act* in 1999 (Howitt, 2001). The *EPBC Act* is restricted to a checklist of “matters of national significance.” These are largely biophysical, with the exception of cultural impacts related to indigenous peoples. Once a development has ‘triggered’ a matter of national significance, however, compelling the Commonwealth Environment Minister to make a determination under the *EPBC Act*, considerations of the social and economic impacts of a project are also undertaken (Commonwealth of Australia - Department of the Environment *et al.*, 2010).

Perhaps the landmark SIA conducted in Australia was that concerning the proposed gold mine at Coronation Hill in the Northern Territory in the late 1980s. As a result of an SIA inquiry conducted under Commonwealth legislation, which recognised the magnitude of the cultural and spiritual impacts on the Jawoyn people should the project proceed, the proposal was rejected, although political factors, frequently present in SIA (Howitt, 2001), are also suggested by Lane (2003) as being influential.

There appears, however, to be no specific SIA guidelines or prescriptions currently in use within the legislative or regulatory frameworks of the *EP&A Act*¹⁷.

4.2.2 SIA Objectives and Practice

In delineating the International Association for Impact Assessment's *International Principles for Social Impact Assessment*, Vanclay (2003:7) determines that the promotion of social and environmental sustainability and equality is the primary purpose of SIA; SIA should ensure that a "development maximises its benefits and minimises its costs." Burdge (2004:4) sees SIA as "providing guidance in managing the consequences of social change." Specifically, properly implemented SIA provides a basis for sound decision-making; facilitates the avoidance or mitigation of negative impacts; assists in educating the public of potential impacts and allows them to develop informed positions; ameliorates conflicts; can identify win-win developer/community outcomes (where possible); and provides a mechanism for ensuring the proponent's accountability (Howitt, 2001; Burdge, 2004; Esteves, 2009).

There is long-running debate as to how SIA should be conducted, as a discipline and as a practice. On one hand is the view that SIA should be a technocratic, positivistic, social scientific exercise in prediction which emphasises the role of expert practitioners and seeks solely to inform decision-making (Lockie, 2001). This 'technocratic' approach seeks to position SIA as a 'hard' science, and has been roundly criticised for ignoring the dynamic and value-laden nature of social processes and systems (Barrow, 2000:31; Lockie, 2001; Lane, 2003).

The alternative viewpoint emphasizes the role of SIA in not only seeking public input, but also as a mobilising and educative force which engages the public directly in decision-making processes, integrates community knowledge, and responds to

¹⁷ A previous set of guidelines, the New South Wales Government's *Guidelines for Assessing Social Impacts*, had been developed, however (Social Policy Development Unit - The Cabinet Office, 1997).

the dynamism of communities subject to change (Lockie, 2001). This participatory, 'political' approach, though marginalised by technocratically-focused regulators, institutions and developers, is championed by many seeking to advance the efficacy of SIA practice, facilitate the recognition of a wider variety of impacts, and fulfil the promise of SIA in improving outcomes for affected communities (Howitt, 2001; Lockie, 2001; Burdge, 2003; Lane *et al.*, 2003; Sairinen *et al.*, 2010). Increasingly, an 'integrative' approach is being encouraged and adopted which overcomes the narrowness, inflexibility and developer bias of the technocratic approach and provides structure and credibility to and a balancing of the subjectivity of the political approach (Barrow, 2000:30-32; Lockie, 2001; Lane, 2003).

While an adherence to the political or technocratic approach may define the specific techniques utilised, the methodology of SIA is generally recognised as consisting of a stepwise process¹⁸. Broadly, SIA requires an understanding of baseline conditions against which changes can be predicted, and the identification of possible changes. An understanding of past changes, either in-situ or in another related context, is also viewed as being of significant utility (Barrow, 2000:79-82; Burdge and Johnson, 2004:15-30). SIA practitioners seek to identify social, socio-economic, cultural and psychological variables from which changes can be observed, with key variables including population characteristics, community and

¹⁸ Properly-implemented SIA processes generally involve the following steps, in a relatively rigid chronological order: the 'scoping' of the basic social situation, including initial consideration of potential impacts and the establishment of terms of reference for the assessment; the formulation of alternatives; the 'profiling' of the social system, its characteristics, and measurable indicators; the prediction of likely impacts; an assessment of the magnitude and significance to the community of those impacts; an aggregated evaluation of impacts; and monitoring, mitigation and *ex-post* auditing (Burdge, 1995:37; Barrow, 2000:84).

institutional structures, and community resources (Burdge, 1995:27-30; Barrow, 2000:80)¹⁹.

The concept of 'significance', being the acceptability or otherwise of a particular magnitude of impact to the community, is the determining factor as to whether an impact has occurred. The ascription of significance consists largely of professional judgements by practitioners and assessors, based on considerations of impact intensity, direction, duration, and geographic sphere of influence (Joyce and Macfarlane, 2001:11). This requirement for often value-laden discretionary judgement is one reason why SIA is deemed by some, such as Howitt (2001), to be a political process, although guidelines and legislation may provide a degree of prescription concerning thresholds of significance.

The on-going development of SIA, and the increased application and progression of SIA techniques, has ensured that it has become a common, if lesser, component of EIA, and it has been identified as improving environmental and social outcomes in a number of examples (Barrow, 2000; Joyce and Macfarlane, 2001; Lane *et al.*, 2003; Burdge, 2003; Burdge, 2004; Karjalainen and Jarvikoski, 2010). SIA does however,

¹⁹ Specific indicators are recognised which allow the proxy measurement of change in a variable; for example, changes to social capital or sense of community may be predicted by observing changes in participation rates in local volunteer organisations in similar, previously impacted contexts, and applying those changes to the project being assessed (Social Policy Development Unit - The Cabinet Office, 1997). Impacts can be demographic, economic, value-based, psychological, or attitude-orientated, and a variety of techniques and data sets may be employed to recognise them. Techniques for procuring qualitative and quantitative data include public-participation techniques, secondary demographic data, checklists, modelling, and expert opinion (Barrow, 2000:83-97).

face a number of significant impediments to effective operation, with constant technical re-appraisal and development occurring²⁰.

Identified impediments to effective SIA include a limited and confused theoretical base (Barrow, 2000; Lockie, 2001); the narrow definition of impacts in socio-economic terms (Lockie, 2001; Lane *et al.*, 2003); a technocratic rationality which focuses on quantification to the detriment of non-empiricisable impacts (Lockie, 2001; Vanclay, 2002; Lane, 2003); limited capacity for long-term monitoring (Joyce and Macfarlane, 2001; Ivanova *et al.*, 2007); little recognition of cumulative impacts (Ivanova *et al.*, 2007); a lack of properly trained practitioners (Barrow, 2000:66; Vanclay, 2002; Burdge, 2004:10-11); limited multi-disciplinary integration into planning and EIA frameworks (Barrow, 2000:48; Lockie, 2001; Burdge, 2002; Slootweg *et al.*, 2003); less developer and institutional recognition and support than for biophysical impacts (Barrow, 2000:69; Lockie, 2001; Burdge, 2002); a lack of institutional support (Barrow, 2000:69; Burdge, 2002; Ahmadvand, 2009); a structural bias towards emphasising positive benefits (Lockie, 2001; Lane *et al.*, 2003); marginalisation of community concerns and participation (Lockie, 2001; Sairinen *et al.*, 2010); community perceptions that public participation in SIA is merely a public relations exercise (Ivanova *et al.*, 2007); a lack of practitioner and public understanding of the politicisation of knowledge (Barrow, 2000:71; Howitt, 2001); and, overridingly, a lack of efficacy in the absence of beneficial political conditions (Howitt, 2001; Lane *et al.*, 2003; Sairinen *et al.*, 2010).

4.2.3 SIA and Coal Mining

The impacts of coal mining and CSM extraction are recognised institutionally through various legislative and regulatory instruments available to the Government of New South Wales. The primary consideration of impacts is undertaken during the

²⁰ For reviews on the state of SIA, see Lockie, 2001; Burdge, 2002; 2003; Vanclay, 2003; and Sairinen *et al.*, 2010.

planning approval stage, with the *EP&A Act* mandating an assessment of impacts²¹.

The *EP&A Act* is largely focused, in object and in practice, on the impacts of projects on the biophysical environment, although considerations of social impacts are mandated and undertaken. In practice, the consideration of social impacts for coal mining and CSM developments are largely focused on socio-economic impacts. For example, of the 15 coal projects within the Hunter/Gunnedah/Gloucester region being assessed under the *EP&A Act* as of August 2010, and for which Environmental Assessments (EAs) were available (all of which were coal mining projects), only 4 considered non-economic social impacts (New South Wales Government

²¹ “Mining, petroleum production, quarries and associated processing industries” are identified under Schedule 1 of the *State Environment Planning Policy (Major Projects) 2005*, subjecting such projects to Part 3A assessment under the *EP&A Act* if particular prescriptions are met (New South Wales Government, 2010b). Coal mining is automatically subjected to Part 3A, as are all CSM projects in all Hunter Valley LGAs. In other areas, including Gloucester Shire and LGAs in the Gunnedah Basin, CSM developments with a capital investment over 30 million dollars or employing more than 100 people, or occurring in a designated ‘environmentally sensitive area of state significance’, are prescribed as Part 3A of the Act (New South Wales Government, 2010b). The Minister for Planning can also choose to assess any project under Part 3A (New South Wales Government Department of Planning, 2010b). Non-Part 3A assessments are carried out by local government authorities under Part 4 of the *EP&A Act* (New South Wales Government Department of Planning, 2010a).

The Part 3A major projects assessment category has been heavily criticised by some sectors of the community for overriding other environmental and heritage protection legislation and limiting third party rights of appeal in particular circumstances (Connor *et al.*, 2009; Ratcliff *et al.*, 2010). Conservationists have been particularly critical of the perceived ease of approvals for coal projects since the legislative inception of Part 3A in 2005 (Rhiannon, n.d.-b; Nature Conservation Council of New South Wales, 2010).

Department of Planning, n.d.)²².

A number of studies in the past decade, using recognised and developing social and socio-economic SIA techniques, have examined, *ex-post*, the social impacts of coal mining in Australia, concentrating on the Hunter Valley, and the Bowen Basin in Queensland. These studies include Brereton and Forbes (2004), Ivanova *et al.* (2007), Rolfe *et al.* (2007), Brereton *et al.* (2008), Lockie *et al.* (2008; , 2009), and Franks *et al.* (2009). These studies have identified such impacts as the loss of sense of community due to shift work patterns, in-migration, and a non-local workforce; the loss, shortage, and poor maintenance of infrastructure; housing shortages; and 'dutch disease', being the creation of a two-speed economy due to mine-related wage and service-cost inflation (Ivanova *et al.*, 2007; Rolfe *et al.*, 2007)²³.

A second mode of inquiry, using anthropological, sociological, and psychological investigation has also emerged, assessing the psychological and physical health impacts of coal mining and power generation in the Upper Hunter, with significant reference given to the human impacts of physical landscape change, including

²² For a list of the EAs referred to, see Appendix A.

²³ Ivanova *et al.* (2007) also identified concerns with the practice of SIA in the Bowen Basin, including a lack of monitoring and assessment beyond the approvals stage, little assessment of the result of changes of scale of operations, and little recognition of the emerging issue of cumulative social impacts (Brereton *et al.*, 2008; Franks *et al.*, 2009). The cumulative impacts of multiple mining operations, being "the successive, incremental and combined impacts (both positive and negative) of an activity on society, the economy and the environment," (Franks *et al.*, 2009:351) are increasingly being identified as significant (Brereton *et al.*, 2008; Franks *et al.*, 2009). Cumulative impacts "can place significant pressure on social, economic and environmental capital and render conventional mine-by-mine approaches to management ineffective" (Franks *et al.*, 2009:351). They may also persist over time, and can accumulate in a linear, exponential, or positive feedback-inducing fashion (Franks *et al.*, 2009). Franks *et al.* (2009:351) assert that "cumulative impacts can be what are most important to environments, communities and economies surrounded by multiple mining operations because cumulative impacts are what they experience."

solastalgia. Studies to emerge from this approach include Connor *et al.* (2004; 2008), Albrecht *et al.* (2007), and Higginbotham *et al.* (2007b; 2010).

Although there are significant differences in technique, focus, and disciplinary grounding between the two approaches cited above, one point of convergence is provided by Brereton *et al.* (2008). In their SIA study of the Upper Hunter town of Muswellbrook, they suggest (2008:xxvi) that “further investigation is required to ascertain whether the rapid expansion of mining activity around Muswellbrook has adversely impacted on people’s sense of place, [and]... community identity” and that, following Connor *et al.* (2004) and Higginbotham *et al.* (2007b), further exploration of sense of place as a potential impact of coal mining is warranted. This suggestion, in concert with similar calls from researchers approaching on a different disciplinary path in the same geographical and industrial context, such as Albrecht *et al.* (2007), suggests significant need and potential for assessing the coal mining-induced loss of sense of place as a social impact.

4.3 Social Impact Assessment and Sense of Place

4.3.1 Social Impact Assessment and Sense of Place: Natural Affinities and Unexplored Potential

A number of SIA practitioners have recognised the relationship between place and SIA. Barrow (2010) determines that SIA is often best conducted at the level of places, while Lane (2003:91), writing in reference to the integration of indigenous knowledge into SIA, suggests that local knowledge of place, including resource management histories and landscaped-derived values, “are at once signals of the complexity of human-environment interactions and the importance of local knowledge in understanding local environments.”

The potential of place to be used as a framework for facilitating community participation in resource management has also been widely recognised²⁴. There are significant affinities between some community-orientated forms of SIA and the posited utility of applying understandings of place to resource management, both of which aim to harness knowledge of places to reduce conflict, facilitate community involvement, and identify community objectives. Examples of studies which demonstrate these affinities include, from the place perspective, Williams and Patterson (1996), Williams and Stewart (1998), Kaltenborn (1998), Cheng *et al.* (2003), Yung *et al.* (2003), Davenport and Anderson (2005), and Manzo and Perkins (2006), and from the SIA perspective, Becker *et al.* (2003), Harris *et al.* (2003), Lane *et al.* (2003), Walker (2003) and Karjalainen and Jarvikoski (2010).

A limited number of studies have specifically addressed the relationship between impact assessment and place. These have largely focused on how attachment to place is potentially one of the strongest predictors of the nature and magnitude of reactions to planned interventions in an ecosystem or community, and thus should be considered by decision-makers as a predictive tool (Williams *et al.*, 1992; Kaltenborn, 1998; Vorkinn and Riese, 2001; Smaldone *et al.*, 2005). Kaltenborn (1998:171), following Williams and Patterson (1996), in a study of the integration of sense of place into EIA in the Arctic, suggests that “natural environments can be viewed both as ecological systems subject to the laws of natural processes and as socially constructed places,” and that EIA should thus encompass place meanings as a matter of course.

The potential of utilising place to determine the felt severity of impacts is supported by several concepts in SIA. The importance of values and attitudes as key determinants of how impacts are felt (Barrow, 2000:68), and the necessity of ascribing a discretionary assessment of the ‘significance’ of an impact to the

²⁴ See section 4.1.1. – *Searching for Praxis*.

community (Joyce and Macfarlane, 2001) both suggest the conceptual validity of considering sense of place as a predictive mediator of social impacts.

Albrecht and Thompson (1988) argue strongly for the institutionalisation within SIA of the analysis of attitudes, perceptions, beliefs, values, and opinions. Whilst the necessity of incorporating these aspects into assessments is broadly recognised, their recognition has been hindered by the question of whether values are predictive or dependent variables; the difficulty in making behavioural predictions from attitudinal measurement; the complexities of how other variables interact with attitudes; and the widespread unfamiliarity of SIA practitioners with highly-developed attitudinal measurement techniques (Albrecht and Thompson, 1988). Such problems notwithstanding, Albrecht and Thompson (1988) view the consideration of attitudes and values as crucial in both determining the way impacts are felt, and in assessing the social impacts that can occur as a result of value, belief, and attitude change. Both these concepts have been examined in the place literature, with examples of the former including Williams *et al.* (1992) and Williams and Vaske (2003), and of the latter being Windsor and McVey (2005), Albrecht *et al.* (2007) and Hay (2008). Vanclay (2002:184) notes that the regular disparity between community opinion and expert opinion has resulted in many significant underestimates of social impacts, suggesting a greater role for the consideration of attitudes, perceptions and values.

Loss of place would appear to be implicit in considerations of community and cultural impacts, fitting within the International Association for Impact Assessment's definition of social impacts (Vanclay, 2003). The New South Wales Government's *Guidelines for Assessing Social Impacts* (Social Policy Development Unit - The Cabinet Office, 1997:7) also identifies 'intangible factors', along with economic and quality-of-life variables, as the primary measures of 'community well-being.' Van Schooten (2003:87) and Burdge and Johnson (2004:25) explicitly recognise changes to place attachment in their checklists of social impacts and variables, although no explication of the significance of this recognition is provided.

Perhaps the clearest call for the recognition of loss of place as a social impact is that provided by Albrecht *et al.* (2007). This study suggests the potential of applying the measurement of various psychological manifestations of environmental disturbance, of which the loss of place concept of solastalgia is one component, to SIA. The focus of this and subsequent, related studies (such as Higginbotham *et al.*, 2007b) is on the conceptual validation of solastalgia, the establishment of the validity of a measurement tool (the 'Environmental Distress Scale') and the recognition of various "bio-psycho-social" impacts, rather than advocating for the specific recognition of loss of sense of place as a social impact (Higginbotham *et al.*, 2007b:245).

Given the preoccupation of place theory with loss of place, the ubiquity of place-altering developments and processes in the contemporary world, and the posited need to recognise 'intangible', attitudinal, and value-based social impacts, some consideration as to why there is limited explicit conflation of SIA and loss of place is warranted.

The empirically-focused bias of SIA provides one significant reason, with Vanclay (2002:185) citing several political and practical reasons as to why this situation prevails²⁵. Brereton (2008:80) specifically identifies the difficulties in measuring changes to sense of place as an impediment to its recognition in SIA. The multi-disciplinary approach which has identified solastalgia as a consequence of environmental change would suggest that the widely-recognised failure to achieve multi-disciplinary integration in impact assessment is also a contributing factor (Barrow, 2000:48; Lockie, 2001; Burdge, 2002; Slootweg *et al.*, 2003). Albrecht and Thompson (1988) suggest that a failure to employ psychologically-trained

²⁵ It should be noted that others, such as Ivanova *et al.* (2007), are more encouraging of SIA's ability to recognise the impacts of most importance to the community, not only those that are common or easiest to measure.

practitioners is the largest impediment to the recognition of attitudes and values in SIA. Two further explanatory factors may be a bias towards emphasizing positive, socio-economic impacts (Lockie, 2001; Vanclay, 2002; Lane *et al.*, 2003), and the complications for project approval which may accompany the recognition of a social impact which is likely to be overwhelmingly negative, potentially commonplace, difficult to mitigate, and likely obstructive in project development.

4.3.2 Loss of Place in the Coalfields

Relph (1976:109,115) writes that “the sheer scale of modern mining... enterprises tends to obliterate places”, and that “with considerable control over economic expansion and physical planning the capacity of the state and the lower levels of government for place-making or place destruction is immense.” The increasing scale of coal mining and CSM extraction in the Hunter, Gunnedah and Gloucester areas, allied with planning processes and government policy (such as infrastructure construction) which facilitate coal development (Evans, 2008; Connor *et al.*, 2009) and emergent concerns regarding loss of place (Connor *et al.*, 2004; Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b; Brereton *et al.*, 2008), would suggest that Relph’s three decade-old observations are manifestly relevant to the region. The loss of sense of place as a result of coal mining operations in the Hunter and surrounding regions is recognised both in the literature (Connor *et al.*, 2004; Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b; Brereton *et al.*, 2008) and in the public sphere (Ferguson, 2009; Fowler, 2010), although it remains unrecognised in impact assessment practice.

In an industry-facilitated study into the cumulative impacts of coal mining around the town of Muswellbrook, Brereton *et al.* (2008:80) found that “changing ‘sense of place’ and ‘community ownership’ were identified [by the study’s key informant consultative group]... as being related to the increasing changes in the local physical environment due to mining”; that there was considerable concern regarding these change; and that sense of place constituted an important issue in need of further research. Albrecht *et al.* (2007) detail examples of sense of place being undermined

by imposed and unwelcome landscape change, and by environmental stressors associated with coal mining and power generation in the Upper Hunter Valley. A number of national media reports have also highlighted place-related issues in the Upper Hunter and the Gunnedah Basin's Liverpool Plains (Ferguson, 2009; Fowler, 2010).

Indeed, many of the processes posited as causing loss of sense of place and solastalgia are present in the region. These processes include environmental and landscape degradation (Connor *et al.*, 2004b; Albrecht *et al.*, 2007; Brereton *et al.*, 2008:80), uninvited development and a lack of input into place-altering decision-making (Albrecht *et al.*, 2007; Higginbotham *et al.*, 2010), displacement and social dislocation caused by land procurement (Brereton *et al.*, 2008:xxv), and rapid and/or significant social change (Connor *et al.*, 2004). Connor *et al.* (2004:54), in reference to those living adjacent to coal mining operations in the Upper Hunter, encapsulate the loss of individual sense of place:

These individuals cannot readily pack up and leave; they remain in an area that was their location of choice or part of their family heritage, but now they experience the destruction of nearly all aspects of life that once provided them with a sense of place and an identity tied to the distinctive qualities and features of life in rural Australia.

These identified issues, in concert with the literature on place and resource management, and local public discourse, suggest that loss of place may constitute a significant concern for the communities of the Hunter/Gunnedah/Gloucester region that are subject to coal development. Given this incipient recognition of loss of place as a major social impact, both generally and specifically in relation to coal, it is therefore incumbent to seek direct evidence of whether loss of place is indeed induced by coal developments, and, further, to assess whether consideration of those impacts in the institutional assessment processes which exist in the Hunter/Gunnedah/Gloucester region is appropriate.

Chapter 5 – Data Collection and Analysis Techniques

5.1 *Striking a Balance: Place, SIA, and Technocratic Decision-Making*

5.1.1 Research Design

Understanding the nature and magnitude of attachments to place is an evolving and oft-debated field. The combination and divergence of phenomenological, psychometric, cognitive, quantitative and qualitative understandings and methods has sparked much progression and discussion (for examples see Seamon, 1984; Williams and Patterson, 1996; Williams and Stewart, 1998; Kruger and Jakes, 2003; Stedman, 2003b; and Patterson and Williams, 2005). Similarly, there is considerable debate within SIA as to what techniques and paradigms should be utilised to correctly predict impacts, and the magnitude and significance of those impacts (Lockie, 2001; Vanclay, 2002; Sairinen *et al.*, 2010).

The latent, experiential, and complex nature of sense of place ensures that its explication presents a difficult project (Stedman, 2003b). Somewhat oppositionally, the technocratic nature of dominant SIA paradigms requires ways of understanding and empiricising perceptions across broad community strata. Thus, any method employed which seeks to position loss of place within SIA frameworks must balance a cognisance of technocratic decision-making and the need to identify community concerns across meaningful samples of the community, with the particularistic and individual nature of place and the complex factors which engender its loss.

This study employs multiple methods in order to negotiate these fraught, evolving, yet potentially traversable epistemological and methodological landscapes.

Triangulated quantitative and qualitative analysis has been undertaken using the Gloucester Shire LGA as the unit of analysis. Gloucester is subsequently considered as a case study relevant to the broader, spatially-bounded context of the Hunter/Gunnedah/Gloucester region. Quantitative analysis is based on a number of techniques, including scale items developed by Higginbotham *et al.* (2007a; b),

while the qualitative analysis is based on Layder's (1998) adaptive theory.

5.1.2 'Measuring' Place

Attempts to explicate sense of place in relation to environmental management can be crudely characterised as existing in two camps. Pioneering phenomenological and psychological qualitative approaches have been increasingly challenged by an environmental psychology-based, often psychometric approach which posits that it is possible to empirically measure place, using discrete, defined psychological constructs (Stedman, 2003b; Patterson and Williams, 2005)²⁶.

The former epistemology holds that places consist of inseparable combinations of factors – environmental, social, cultural, temporal, experiential, historical, and so on – and that a qualitative approach which appreciates this indivisibility is the only possible way through which to recognise the nuance and complexity of places (Relph, 1976; Seamon, 1984; Gunderson and Watson, 2007). This framework becomes somewhat restrictive, however, when attempts are made to insert recognition of place into technocratic resource and land management decision-making structures (Stedman, 2003b). The need to generate data which represents, or purports to represent, the 'intangible' values of representative samples of the population has thus stimulated positivistic place measurement methods (Stedman, 2003b).

Resistance to such an approach remains considerable, however. Relph's (1976:4) claim that "clarification [of place] cannot be achieved by imposing precise but arbitrary definitions" is supported by Gunderson and Watson's (2007:710) contemporary advocacy for qualitative approaches:

²⁶ For a comprehensive discussion of the fractures between phenomenological and psychometric understandings of place, see Patterson and Williams (2005).

the person's whole relationship to a location cannot be dissected in a quantitative, reductionist manner and then put back together in order to understand in a holistic way the level of emotional disruption due to a disturbance event.

While it is strongly argued by some that statistical methods constitute an inadequate way of explicating attachments to place that comprise "interrelated and inseparable aspects" (Low and Altman, 1992:4), it is also apparent that the technocratic nature of resource decision-making and the associated disdain for 'soft' science requires an approach which both does justice to people's sense of place and provides a method of integrating place into decision-making (Stedman, 2003b).

Consideration of the place literature suggests that although there is considerable acrimony, disputation and incompatibility between such approaches, the derivation of shared or related understandings from alternate epistemological pathways demonstrates some potential for convergence (Manzo and Perkins, 2006)²⁷.

²⁷ For example, one significant project in empirically-focused place research has been the attempt to determine the underlying formative and constitutive components, or 'dimensions', of attachment to place. A commonly recognised and illustrative conception of such dimensions involves place identity and 'place dependence' (Williams *et al.*, 1992; Williams and Vaske, 2003; Kyle *et al.*, 2003; 2004; Brown and Raymond, 2007). Place identity describes cognitively and often consciously constructed ideas around what a place means for a person and their identity, while place dependence describes a potentially latent and unacknowledged practical, emotional, and symbolic need (Gunderson and Watson, 2007). An illustrative example of the relevance of such constructs can be seen in the differing attachments that exist in rural communities subject to lifestyle migration from urban areas; newcomers often express place attachments as strong or stronger than long term residents whose place attachments may be unconscious, yet arguably more attuned to the rhythms of life in that place and more necessary for the maintenance of their existence (Yung, 2003; Brown and Raymond, 2007).

Significantly, this particular dimensional approach, although adopting a categorical method which may appear inimical to phenomenological approaches, shares some theoretical territory with Relph

The fracture between phenomenological and positivistic approaches to place is in some ways paralleled by the debate in SIA between the 'political' and 'technical' approaches. While the political approach stresses stakeholder education and the valuation of community knowledge, the technical approach takes a 'hard' science approach where the role of dispassionate practitioners and decision-makers is paramount (Lockie, 2001).

A convergent 'integrative' approach which recognises the complementary roles of differing methods in identifying and predicting impacts is commonly encouraged within the literature of SIA. This is not to suggest that this has become the dominant approach; indeed, an obsession with quantifiable socio-economic data is arguably institutionally endemic to SIA (Lane *et al.*, 2003; Barrow, 2000:5; Lockie, 2001; Sairinen *et al.*, 2010), with the assessment of coal mines in the Hunter region a case in point²⁸. Vanclay (2002:185) describes how SIAs trend often towards "measurable impacts... and/or politically convenient indicators" or alternatively, towards "in-depth social analyses that have a tendency to become lengthy social overviews without any focus on the likely future social impacts." A number of studies have, however, demonstrated comprehensively that the integration of quantitative and

(1976) and Tuan's (1977) distinctions between the conscious formation of places by individuals, and the latent existence of sense of place which fulfils emotional and spiritual needs. Explicating the bases of place at precise levels does pose issues for the experiential mode of understanding and also for some psychological approaches (Low and Altman; 1992, Patterson and Williams; 2005, Gunderson and Watson; 2007). Nonetheless, it has been perceived that in order to take full advantage of the varying epistemological approaches to understanding places, place research "requires a pluralistic world view that understands place, not as a single research tradition but as a domain of research informed by many disciplinary research traditions at the research program and paradigmatic level" (Patterson and Williams 2005).

²⁸ See section 4.2.3 – *SIA and Coal Mining*.

qualitative, practitioner-driven and community-based models has the potential to advance the quality of impact prediction and mitigation²⁹.

This effective integration in SIA, and the posited potential of combining varying approaches in order to understanding places suggests a mixed methods research approach. The combination of methods thus serves to balance SIA's need to identify impacts that are broadly recognised within the community, generalisable across multiple contexts, and integrable into dominant technocratic institutional structures, with the necessities of recognising varied senses of place, the complex factors which create and destroy place, and of understanding places as unique and holistic entities (Gunderson and Watson, 2007).

5.1.3 Mixed Methods Research

The conflict between quantitative and qualitative methodologies in both SIA and place research in some measure reflects broader conflicts between the researcher/hypothesis-driven quantitative approach to social science, and the reflexive/exploratory/qualitative research approach where concepts and ideas emerge directly from interactions with subjects (Herman and Egri, 2006:177). This tension, however, does not preclude the effective complementary use of differing methodological frameworks. Indeed, the use of multiple methods allows the mitigation of the bias and limitations inherent in all research methods (Singleton

²⁹ For example, Lane *et al.* (2003) describes the systematic integration of indigenous knowledge into the SIA conducted for the planned Coronation Hill mine. The mine was ultimately rejected, based on, proximately at least, the cultural impacts of the mine on the Jawoyn people. Similarly, Becker *et al.* (2004), in comparing the use of participatory and technical approaches in conducting a large-scale SIA of changes to river management in the Pacific North-west of the United States, concluded that these approaches can be used complementarily; the quantitative, technical approach can be used to compare impacts across a broader region, while participatory, qualitative techniques can reveal local reactions, objections, and potential mitigation measures.

and Straits, 1999:393). Qualitative data provide rich understandings of attitudes, beliefs, perceptions, and underlying processes, while quantitative data serve to establish the “structural features of social life”, efficiently eliciting underlying patterns across broader scales (Bryman, 2006:163).

Layder’s (1998) adaptive theory has been selected as the primary methodological frame for the qualitative analysis component. This approach allows an open transfer between varying epistemologies, seeks to capitalise on the possibilities of multiple methods in order to generate further theory, and is explicitly compatible with survey-based quantitative analysis (Layder, 1998)³⁰. While the quantitative component employs an hypothesis-driven approach based largely on loss of place scales derived from Higginbotham *et al.* (2007a; b), adaptive theory can respond to emergent and more complex ideas through, in this case, semi-structured interviews with key informants (Layder, 1998).

The core of mixed methods research is the concept of triangulation. Triangulation relies on dissimilar methods which compensate for respective methodological weaknesses (Singleton and Straits, 1999:394). In the case of this study, such weaknesses include the crudity of psychometric place measurement tools in eliciting complex understandings of place, and the difficulty of accommodating qualitative data within technocratic decision-making structures. It serves to validate a researcher’s conclusions by confirming them through recourse to different methods, and the relationship between methods allows otherwise unperceivable outcomes to emerge (Bryman, 2006), particularly when “investigating complex and multifaceted phenomena” (Herman and Egri, 2006:177).

In this study, the survey data gathered serves to gain broad, crude indications of loss of place, to identify potential proximate drivers of that loss, and to assess differences in felt loss across the community. In concert, the qualitative data

³⁰ Adaptive theory is more comprehensively described in section 5.3.1 – *Employing Adaptive Theory for Qualitative Analysis*.

collected focuses on the perceptions of key informants in an attempt to provide validation, nuance and/or oppositional findings that respectively point to validity or flaws in the quantitative data. The interview data also serves to gain greater depth, and to gain understandings that are not possible to elicit with quantitative analysis.

5.1.4 Case Study Research

Case studies are one of the most common methodologies utilised in the social sciences (Burton, 2000:215), and consist of a “research strategy... [that] focuses on understanding the dynamics present in single settings” (Eisenhardt, 2002:8). Case studies can be characterised as providing the “building blocks for data collection and analysis”, providing a unit at which hypotheses can be generated and tested, and from which non-hypothesis driven findings can be derived (Burton, 2000:215).

In this research, a case study approach has been used to facilitate the inductive transposition of specific findings from a project at a researchable scale, being the Gloucester Shire, to a related, broader, and bounded spatial context where generalised understandings can be applied.

A single case study approach has been adopted as appropriate for a number of reasons. Firstly, practical limitations precluded the selection of multiple sites in the Hunter/Gunnedah/Gloucester area. It was thus imperative to select a study site that represented, as well as possible, broader change processes in the region, whilst fulfilling other practical research criteria³¹.

Secondly, the use of case studies is widely undertaken in both SIA and place research³². Both disciplines are heavily focused on place contextualisation (Vanclay,

³¹ See section 2.2.3 – *Suitability as a Regionally Representative Case Study*, for further discussion of the representativeness of Gloucester within the broader context of coal development in the region.

³² SIA relies heavily on longitudinal, iterative, *ex-post* analysis of both emergent social impacts and the efficacy of prediction and mitigation in order to accurately predict and manage the impacts of future projects in related contexts (Burdge, 1995). This reliance on case studies has been explicated

2002; Barrow, 2010), with the particularism of place presenting some problems in seeking to extrapolate place understandings across contexts. The recognition that sense of place exists and is significant to people and communities, however, combined with a respect for place endemism, allows techniques for eliciting place to be utilised.

Additionally, the identification of cultural, geographic, and other affinities allows some cautious comparisons to be inducted from one place context to another. While the representativeness and generalisability of findings is the most frequently critiqued aspect of case study analysis, an adherence to the aim of case study research of making analytical generalisations rather than statistical inferences, and carefully selecting the case in question, can ensure the validity of findings (Burton, 2000:224,225). This study does not seek to imply that any loss of place felt in Gloucester will be felt in exactly the same way, at the same magnitude, and by the same proportion of the population in the surrounding regions. Instead, it is recognised that similar development processes are occurring in Gloucester and in adjacent areas with cultural and geographic affinities, and that any loss of place that is occurring in Gloucester as a result of those shared processes may have implications for those related contexts.

5.2 *Quantitative Methods*

5.2.1 Using Surveys

The significant utility of survey techniques resides in their “ability to estimate closely the distribution of a characteristic in a population by obtaining information

in SIA models such as Burdge and Johnson’s (2004:17) pioneering Comparative Diachronic Model, which is predicated on the assumption that “after studying the social impacts of a natural resource development in one community, the findings may be transposed to a similar community where the same type of development is proposed – thereby allowing predictions about future social impacts.”

from relatively few elements of that population” (Dilman, 2000:204). Self-administered postal surveys are broadly recognised as an appropriate technique for measuring attitudes, values, beliefs and behaviours (Neuman, 2003:4,5; Nardi, 2006:73-84). Key methodological considerations relating to survey use include sampling, survey and question design, and the analysis planned (Nardi, 2006).

5.2.2 Sampling Frame and Design

The selection of a sampling frame was done with reference to the guidelines suggested by Dilman (2000). The sampling frame for the survey was a phone book of the Gloucester Shire produced by the local newspaper, the *Gloucester Advocate* (2010). The 2006 Census records the Gloucester Shire as having a population of 3733 people over eighteen years of age (Australian Bureau of Statistics, 2007b). Dilman (2000:207) argues that a completed sample size of 94 is required to adequately represent a population of 4000. It was considered that a sample size of approximately 600 was adequate to compensate for the potential of a low response rate.

A systematic sample, suitable for geographically concentrated populations, was surveyed, using the method described by de Vaus (2002:71, 72)³³. The number of entries, excluding businesses and those with inadequate address details, were summed ($n=1761$). After selecting a random start point between the first and third entries, every third suitable entry was thus selected ($n=582$).

Techniques and language designed to maximise response rates were adopted from Dilman (2000), with a short, full-colour survey posted and accompanied by a reply-

³³ De Vaus’ (2002) systematic sampling method involves obtaining a sampling frame, determining the population and sampling size, calculating a sampling fraction by dividing the population size by the required sample size, selecting a random starting point based on the sampling fraction, and using the sampling fraction interval to select every n th case.

paid envelope³⁴. A follow up/thank you letter was mailed three weeks after the initial survey. Additionally, an article was written for the local newspaper which explained the study and the survey in order to provide greater legitimacy and raise public awareness, with the aim of increasing response rates (Jordan, 2010).

In order to reduce sample bias towards demographic groups most likely to respond, the “most recent birthday method,” was used, where the householder with the most recent birthday is requested to complete the survey (Dilman, 2000:203).

5.2.3 Survey and Question Design

Dilman (2000:32) writes that “the goal of writing a survey question for self administration is to develop a query that every potential respondent will interpret in the same way, be able to respond to accurately, and be willing to answer”, with significant difficulties presented in fulfilling these aims³⁵. In order to negotiate such issues, the survey was designed with reference to the guidelines provided by Dilman (2000), de Vaus (2002) and Neuman (2003). The dominant approach adopted was to use closed-ended questions with unordered response categories, with this method appropriate to eliciting well-defined concepts that require an evaluative response (Dilman, 2000:43). The survey consisted of six components³⁶.

Section One (items 1 – 6) of the survey assessed six hypothesised variables which may influence the loss of place as felt by Gloucester residents. This technique is used by Williams and Vaske (2003), Brown and Raymond (2007), and Higginbotham *et al.* (2007a), amongst others. Variables which addressed environmental concern and the number of years and generations lived in the area were adapted from Brown and Raymond (2007), while distance from a mine operation or exploration

³⁴ The survey is included in Appendix B.

³⁵ Dilman (2000) discusses these issues at length in Chapter 2 of that publication.

³⁶ See Appendix B.

lease, and opinion of mining, were developed independently. This approach allowed consideration of whether particular sections of the community, based on spatial, demographic, and value-based indicators, feel more or less loss of place. The gathered data thus facilitate some understanding of what conditions create loss of place, who is affected, and how SIA may consider this loss.

Section Two (items 7 – 20) of the survey measured, on a five point scale, the level of community concern regarding 14 possible impacts of coal and gas development, in order to assess comparative concern regarding loss of place. Potential impacts were selected by an analysis of EAs of coal and gas development in Gloucester and surrounding regions; media and interest group communications; interviews and informal conversations; and a survey pre-test.

The place related item (2.13) asked participants to rate their concern regarding ‘loss of sense of place and community identity’. This question is limited in its ability to make explicit sense of place, as what constitutes sense of place is left to the participant to determine. This was considered appropriate however, as a simple and clear comparative indicator. The concept of community identity was added to elicit further conceptual understanding.

Section Two (items 21 – 32) used Likert-type scale items in order to elicit loss of place. A common approach to measuring “non-factual topics” such as perceptions, beliefs, attitudes, and values, is to construct a scale (Robinson, 1998:390). A scale is “a composite measure of a concept, a measure composed of information derived from several questions or indicators” (de Vaus, 2002:180), and consists of non-exact abstracted linear items which, when combined, provide a more reliable indicator (Robinson, 1998:391). Scales assist in understanding complex, broad concepts; avoid the distortion and misclassification of single-item indicators; compensate for the subjectivity and misinterpretation inherent in question creation and interpretation; provide greater precision; and simplify analysis (de Vaus, 2002:180,181). The most developed example of a loss of place scale is the solastalgia-incorporating Environmental Distress Scale (EDS) (Albrecht *et al.*, 2007;

Higginbotham *et al.*, 2007a; b), with the need for similar instruments also recognised by Williams and Vaske (2003:839).

The loss of place scale in this study was constructed broadly following the steps described by de Vaus (2002:182-185)³⁷, although time, budget and resource constraints precluded the possibility of conducting a statistically viable correlation analysis prior to survey distribution (de Vaus, 2002:184-185). Initially, a preliminary scale was constructed with reference to the literature, researcher knowledge, and observation of the study area context, with items adapted from Williams and Vaske (2003), Brown and Raymond (2007) and Higginbotham *et al.* (2007a), and also created independently. The scale items were reduced and clarified after advice from professional and non-professional sources and a small sample pre-test ($n=12$). A core reliance on items adapted from an established and reliable scale (Higginbotham *et al.*'s [2007b] EDS solastalgia scale) was utilised in order to ensure the reliability of the scale.

Four items were borrowed or derived from Higginbotham *et al.* (2007a). These items were adopted as they articulate place issues as clearly, specifically, and overtly as possible, while a further scale item was developed in order to utilise the almost universally recognised place concept of 'home'. The scale recognises two temporal dimensions, 'Current' and 'Future', with questions identical in each section save a change in tense. This division provided indications of both *ex-post* and *ex-ante* place impacts. A further non-scale question, included for formatting

³⁷ The steps described by de Vaus (2002) are to identify the concept to be measured, develop a set of questions to measure that concept, test those questions on a group of people similar to the final sample, score each person's response, reverse code oppositionally-worded items, summate each person's item scores to derive a scale score, and use correlation coefficient and Cronbach's Alpha analysis to test reliability and unidimensionality. Resourcing constraints removed the possibility of conducting a test sample, and factor analyses were utilised as a more accurate method of deriving scale scores than summation of raw scores.

ease (items 26 and 32), was attached to determine whether damage to sense of place would result in people leaving the area.

Finally, data was collected on several demographic variables to allow comparison with Australian Bureau of Statistics (ABS) data for sample bias. An open-ended question was also asked regarding loss of place and mining.

5.2.4 Data Analysis Techniques

Data was coded and entered into PASW version 18.0 and cleaned using the method described by Pallant (2005). Scale items were then standardised, with negatively-worded questions reversed.

A comparison between the collected sociodemographic variables of gender, age, and education level, and Australian Bureau of Statistics data for the Gloucester Shire, was conducted to determine any bias in the sample (Australian Bureau of Statistics, 2007b; Brown and Raymond, 2007).

In order to establish the comparative significance to the community of loss of sense of place, 14 possible social and environmental impacts of coal and gas development were ranked. This comparison was conducted using descriptive graphical and tabular representation to rank the mean score of each impact.

The mean response to individual items of the loss of place scale was represented as tabulated percentages, with Agree/Strongly Agree and Agree/Strongly Disagree responses aggregated. A graphical representation of the summated scales was also generated. The loss of place scale items were assessed for reliability using Cronbach's Alpha, with an alpha of above 0.7 being identified as confirming reliability (de Vaus, 2002:184).

A principal components analysis (PCA) was conducted to derive factors for each scale. The derivation of factors serves to determine how many underlying, latent constructs are being measured using a particular set of scale items (Field, 2009:628). PCA, a type of factor analysis that "explains the maximum amount of

common variance in a correlation matrix using the smallest number of explanatory factors” (Brown and Raymond, 2007:96), is widely used in identifying underlying place constructs, for example, in Brown and Raymond (2007), and Higginbotham *et al.*, (2007b). The suitability of the data for factor analysis was assessed by calculating correlation coefficients, using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett’s Test of Sphericity (Pallant, 2005:179).

A paired samples t-test was conducted between the factors of the two temporal scale dimensions in order to determine statistically any variation between current and future concerns regarding loss of place (Pallant, 2005:97). The variables hypothesised to influence sense of place were then analysed against each scale factor using one-way ANOVA (Brown and Raymond, 2007).

5.3 Qualitative Methods

5.3.1 Employing Adaptive Theory for Qualitative Analysis

Qualitative analysis has been suggested as essential for fully understanding place (Gunderson and Watson, 2007). This study uses qualitative data to explicate the complexities of potential coal-induced loss of place in Gloucester, and to elicit locally-developed knowledge from key community members regarding community and environmental change. Accordingly, semi-structured interviews were conducted with 21 key informants, with interviewees selected by snowball and opportunistic sampling (Bradshaw and Stratford, 2000).

The complexities that characterise place require a qualitative data collection and analysis framework which is at once exploratory, iterative, reflexive, and able to be linked to a rich theoretical base. Layder’s (1998) adaptive theory provides such a frame. Adaptive theory provides an appropriate methodology for addressing research questions that are focused on individual perceptions and understandings of complex, real-world situations, and focuses on combining pre-existing theory with ideas generated from data analysis (Layder, 1998).

Adaptive theory involves entering the field with a number of theoretically-grounded 'orientating concepts' which are then iteratively reconstructed, expanded, and developed as research subjects are engaged. As these concepts develop, a framework for analysis emerges (Layder, 1998). Several orientating concepts around which data collection and analysis were focused were identified. These concepts were a cognisance, grounded in the literature, of the ways in which attachments to place are formed, maintained, and lost; an awareness of the variety and complexity of senses of place that were likely to exist across the community; and a recognition of the potential importance of perceptions of community control over change processes.

This approach was adopted in this study with particular reference to complementing and potentially validating data derived from quantitative sources. Layder (1998:39) encourages varying research approaches to be considered as "working resources... in the context of an overarching framework," with adaptive theory comfortably relating to less flexible, hypothesis-driven quantitative analysis (Layder, 1998:42-45).

Thus, the qualitative process sought to validate or otherwise quantitatively-derived data, obtain further understandings that were considered to be difficult or impossible to gain through a self-administered survey, and to gain further depth regarding issues addressed in the survey. Areas of focus included interviewee's own formations of sense of place, as an indication of how sense of place was constituted and altered in the Gloucester area; perceptions of community and landscape change, including future change; perceptions of community opinion regarding mining; and perceptions of state government and developer appreciation of the community's vision for the area. This latter question was asked with reference to the concept that places can accept change that is below a certain threshold and not entirely imposed (Relph, 1976; Harvey, 1996; Hay, 2002a), and with a view to suggesting potential SIA techniques which may ameliorate loss of place (Kaltenborn, 1998).

The analysis of interview data was conducted with reference to the process described by Layder (1998:51-60). This involved 'provisional coding', where recorded interviews were listened to, with important pre-determined and emergent concepts coded into categories and transcribed. 'Core' and 'satellite' codes were adopted, and an iterative, reflexive process undertaken that facilitated the addition of new codes if required (Layder, 1998:51-60).

5.3.2 Participant Selection

Purposive, non-probability sampling based on theoretically-derived research needs was selected as appropriate to yield detailed, information-rich data (Layder, 1998:46). The selection criteria for key informants was based on an understanding of the community, knowledge of the coal industry, and, if perceivable, a relationship with the community and the environment which suggests understandings of sense of place; for example, being engaged with environmental issues or being a member of a family that has lived in the area for multiple generations.

The primary method of sampling undertaken was *snowball* sampling, where initial participants are identified through background research, and these participants provide information that identifies further useful participants (Bradshaw and Stratford, 2000). Initial participants were identified through media statements, submissions to public inquiries, internet searches, and discussions with people in the community. Several participants were also identified using *opportunistic* sampling, where new leads were followed based on observation and new non-participant derived information (for example, one participant was identified by the plethora of anti-mining related signage on their property) (Bradshaw and Stratford, 2000).

As it became clear that, after an initial round of interviews, a broader spread of perspectives was required, successful attempts were made to obtain contacts from existing participants based on specific criteria (for example, multi-generational cattle farmers with a particular view of mining). This is an example of what Layder (1998) calls 'theoretical sampling'. Ultimately, twenty-one people were interviewed,

including local government representatives, local business people, environmentalists and other mine-related campaigners, resource company employees, farmers, and indigenous people, with a more or less even spread across new residents and 'old-timers', and those who could be crudely characterised as pro- or anti-mining (Table 5.1).

5.3.3 Interview Techniques

Dunn (2000:52) describes research interviews as being used for four primary reasons; "to fill *a gap in knowledge*...; to investigate *complex behaviours and motivations*; to collect a *diversity of opinion and experiences*...: and when a method is required that shows *respect for* and *empowers* those people who provide the data" (emphasis in original).

While good interview design and practice is highly specific to the research situation, a number of preparatory procedures can be adhered to (Dunn, 2000). Interview design and practice was implemented with reference to the process described by Dunn (2000)³⁸.

Interviews were recorded on an MP3 voice recorder. They ranged from twenty minutes to 1.5 hours in duration, and were conducted in a variety of settings, including homes, businesses, offices, utilities, and paddocks. The interview questions were designed and ordered to achieve a number of outcomes, although the chronology was altered depending on the situation. A number of initial

³⁸ Dunn suggests a comprehensive set of guidelines. These guidelines encompass the appropriate use of interview guides and schedules in facilitating 'natural', conversational interviews; reflexivity in interview techniques as research progresses; the use of *primary* (initiating) and *secondary* (prompting) questions; various approaches to the ordering of questions; appropriate, professional and effective initial contact with prospective participants; the establishment of a rapport during interviewing; and appropriate interview etiquette.

questions were asked to gain basic demographic information and to assist in making the interviewee comfortable.

In order to elicit the often latent concept of place, several techniques were employed. The phrase 'sense of place' was employed minimally, to avoid alienating those who may have some scepticism regarding the term, and to avoid narrow responses to satisfy the interviewer from those who had some familiarity with the concept. Instead, strategies included the use of more conceptually familiar place-related phrasing such as 'community', 'country', 'home', and 'places that are special to you'. Additionally, questions were asked about a place that people considered special, in order to cognitively acquaint them with the concept, and about those aspects of the community and environment that they may consider unique or special³⁹.

To elicit information on place change, questions were posed regarding changes to the area, comparisons with other nearby mining areas in the Hunter Valley, and people's perceptions of the drivers of change. In order to gauge whether community control of or participation in mine development would potentially mitigate changes to place and community, a number of questions were asked about community consultation, and government and developer concern.

³⁹ The full interview schedule is listed in Appendix C.

Table 5.1 Number of interviewees with particular characteristics (note: each participant may have more than one characteristic)

<u>Years in Gloucester</u>	Born in Gloucester	More than ten	Less than ten
	9	5	7
<u>Characteristic</u>			
Councillor	8		
Farmer	7		
Pensioners/Retired	6		
Semi-retired	5		
Business Owner	4		
Home Duties	3		
Professional/Retired Professional	2		
Coal/Gas Industry Worker	1		
Indigenous	1		

Chapter 6 – Results of Data Analysis

6.1 *Quantitative Results*

6.1.1 Survey Return, Representativeness, and Reliability Statistics

203 complete surveys were returned from a sample size of 582, with 111 being returned-to-sender as the addressee was no longer at the address provided in the sample frame. After subtracting the returns, there was a completed sample response rate of 43 percent, well over the threshold defining an adequate sample identified by Dilman (2000:207) (Table 6.1).

An analysis of the demographic data collected from the survey against ABS Census data reveals some sample bias towards tertiary-educated, older community members. While the gender ratio in the sample of the over eighteen year-old population was virtually identical to that of the broader population, there were considerable differences in the tertiary education level and age ratios.

The loss of place scale was confirmed as having good internal reliability. The Cronbach's Alpha analysis identified that both the 'Current' (Alpha = 9.31) and 'Future' (Alpha = 9.51) dimensions demonstrated good internal consistency, well over the .7 threshold of reliability, with only five items in each scale (Table 6.2). Only one item (22) over both scales would increase Cronbach's Alpha if deleted, and then only by a small amount.

Table 6.1: Sample demographics vs. 2006 Census data for the Gloucester Shire (percentages)

<i>Gender</i>	Female	Male
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Survey 51.3 48.7

Gloucester Shire 51.4 48.6

<i>Education Level</i>	Tafe/technical college certificate or diploma	Bachelors degree	Postgraduate qualification
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Survey 44.3 9.9 11.8

Gloucester Shire 25.6 6.9 2.0

<i>Age</i>	18-30	31-45	45-60	61-75
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Survey 2.5 10 35.3 40.3

Gloucester Shire 10.8 22.8 29.7 24.6

Table 6.2: Item-Total Statistics for 'Current' and 'Future' Loss of Place Scales

Scale Items, Current Dimension	Scale Mean if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
21. Damage to the physical environment by coal mining and gas extraction threatens my way of life here.	9.96	.804	.918
22. The coal and gas industries have made the Gloucester region a better place to call home.	10.23	.711	.934
23. My sense of belonging to the Gloucester region has been undermined by unwelcome change associated with the coal and gas industries.	9.72	.826	.914
24. I am worried that aspects of the Gloucester region that I value are being lost because of the coal industry.	10.25	.851	.909
25. I am sad that familiar aspects of the Gloucester region are disappearing because of the coal and gas industries	10.16	.900	.899

Scale Items, Future Dimension	Scale Mean if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
27. Further damage to the physical environment by coal mining and gas extraction threatens my way of life here.	9.27	.879	.937
28. Coal and gas mining will make the Gloucester region a better place to call home.	9.54	.813	.948
29. My sense of belonging to the Gloucester region will be undermined by unwelcome change associated with the coal and gas industries.	9.05	.827	.946
30. I am worried that aspects of the Gloucester region that I value will be lost because of the coal industry.	9.49	.912	.931
31. I am sad that familiar aspects of the Gloucester region will disappear because of the coal and gas industries.	9.42	.895	.934

6.1.2 Loss of Place in Comparison to Other Impacts

There existed a generally high level of concern regarding the social and environmental impacts of coal and CSM in Gloucester. For each potential item save two, the greater proportion of respondents indicated that they were ‘extremely concerned’, that being the highest possible level of concern. For the impacts ‘climate change’, and ‘social problems related to an influx of workers’, the greatest proportion of residents (32.7 and 30.7 percent respectively) indicated that they were unconcerned.

‘Loss of sense of place and community identity’ was identified as being the fourth highest concern, behind ‘reduction in water quality’, ‘deteriorating human health’, and ‘reduced air quality’ (Figure 6.1, Table 6.3). 45.3 percent of respondents indicated that they were ‘extremely concerned’ about loss of sense of place, compared to a mean level of extreme concern across all potential impacts of 36.8 percent (Figure 6.2).

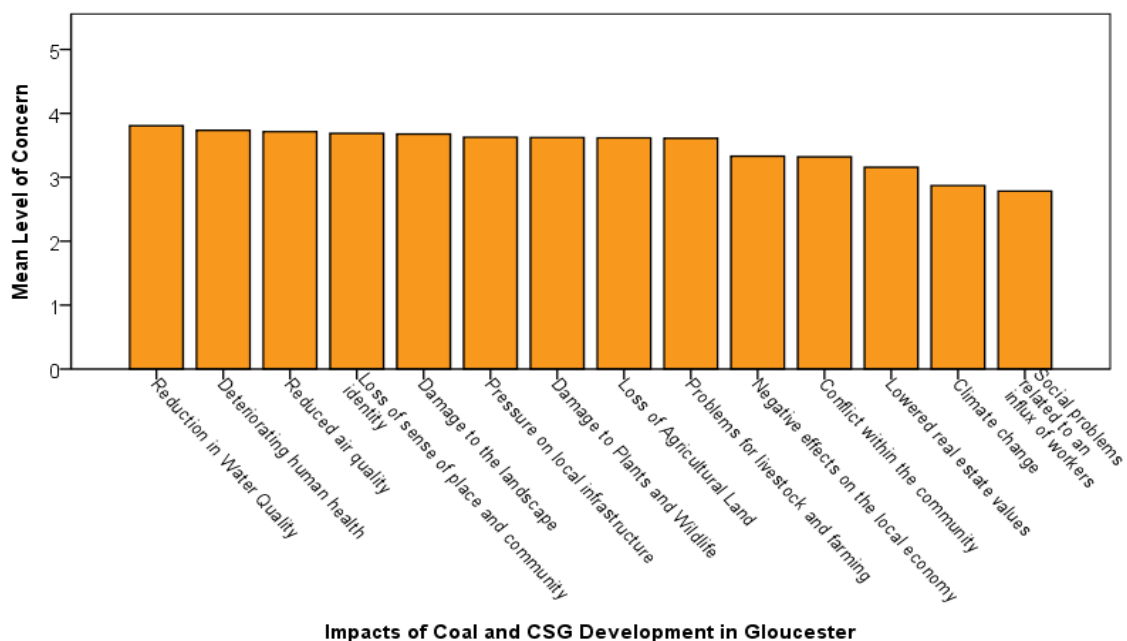


Figure 6.1: Mean Level of Concern for Various Potential Impacts of Coal and CSM development in Gloucester, in descending order (1=unconcerned, 2=a little concerned, 3=moderately concerned, 4=very concerned, 5=extremely concerned)

Table 6.3: Mean Level of Concern for Potential Impacts of Coal and CSM development in Gloucester, in descending order

Potential Impact	N	Mean	Std. Deviation
Reduction in water quality	199	3.86	1.431
Reduced air quality	201	3.76	1.482
Deteriorating human health	198	3.75	1.473
Loss of sense of place and community identity	202	3.71	1.462
Damage to the landscape	198	3.70	1.438
Pressure on local infrastructure	201	3.65	1.311
Loss of agricultural land	203	3.64	1.398
Problems for livestock and farming	198	3.62	1.482
Damage to plants and wildlife	203	3.62	1.350
Negative effects on the local economy	198	3.35	1.595
Conflict within the community	202	3.33	1.397
Lowered real estate values	199	3.13	1.555
Climate change	202	2.89	1.605
Social problems related to an influx of workers	202	2.81	1.479

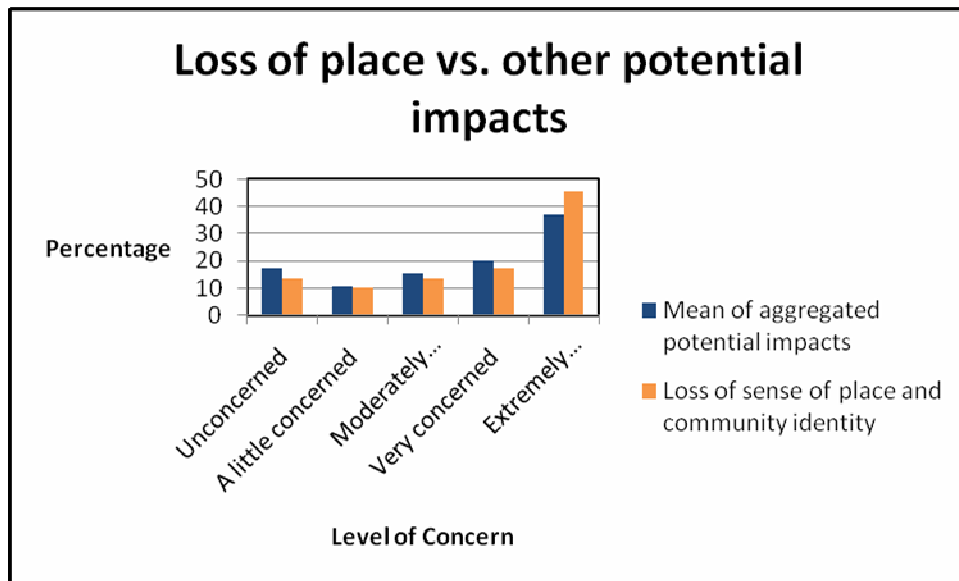


Figure 6.2: Level of concern regarding loss of place in comparison with other impacts

6.1.3 Loss of Place Scale Items

Prior to conducting factor analyses to allow further statistical analyses, consideration was given to the response percentages for each individual item (Table 6.4). The largest proportion of responses for each negatively worded loss of place scale item was in the aggregated 'Agree/Strongly Agree' category. For five of these eight items, the majority of respondents agreed with the contentions designed to measure the coal and CSM-related loss of place, and the level of agreement was maintained above 42 percent in each item. Similarly, 59.1 and 64.9 percent respectively disagreed with the alternatively-worded contention that "the coal and gas industries have made/will make the Gloucester region a better place to call home."

In order to provide a descriptive indication of felt loss of place, the means of the raw scale scores were summated, with negatively worded items reversed (Pallant, 2005). For each item, the 'neither agree nor disagree' item was accorded a value of three, indicating no felt loss or increase of sense of place. For each item, inclusive of reversed items, a score of five indicates strong agreement with felt loss of place, four=agreement, two=disagreement, and 1=strong disagreement with the

contentions that coal and gas development engenders loss of place. Thus, with the five summated item scores for each scale, a score of fifteen indicates no felt place change, below fifteen indicates a strengthening of place, and above fifteen indicates a felt loss of place. The summated mean scale scores were thus 17.48 for the current dimension and 18.26 for the future dimension, indicating a noticeable but not overwhelming felt loss of place as a result of coal and gas development across the community (Figure 6.3). It must be noted that such statistics are indicative only; the factor analysis conducted provides a more accurate statistical representation of the scale data.

The five items in each temporal dimension of the loss of place scale were subject to principal components analysis (PCA) using PASW 18.0. The data were assessed as suitable for factor analysis, with all coefficients over .613 for the current dimension and 7.39 for the future dimension, well over the recommended .3 and above (Pallant, 2005:182) (Table 6.5). Additionally, the KMO values were .890 and .869 respectively, with Bartlett's Test of Sphericity significant in both cases.

A factor is recognised if the PCA reveals an eigenvalue exceeding one. For the loss of place scale, one component for each dimension with an eigenvalue exceeding 1 was revealed. For the current dimension, the first component had an eigenvalue of 3.994, explaining 77.7 percent of the variance, while for the future dimension the first component had an eigenvalue of 4.187, explaining 83.7 percent of the variance. A single factor from each dimension was thus derived for further analysis.

Table 6.4: Loss of Place Scale items, percentage Agree/Disagree (highest percentage for each category in bold)

Scale Items, Current dimension	Agree/ Strongly Agree	Neither Agree nor Disagree	Disagree/ Strongly Disagree
21. Damage to the physical environment by coal mining and gas extraction threatens my way of life here	45.3	27.9	26.9
22. The coal and gas industries have made the Gloucester region a better place to call home (<i>item reverse-worded</i>).	18.7	22.2	59.1
23. My sense of belonging to the Gloucester region has been undermined by unwelcome change associated with the coal and gas industries.	42.9	22.2	34.9
24. I am worried that aspects of the Gloucester region that I value are being lost because of the coal industry.	63.1	11.8	25.1
25. I am sad that familiar aspects of the Gloucester region are disappearing because of the coal and gas industries	60.7	13.9	25.4

Scale Items, Future dimension	Agree/ Strongly Agree	Neither Agree nor Disagree	Disagree/ Strongly Disagree
27. Further damage to the physical environment by coal mining and gas extraction threatens my way of life here.	58	22	20
28. Coal and gas mining will make the Gloucester region a better place to call home (<i>item reverse-worded</i>).	14.4	20.8	64.9
29. My sense of belonging to the Gloucester region will be undermined by unwelcome change associated with the coal and gas industries.	49.5	19.8	30.7
30. I am worried that aspects of the Gloucester region that I value will be lost because of the coal industry.	69.3	7.9	22.7
31. I am sad that familiar aspects of the Gloucester region will disappear because of the coal and gas industries.	66.3	10.4	23.2

Table 6.5. Correlation coefficients for loss of place scale dimensions

Correlation Matrix – Current Dimension

		LoPNow21	LoPNow22	LoPNow23	LoPNow24	Factor Score
Correlation	LoPNow21					.764
	LoPNow22	.616				.632
	LoPNow23	.718	.613			.782
	LoPNow24	.725	.627	.755		.819
	LoPNow25	.786	.686	.799	.940	.888

Correlation Matrix – Current Dimension

		LoPFuture27	LoPFuture28	LoPFuture29	LoPFuture30	LoPFuture31	Factor Score
Correlation	LoPFuture27						.853
	LoPFuture28	.761					.772
	LoPFuture29	.807	.739				.791
	LoPFuture30	.842	.768	.771			.897
	LoPFuture31	.811	.761	.758	.940		.888

A paired samples t-test was thus conducted, using the derived factors, in order to determine whether residents' perceptions of future coal and CSM developments would increase their loss of place. Whilst comparison of the raw summated scale means (current=17.48, future=18.26) (Figure 6.3) suggests a concern that loss of place will increase in the future, when the derived factors were analysed, no statistically significant increase in loss of place scores was found between the current ($M=.0052498$, $SD=1.00247217$) and future ($M=.0017837$, $SD=1.00191724$, $t(196)=.126$, $p=.9$) dimensions.

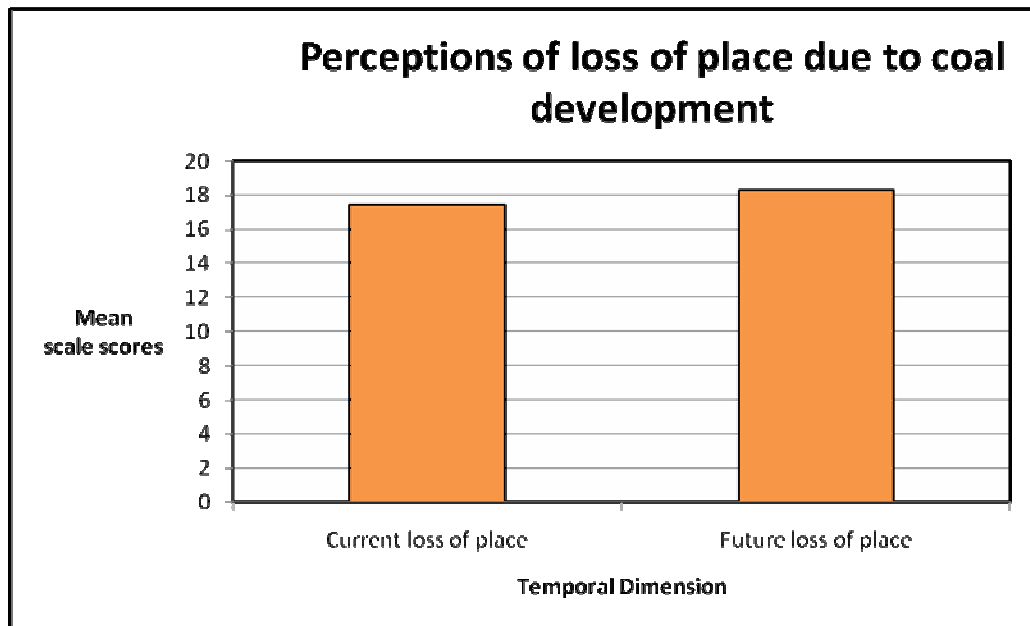


Figure 6.3: Comparisons of raw summated mean scale scores of temporal loss of place dimensions

6.1.4 Differences Within the Community

One question – ‘Is coal and gas development a good thing for Gloucester?’ – was asked in the survey to gain an understanding of the community’s general attitude towards coal and CSM developments. The results demonstrate a distinctly polarised community, with the aggregation of positive and negative attitudes revealing 49.1 percent of respondents believing such developments to be positive, 49.5 percent believing they are negative, and 1.5 percent neutral. Of those who believed that mining developments are a good thing for the area, 34.7 percent also expressed some concern regarding potential problems (Table 6.7).

Table 6.6: Answers to Survey Item 6 - 'Is coal and gas development a good thing for Gloucester?'

Response	Percentage
Yes, very good	14.4
Yes, but I have some concerns	34.7
Neither good nor bad	1.5
No, but there are some positives	26.2
No, not at all	23.3

One-way ANOVA was conducted for both loss of place dimension factors. Statistically significant differences were found for a number of hypothesised variables. For both dimensions, those who were the first generation in Gloucester were found to score significantly higher on the loss of place scale than those whose families had been in the area for four generations, while those who were the second, third, or fifth or more generation having loss of place scores intermediate between the two (current dimension= $F(4, 194)=3.347, p=.011$], future dimension= $(F(4, 195)=2.684, p=.033)$) (Figure 6.4). No statistically significant relationships were found regarding years lived in the area and loss of place (Figure 6.5).

Those who considered environmental issues 'very important' were found to have significantly higher loss of place scores than those who considered them only 'important' (current dimension= $F(3, 193)=13.591, p<.0005$], future dimension= $(F(3, 195)=17.835, p<.0005)$), and in the future dimension, 'of little

importance'. It should be noted, however that out of 203 respondents, only seven considered environmental issues of 'limited importance' and two 'unimportant' (with equal numbers in both dimensions). These results indicate a high level of concern regarding environmental issues generally, however those who appear to ascribe greater importance or priority are more likely to feel a strong loss of place (Figure 6.9).

While there was found to be no statistically significant relationship between loss of place and distance of residence from an active mine, there appears to be a linear relationship, with loss of place decreasing as the distance from a mine increases (Figure 6.6). Those who had an exploration lease (EL) over their home property were found to have a statistically significant increase in current loss of place compared with those who lived two to five kilometres from an EL (current dimension= $F(5, 190)=2.655, p=.24$], with the latter category experiencing the least loss of place (Figure 6.7).

Finally, there was found to be a number of statistically significant relationships between a respondent's position on whether coal and gas development was good for Gloucester, and loss of place. Felt loss of place was shown to be inversely proportional to a respondent's positivity regarding coal and gas development (current dimension= $F(4, 194)=56.564, p<.0005$], future dimension= $(F(4, 194)=63.909, p<.0005)$) (Figure 6.8).

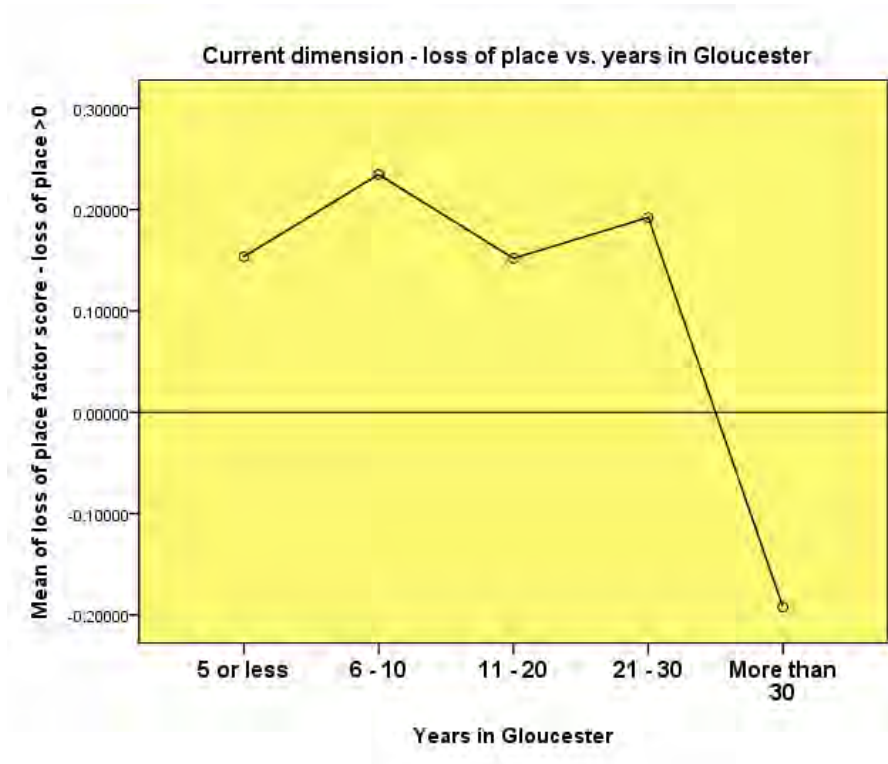


Figure 6.4: Loss of place vs. years in Gloucester (only current dimension displayed for this and Figures 6.5 – 6.9 as future dimension demonstrate similar trends)

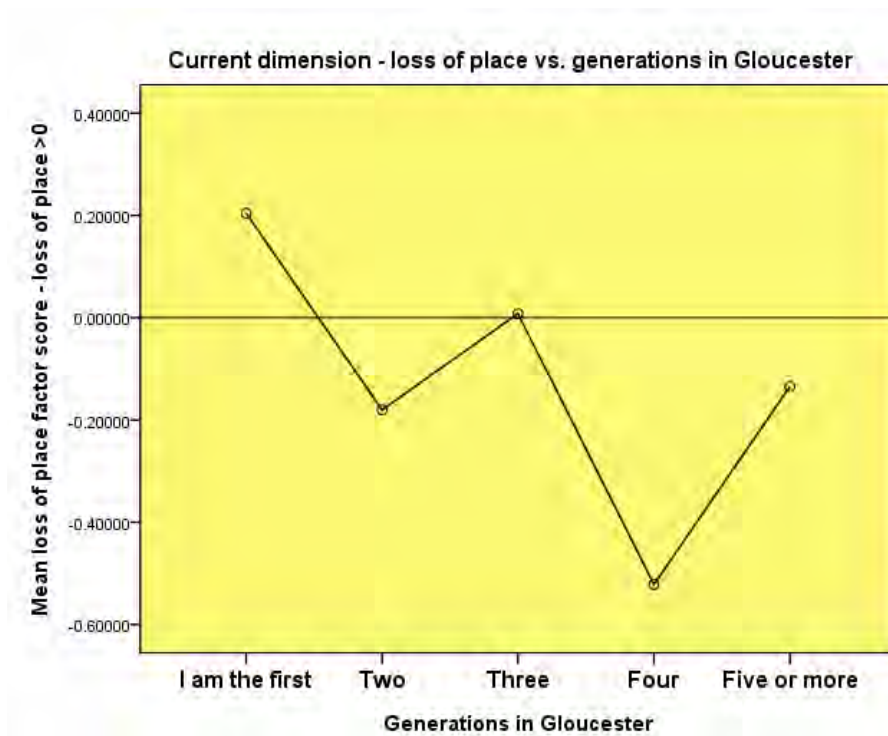


Figure 6.5: Loss of place vs. generations in Gloucester



Figure 6.6: Loss of place vs. distance lived from existing coal mine

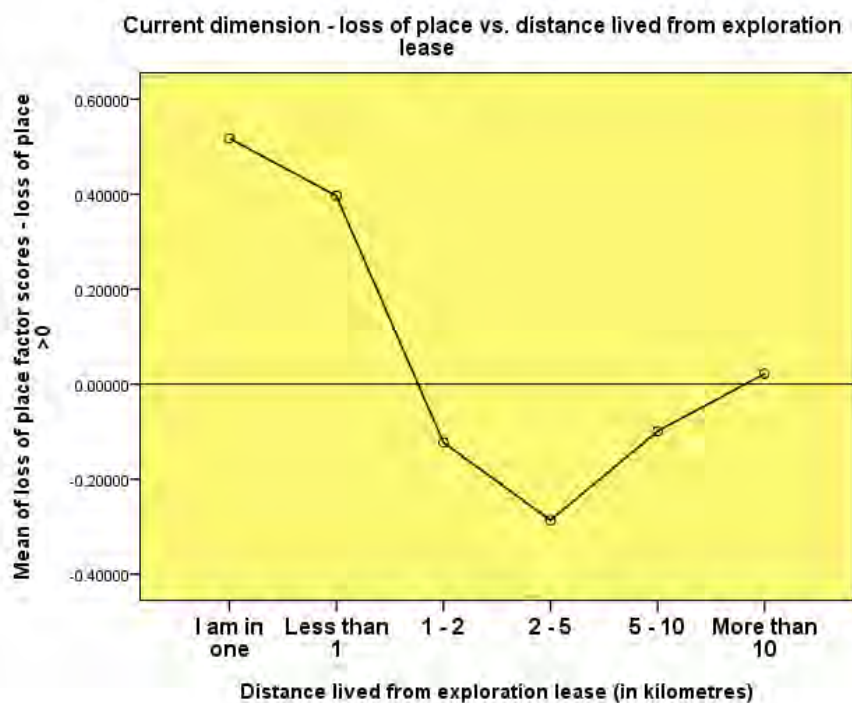


Figure 6.7: Loss of place vs. distance lived from exploration lease

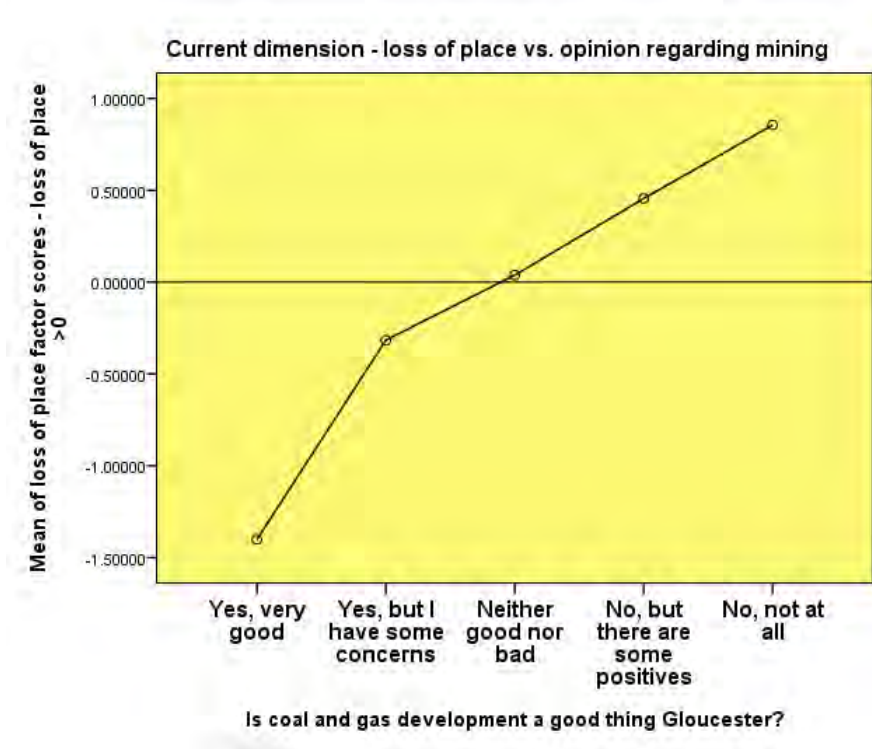


Figure 6.8: Loss of place vs. opinion regarding mining

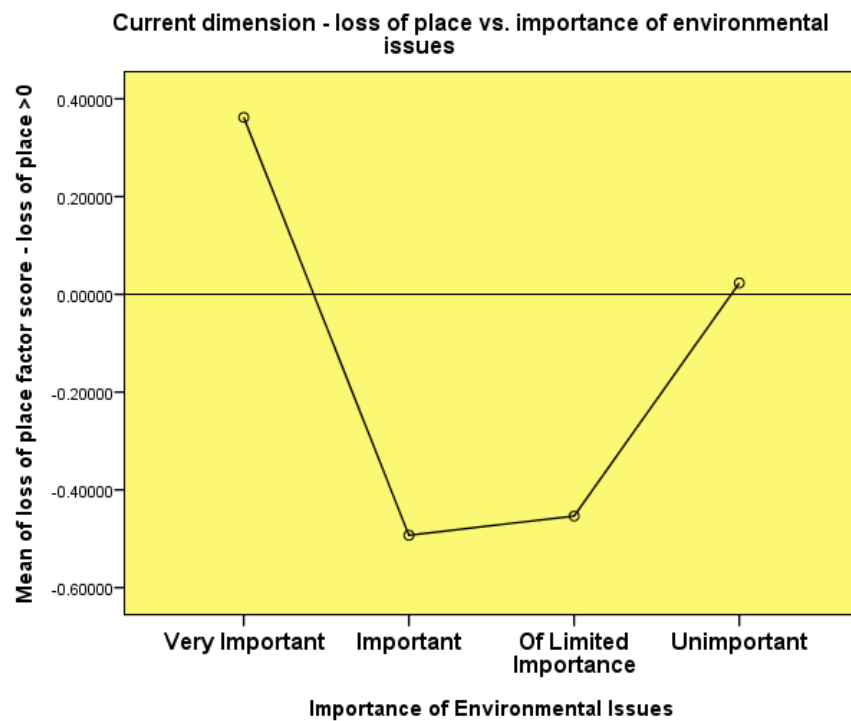


Figure 6.9: Loss of place vs. importance of environmental issues

6.2 Qualitative Results

6.2.1 Place Related Issues in Gloucester

In regards to place-specific issues, the qualitative data extracted a high degree of complexity, divergence, ambiguity and, in a significant number of cases, ambivalence towards the possibilities of place loss. In respect to other mining-related issues, anxiety regarding health impacts was common, and concerns regarding the landscape were for some respondents largely instrumental, relating, for example, to water quality for agriculture, rather than the severing of deep emotional ties or loss of meaning. There was also significance attached to the role of the mining industry in economically supporting the community of Gloucester, and thus facilitating place-maintenance. Loss of place, and the associated emotional and psychological consequences, was clearest however in those who had direct experience of lost places; were located close to mining areas; and/or who had been or were under threat of being moved from their home.

The variety and polarity of feelings regarding mining, and the demonstrated variety of attachments to place emerged as significant, with the latter appearing to be a key factor in determining felt loss of place. These issues have significant implications for the community's tolerance of development, and the potential recognition of loss of place as a social impact. The variety of both senses of place and opinions regarding mining were examined in order to provide a basis for addressing these implications.

A number of the complex environmental, social, and psychological actions and outcomes which accompany loss of place, including environmental degradation (Albrecht *et al.*, 2007), rapid social change (Yung *et al.*, 2003; Carter *et al.*, 2007), and displacement (Brown and Perkins, 1992; Fullilove, 1996; Read, 1996), were commonly cited as being extant or emerging in Gloucester as a result of coal and gas development. Two factors which are identified in the literature as important to determining whether development actions conduce to loss of place, or are absorbed into existing culturo-historic place narratives, are the magnitude and rate

of change, and the degree of input of place-dependent communities into place-altering plans and developments⁴⁰. Thus, both perceptions of the rate and magnitude of future change, and the adequacy of community involvement in coal and gas development were examined.

6.2.2 Resident's Attachment to Place

It was widely recognised among participants that the Gloucester area is physically beautiful and possessed of a unique community, and that much of the uniqueness of the area was derived from the physical environment. The area's waterways were repeatedly cited as being particularly significant. A distinct sense of place, as derived from the environment, the community, and the area's history, was evident in both long and short-term residents.

More recent residents tended to be more explicit about their felt relationship with and appreciation of the environment, with this potentially ascribable to a conscious process of place creation (Relph, 1976:71-77). The physical environment was commonly cited as a reason for making a home in the area. A strong sense of community was also recognised as a key factor in establishing one recent resident's sense of belonging to the area:

The quality of people are different. When you've got people who've lived here for a considerable amount of time. I mean you've got generations of people who've lived in this area. Kind, considerate, you each get to know each other, you get to know the values of each person. The people are more understanding and friendly, a more trustful community.

Others recognised more intangible qualities as making Gloucester significant to them. One resident of several decades explained that "there was something about

⁴⁰ See section 3.3.2 - *What Drives the Loss of Places?*

driving into town that made us think ‘this is a very special place’... I speak to a lot of people about why they move to Gloucester, and they say... ‘it just felt right’”.

Longer-term residents, particularly those with multi-generational links, expressed significant historically-grounded attachments to place. One local Worimi indigenous elder described attachment to particular sites throughout the valley: “I have very special places here ... I know the tracks and everything, where they [the ancestors] were, where they camped... and especially at Stratford... The tribes always followed the rivers.” A descendant of an early settler family expressed similar attachments:

On the place that I now own there’s a waterfall, in a brush, that’s one of my, using an aboriginal term, sacred places... it’s also a sense of history. I drive past what was the original family holding, and none of the family have any landholding, but you say “there’s the family farm”.

Many longer-term residents, particularly those involved in primary production, expressed a more pragmatic relationship with country. Such a relationship, where place is grounded in the means of physical sustenance, was expounded by several interviewees. As one cattle farmer explained, “the property that you live on and work on and get rid of all your sweat on is the favourite place.”

6.2.3 Felt Loss of Place

Loss of place was analysed at both the individual and community levels, with a significant divergence of opinion extant. This divergence is potentiality ascribable to differing senses of place; varied personal circumstances; direct experience or otherwise of mining impacts; and different cultural, economic and political experiences and needs. There was considerable ambivalence from several interviewees regarding the potential of coal and CSM to alter the community’s sense of place. This was despite a commonly held view that a significant increase in the scale of mining was undesirable. A broader recognition existed regarding the potential impact on individual place attachments.

A number of place-destroying processes, as described in the literature⁴¹, were identified by interviewees. These included environmental and landscape change; social changes as a result of changing economics and demographics; and displacement as a result of coal mine development. There was widespread recognition of significant damage to the environment as a result of mining, although pro-mining participants commonly identified environmental damage as inconsequential, appropriately managed, and/or as being remediable. One lifelong resident of the Stratford area lamented the loss of wildlife from an area that was subject to open-cut coal extraction:

All the wildlife and that is buggered out there. I used to bird nest and that out there when I was goin' to school with a cousin. We were the Steve Irwins of Stratford in our day (laughs), with the all the birdlife and that out there in the swamp. You couldn't find a dozen birds out there now... We used to have all the bird books and we used to sit out there and study 'em and where they were goin' and how they were makin' their nests. Those days are long gone, those flocks of Double Bars and Redheads and Diamond Sparra's, they had little bullfinches and God knows what out there. There's none around now at all.

The same resident had also experienced run-off from mine infrastructure that had polluted a creek on his property, believing that water contaminated by off-site fill had killed much of the vertebrate fauna. He also expressed concern about the design and effectiveness of environmental planning and remediation techniques, suggesting that the mining company had failed to account for flood events:

They're just startin' to panic about it... [they] fill it up with toxic stuff and put three or four feet of water over it. Then we get a flood and look out Taree, here she comes (laughs)... [Rehabilitation] can't be done. Can't be done. And the fallout'll end up stuntin' the growth of everything around.

⁴¹ See section 3.3.2 – *What Drives the Loss of Places*

A resident of the nearby Craven area had similar perspectives regarding the long-term damage done by open-cut mining, saying “I’ve seen it happen. I know what happens if the property’s taken by mining – it’s lost forever. And the landscape, the animals, the birds. Everything is lost.” A local indigenous elder, who had grown up in the village of Craven, expressed a felt loss of place engendered by environmental damage, within the context of her own and the country’s histories:

My grandpa was a very gentle soul. He lived for the land, and he knew all the seasons, and when to burn off, and when the fishing season was on, and when there was a change coming... And with the death of my grandfather, I continued on to live with my grandma, and she used to take us out to the Tidman property... there was this beautiful spot out there, it was pure white sand, and it had all these beautiful shells, and it had blackboys and native plants and all that sort of thing, and she would never allow us to even take a grain of sand home, ‘cause she said “it is a sacred, sacred spot”. And it must have been there from an ocean long, long ago and of course, that’s been mined... I will not go out there to see what’s happening, I don’t want to go.

Other residents had experienced displacement, and suffered severe psychological and emotional stress as a result. When asked if she had a favourite, or special place in the area, one local business owner responded by describing the emotional anguish experienced by having her property recently bought out by a mining company:

My home was everything, it’s been very distressing... I lost it. I’ve actually been quite depressed, really badly, and not coping at all... I couldn’t get up without crying everyday... We had a view, it was a beautiful little property, only 40 acres and it had a creek, a beautiful creek that ran through it... we had to build our house, which we built ourselves, just a small little house; we didn’t need anything fancy. And we looked back across to the Bucketts mountains, it was an absolutely stunning view. Wonderful neighbours, wonderful everything...

A number of respondents had themselves experienced significant depression as a

result of the prospect of current or future landscape change or displacement, or had knowledge of neighbours or friends who had, concurring with Albrecht *et al.*'s (2007) concept of solastalgia. One long term resident admitted that "I'm depressed... you drive down the road and you look out and you think 'oh my god, this is going to go'". Those whose properties were under exploration leases were also described as suffering from emotional stress, and in some cases severe illness, due to the uncertainty surrounding their future in the area.

Alternatively, other residents believed that most people had not suffered emotional distress as a result of displacement or landscape change. This position held that those who had been moved had received adequate compensation; that people generally accepted that the community's best interests lay with coal and gas development; and/or people were accustomed to change and loss as a result of living difficult rural existences. This viewpoint did not preclude the generation and maintenance of attachments to place, but consisted of a different, more pragmatic conception. Such views held that humans are adaptable and can become attached to any place, and are not necessarily affected by the removal from or alteration of places that is commonly experienced in rural areas as a result of economic or environmental necessity. This cognisance of the realities of an often economically-depressed rural community was regularly cited as engendering an acceptance of change and an active encouragement of potentially place-destroying development, even at the cost of place-supporting landscapes, farms, homes, cultures, and lifestyles⁴².

After relating several stories about personally meaningful places, one cattle farmer stated his belief that "no matter where you live in Australia there are special spots,

⁴² Specific examples of resilience-inducing process included natural hazards, such as drought, the vagaries of agricultural and resource commodity markets, and the economically-severe impacts of government policies such as dairy deregulation and forest protection

and it's up to you to find them. If you love country as I do you can get satisfaction from wherever you are." This pragmatic approach was explained thus:

I don't think anyone has been impacted all that detrimentally by [loss of] the land. Attachments to land... obviously there's memories there, but human beings learn to move on, and readjust... Our family's been here for 100 years, I don't feel I'll have a problem with moving on. The time comes when you make a decision, with your eyes wide open, and accept the consequences. It's often people on the outside who see things from the outside and wonder why or how you could make such a decision.

A local pro-mining businessperson was understanding of people's reasons for wanting to maintain the attachment to the land, saying "I love going home... and I understand people that have the same sentiment for places that are under threat from mining to be very, very anti-mining, because that's their place." He was also sceptical, however, of some of the reasons posited for rejecting mining by some newly-arrived landholders, and the validity of their attachment to country:

Prime agricultural land... here, that's just a ridiculous argument... if someone came along and said "sign this petition, because I'm being moved off my land and I'll never be able to grow rocks in it again", well, why bother? It may be a better use for it to bring in income and you get paid, or rewarded to move somewhere else.

Other residents, however, had obviously different value systems which consisted of a different understanding of attachment to the landscape:

It's fairly rocky country here, and by the time I'd finished [cleaning the property up] I knew where every rock was. Over time you develop a sense of bonding with an area, and that has now happened, so I would feel a sense of loss at being separated from it, here, having to go somewhere else and learn where the new rocks were (laughs).

6.2.4 Varying Senses of Place and Views on Mining

Experientially-derived variations in the acceptance of place change appeared to be one of the primary points of difference determining resident's views regarding mining, with resident's proximity to mining operations also appearing significant. There was a general perception that 'newcomers' – a nebulous designation which appeared dependent on integration into the cultural milieu of the area as well as the number of years or generations in the community – were largely united in their opposition to mining and that they were the main organised opponents of mining. Long-term residents, or 'old-timers', were perceived as being generally more supportive of mining (it is important to note that such crude categories are not discrete, monolithic, or accorded relevance by all participants). The perceptions garnered from the qualitative data indicate that newcomers were viewed by some as lacking understanding of the harsh realities of country life and the economic ebb-and-flow of the Gloucester area, and as being insulated economically from the fortunes of the area.

New residents, however, appeared to be consciously seeking to create homes and place, to develop an understanding of the landscape, and to engage with the community. As one recent resident explained:

For us, a sense of place is absolutely imperative at this time... If you're born into a place and you just grew up, you don't realise, I don't think people even think about it. I don't think it's a conscious thought... So that's what we want, whereas the others have been through a whole different experience in Gloucester.

The influence of different histories and experiences on individual perceptions of mining were summarised by a multi-generational cattle farmer, who also believed there was a general tolerance of alternative viewpoints across the community:

Everyone's different. There's obviously people who came here and bought here for the peaceful way of life and the last thing they want is to be run over or be overlooking a coal mine, and that's a genuine concern. And then the other side of the coin is that someone who's had a broken-down old dairy farm here and been struggling to make a living all his life. There's a couple

of examples of blokes who've had their properties on the market for three or four years for a million dollars and couldn't sell them and the company's turned around and given them two. Well as much as they might not be in favour of coal mining (laughs), it's changed their life and they've probably got sons and daughters and grandsons working in the mines and they see it's nothing but good... but by and large people accept each other's feelings.

There appeared to be a considerable acceptance of competing views, and of the different experiences that formed those views. The qualitative data suggested concerns, however, that some members of the community, such as newer residents, those who lived in the immediately impacted mining areas of Stratford and Craven, or those that spoke out against mining, felt, or were viewed, as having less voice in the community. A local Councillor's characterisation of the different views of the community illustrates this potential marginalisation:

It's interesting, what I call the generational landholders... their question is always "will it be good for the town?" Whereas those who've been here a lesser time, their usual comment, and I'm not trying to be judgemental... their usual comment is "how will it affect me?" or "what's in it for me?"

While such characterisations describe a clear division in the community, other interviewees recognised a variety of place-mediated reactions to mining, rather than a simple stratification of pro-mining old-timers and anti-mining newcomers. For example, the place-focused knowledge, resigned acceptance of change, and conservative culture that prevails for longer-term residents was seen by a number of interviewees as mediating reactions to mining, while the efforts of some newcomers to control the spread of mining was suggested as being partially motivated by a desire to maintain the strong pre-existing sense of community.

The ambivalence towards mining and the greater diversity of understandings of loss of place that was demonstrated amongst old-timers appears complex. The predominant view amongst this section of the community appeared to be a general support for mining in the area, and less concern that alterations to the community and landscape would enjoin fundamental changes to what residents valued about

Gloucester as their home. There was a significant counter-stream, however, particularly amongst a number of farmers, that mining would fundamentally and negatively change the country, and the community.

The existence of such divergence appears in some measure indicative of the significance of the held concerns, and felt loss of place, of some community members. A commonly recognised restriction on old-timers voicing concerns was a cultural environment where to venture criticism of community leader-sanctioned economic progress or development, or to associate oneself with 'green' issues, was to risk exclusion. This restriction was also felt by newcomers, but more acutely by some old-timers. The fact that some old-timers were compelled to express concern, often at the cost of friendships and community standing, appears indicative of the level of threat that some perceive to Gloucester as a place.

A further issue cited by a number of interviewees was the role of coal mining in maintaining Gloucester as a place. Gloucester has suffered significant financial hardship as a result of dairy industry deregulation, the enforced closure of much of the timber industry, and fluctuating cattle prices. The opening of two coal mines in the past fifteen years was thus viewed positively in allowing the community of Gloucester to reverse its previous decline, and as facilitating the maintenance of the area's culture and community.

6.2.5 Concern Regarding Future Change

There was widespread recognition amongst interviewees of the positive economic benefits of the existing mining operations. Similarly, there was a near-consensus regarding the undesirability of changes potentially resulting from future coal expansion and gas development, particularly in the vicinity of Gloucester township. A commonly expressed fear was that the Gloucester area would come to resemble, both in environmental and social characteristics, the semi-industrialised landscape that exists in parts of the Upper Hunter Valley. Several interviewees identified the increasing scale of mining as an explicit threat to the Gloucester community's sense

of place:

I think our culture will change dramatically... If there's another mine in Gloucester, and where it's going to be positioned so close to town, the town's character, and the way we know Gloucester is going to change... I'd like the community to go in the direction that it has in the past, and remain as it is and look after something that's very unique, and I don't think mining will allow that to happen.

Concerns regarding changes to community values and structures were also accompanied by fears of change to the physical environment. A regular comparison was made with the Upper Hunter region:

That is the big fear, I mean obviously if you drive from Singleton to Muswellbrook, or even worse, if you go by air, it's a total disaster. And if you knew what it was like before... the place has changed dramatically. And we're told that they want to more or less join Stratford with Duralie mine which are 20 kilometres apart, and they want to expand right to the edge of Gloucester town. Well I think those fears of our landscape being desecrated in the same way are certainly very real fears.

Interviewees who were supportive of mining had mixed views towards the possibility of a landscape dominated by mining. There was almost a consensus among participants that a coal-dominated landscape would be detrimental to the character and community of Gloucester. Some pointed out that the coal resource underlays only a limited percentage of the Shire, while others took the view that there were geophysical restrictions to the mining of the whole basin. Several interviewees who held a relationship of some sort to the coal industry believed that wholesale extraction was inevitable, with one saying that "there's a seam of coal there, it's about 30 kilometres along, about four kilometres wide, and it's 50 metres deep in some places. That's not going to be left there. That will be mined." A cattle farmer whose land is subject to several exploration leases believed change to Gloucester was inevitable: "I believe the township will change. It's gonna be different. Now saying it's different doesn't mean it's bad or good, it's just not what

we're used to." A regularly expressed view was that shared by a retiree living on the outskirts of Craven: "In the broader sense of the community, all this coal and gas development will change the town, and for the worse."

The view that an expansion of mining was inevitable, and that the preferable, or most achievable, way for the community to interact with mining was to attempt to manage it rather than to close it down, was widespread across the interviewees. In many cases this view had been adopted more from pragmatism than preference, however. One local Councillor took the view that:

There has been a well-quoted and justified comment made that we're a town with a mine, we don't want to become a mining town... We've suddenly come to realise that the industry is going to want to grow, and it's going to want to grow into areas that we aren't too happy about ... I personally feel that we're going to have to come to terms with this as a community – it's gonna happen. We can rant and rave as much as we like, but the reality is that we are five thousand people... When push comes to shove there is little chance we can stop resource development; to some extent we might be able to curb it impacting us in a visual sense proximate to town.

A common perception amongst those opposed to mining was that there was a significant component of denial or ignorance regarding the potential scale and impact of the pending changes amongst those who were pro-mining. A Stratford resident commented that "I've seen it, I've spoken to these people, they just don't want to see it happen. But behind closed doors, people still think nothing's going to happen, but it can, and it will, and it is."

6.2.6 Community Perceptions of Industry and Government

The ability of communities to manage or control the rate of place-change is suggested in the literature as a significant mediator of loss of place⁴³. The

⁴³ See section 3.3.2 – *What Drives the Loss of Places*.

qualitative data collected in Gloucester demonstrated an overwhelming perception that the community had virtually no input into the approval, development, regulation, or management of coal and CSM development. While one participant viewed this as necessary, given the potentially onerous nature of mine approval and regulation processes for local government, this situation was clearly viewed as restricting the community's ability to control mining at an acceptable level.

A financially stressed state government, dependent on mining royalties, was regularly cited as ignoring the wishes of the community. One local Councillor expostulated: "we've got a greedy government, and a government that's prostituted themselves to the mining industry, that prostituted themselves to money. It's extremely hard for them to say no."

There was also a widespread perception that the relationship between the state government, its agencies, and mining companies is characterised by a lack of transparency, virtually no community input, inadequate consideration of environmental and social impacts, a lack of long-term planning, and in some cases, corruption. The legislation and regulations governing mine development and management were viewed as being manifestly inadequate, and designed primarily to facilitate mining with as few restrictions as possible. A cattle farmer whose land was subject to a mining lease expressed this commonly held view:

Under this part 3A⁴⁴, which is the craziest thing I've ever heard, nobody's got any say in it. It's all under the department of planning, and they're dictated to by the parliamentarians, and the parliamentarians need the money, because the State's broke. So they're going to do whatever they have to do to get the money.

While a number of interviewees recognised one company's foregoing of mining leases directly adjacent to the township (leases which were subsequently taken up

⁴⁴ See section 4.2.3 – *SIA and Coal Mining*.

by another company), there was a near universal perception that the coal and gas companies operating in the Gloucester Shire had no concern for or understanding of what the community wanted for the area. One resident observed: “I don’t think any of these big companies have got any social conscience whatsoever,” while another, expressing the same view, added that “they just vary in the degree of sophistication of their public relations.”

Community consultative committees established by the mining companies were widely derided as tokenistic public relations exercises: “we trot out there every now’n again, and they give us the history of what’s happened over the last three to six months, and very little insight into what’s actually going on.” Mining companies were also seen by some residents as adhering to land procurement policies which were designed to stifle opposition. One resident, active in a local anti-mining organisation, explained her impression of mining company actions:

It's all based on fear. They get in because of fear, that's how they get in. They just make, the people, who have their properties, it's all based on fear. They don't actually have to do anything; they just need a licence.

A number of interviewees did believe that procurement policies were fair to landowners, though a common view was that shared by a Stratford resident who said: “(laughing) they’ll buy ya out if you’re prepared to take a tent and a carton a’ piss I suppose, in exchange (laughs). That’s what happens... plenty of ‘em around the same, got no chance of gettin’ out.” The same resident was equally critical of compliance to environmental standards, and the enforcement of those standards by government agencies:

That’s a bloody gimmick. The noise monitorin’ is Tuesdy, Wednesdy, Thursdy nights only. They’re the three set nights every quarter, and all hell’s let loose as soon as they pull the monitors up, word gets around and away we go again... The environmental officer out here, he started this racket: “oh, it travels ahh further and louder on frosty nights.” I said, “I was born around here and on frosty bloody nights there was no noise at all ‘til you bastards

come ‘ere.”

A local Councillor described the need for mine approval processes that actually incorporated community concerns, and that took heed of what the community wanted, particularly in the early stages of granting exploration leases, rather than merely providing a framework in which issues could be heard:

There are people who don’t want a mine in your backyard, and regardless of what you may consider could be the benefits, where you live, and how you would like to live, is more important than having an industry around you that you’re not going to be happy with. So no, it’s not about, do we have a better discussion, it’s about whether we want a mine or not, and I think they should be given that right.

This widely expressed desire for a greater appreciation of community perspectives points to potential mechanisms for addressing the loss of place and intra-place division that appear emergent in Gloucester. The commonly perceived lack of government and industry concern and the desire for greatly increased levels of community input into decision-making, allied with the exacerbation of loss that is posited as resulting from a lack of community control over change (Albrecht *et al.*, 2007) suggests potential pathways for ameliorating place loss, both in Gloucester and in neighbouring regions experiencing similar change.

Chapter 7 – Discussion

7.1 Introduction

Places are constituted of the values, meanings, beliefs, and ways of knowing that are birthed and sustained in the flows of experience that run between individuals, environments, communities, and histories. Those flows coalesce and conflict, creating temporally-persistent home places in which healthy and fully-lived human existences can occur. Such senses of place appear commonly threatened by large-scale, externally-imposed developments. This study has sought to assess whether such processes, as a consequence of coal development, are of concern to the Gloucester community, and thus whether any such loss of place should be considered as a social impact in the relevant institutional and regional contexts.

The data gathered in Gloucester indicates that loss of place is occurring as a result of current and projected coal mining and CSM extraction, and that this constitutes a concern for a substantial proportion of the residents of Gloucester. Similarly, the expectation of future loss, as mining expands, also suggests that this problem will continue to escalate in importance. The potential relationship between coal development and loss of place, and the associated impacts on communities, thus suggests implications for similar place contexts, and a need to consider how such consequences can be remedied.

Both previous research and public discourse indicate that the loss of place identified in Gloucester is reflected in the neighbouring Hunter Valley and Gunnedah regions (Connor *et al.*, 2004; Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b; Brereton *et al.*, 2008; Ferguson, 2009; Fowler, 2010). A number of potential processes exist which may redress this loss. One approach, which this study has prioritised, is to recognise loss of place as a social impact within impact assessment frameworks. Another possibility is to view place holistically and pro-actively, integrating community input into assessment processes, and allowing communities to contribute to the mode of development that they deem as maintaining or

improving their conception of place. Alternatively, the option exists for the pragmatic acceptance of place change as an inevitable consequence of development, irremediable and immitigable.

While loss of place emerged as a significant concern for the people of Gloucester, there exist in the data some ambivalences, ambiguities, and contradictions. The complexities and variations of place, the difficulties of place measurement, and several issues related to SIA decision-making suggest that the recognition of loss of place as a discrete social impact is difficult. An alternative method of integrating place into SIA is thus suggested as worthy of further examination. This suggested concept is informed by the educative, participatory methodological approach to SIA practice, and the widely-posed possibility of utilising understandings of place to define community wants and ameliorate conflicts in relation to large-scale development. Such suggestions are made with reference given to the context of the broader Hunter/Gunnedah/Gloucester region.

7.2 Is Loss of Place Occurring in Gloucester?

The gathered data in large measure supports the contention that the development of coal and CSM in Gloucester is engendering a loss of sense of place. Loss of place was ranked fourth from a list of fourteen biophysical and social impacts, and the raw item and loss of place scale scores indicated that loss of place was being felt now, and would continue to be felt in the future, by a majority of people in Gloucester.

Interviews suggested a widely-held perception that the community was strongly divided regarding mining. This concurred with the quantitative data, with 49.5 percent believing mining was bad for Gloucester, and 49.1 positive about mining. Both the quantitative and qualitative data suggested that loss of place was a concern for at least some of those who supported mining. Of those interviewees who supported mining, a number expressed reservations that if increased to the level currently planned, or beyond, such development may engender negative

environmental and community change.

Differing attachments to and experiences of place also appeared extant, and were commonly seen as mediating the felt impacts of mining. In particular, a common perception was that longer-term residents were more accustomed to the imposed change and emotional stress that accompanies rural life, and were thus less likely to ascribe particular significance to loss of place, despite having both strong attachments and prior experience of place loss.

Of note was the convergence or otherwise of loss of place-influencing variables between data sets. One of the clearest ANOVA results was that those who considered environmental issues 'very important' had a greater felt loss of place than those who considered environmental issues merely 'important'. Only seven of approximately 200 respondents indicated that environmental issues were 'of little importance' or 'unimportant.' The qualitative data suggested a similarly high level of environmental concern. Conversely, however, these results may be explained by a response bias towards a positively-viewed social value.

While the survey data also demonstrated a strong inverse relationship between loss of place and support for mining, other variables, such as the distance lived from a mine or lease, and the number of years or generations in the area, demonstrated less clear relationships. This ambiguity appears reflected in the qualitative data, where place loss was variable across experience and background. There does exist, however, an element of conflict between the two datasets in that there was a broad perception in the qualitative data that, with exceptions, loss of place was felt more strongly by new residents, and by those living in close proximity to existing mines.

The most apparent conflict between the data sets concerns future place impacts. While the quantitative data discerned no significant difference between the 'current' and 'future' loss of place dimensions, it was clear from the interview data that residents felt that the continued expansion of coal mining, and the establishment of a CSM industry, would have significant place impacts, amongst

other social and environmental concerns.

The suggested loss of place in Gloucester accords with research conducted on coal development-induced solastalgia in the Upper Hunter (Connor *et al.*, 2004; Albrecht *et al.*, 2007; Higginbotham *et al.*, 2007b). For example, the qualitative analysis reported by Higginbotham *et al.* (2007b) identified processes similar to those suggested in Gloucester, such as the severing of attachments to place as a result of damage to homes, farms, waterways and habitat, and the destruction of multi-generational ties to the land. Other issues were also shared, such as the perceived indifference of developers and government agencies, ambivalence regarding economic benefits, and concerns regarding community division, economic inequality, and human health (Connor *et al.*, 2004; Higginbotham *et al.*, 2007b).

These identified affinities, alongside similar concerns in the Hunter and Gunnedah areas that have been raised in the public sphere (Ferguson, 2009; Fowler, 2010), suggest that the issues extant in Gloucester are to a significant degree shared with neighbouring areas undergoing similar change processes. It thus follows that any methods suggested to both identify and ameliorate place impacts may, given appropriate mechanisms and a consciousness of place endemism, be applicable across the Hunter, Gunnedah, and Gloucester regions.

7.3 Efficacy of Research Methodology

The datasets appeared to be generally complementary, and largely served the purposes intended. The survey data allowed representative samples to be derived, whilst the qualitative data allowed deeper examination of place complexities, validating, in a number of cases, the quantitative data, and, in one crucial aspect, contradicting it.

The primary emergent methodological issue was that the loss of place scale failed to detect a significant difference between current and future loss of place. The key informant interviews provided a clear indication that expansion of the coal industry was central to community concerns regarding loss of place. While it is feasible that

the perceptions expressed by key informants were not representative of the broader community, the unequivocal and near-unanimous expression of concern regarding future change would suggest otherwise. The failure, then, of the quantitative methodology to elicit these concerns has significant implications for the potential use of such methodologies in SIA practice, given that SIA is dependent on the effective prediction of future impacts.

7.4 *Considering Loss of Place as a Social Impact*

7.4.1 Barriers to Recognition

Whilst the determination of felt loss of place is a difficult exercise, and the diversity of senses of place that are extant in Gloucester further complicate such determinations, it is nonetheless clear that loss of place appears a consequence of coal development in Gloucester. In addition, research, public discourse, and the similarity of change-inducing development processes suggest that such coal-induced losses may also be extant in the related geographic regions of the Hunter Valley and Gunnedah Basin. A number of difficulties arise, however, when attempting to recognise this loss alongside other social impacts within institutional approval and assessment frameworks.

While the literature and suggested best practice of SIA encourages the consideration of all major impacts, rather than only those that are easily measurable or politically expedient, a number of issues combine to form a formidable barrier to such recognition in regards to place. These issues include the difficulties engendered by the intra-place diversity of place attachments, measurement issues, the determination of significance, and the top-down and development/developer-friendly nature of impact assessment and approval in New South Wales.

7.4.2 Intra-place Diversity

Relph (1976:45) writes that “while every individual may assign selfconsciously or unselfconsciously an identity to particular places, these identities are

nevertheless combined intersubjectively to form a common identity.” While the Gloucester interviewees expressed a general desire to maintain a socially-rich rural identity grounded in the unique physical surroundings of the area, there existed differing attachments to place, and various views on how such a communal place identity could be maintained. Gloucester thus provides an example of the formation of places as the “contested terrain of competing differences”, where places do not “unproblematically stand for the memory and identity of a particular group of people” (Cresswell, 2004:62).

While the residents of Gloucester were in some measure united regarding their desires for the maintenance of place, the divergence of opinions as to what that place would look like was significant. The desire for mine-related economic development and a pragmatic acceptance of change were suggested as prevailing for a substantial section of the community. This appeared opposed to the views of others that the community and place would be better maintained in the absence or curtailing of such development. Additionally, there was a perception that ‘newcomers’ and ‘old-timers’ had differing attachments to place⁴⁵.

In considering the recognition of loss of place as a social impact, such divergence creates particular complications. A variety of senses of place complicates measurement, prediction, and mitigation, for although a felt loss of place may be considered measurable, understanding the processes which engender the loss of individual attachments is more difficult. Losses are thus difficult to mitigate or manage. Additionally, privileging one particular course of action as causing or mitigating a loss of place would appear to generate further conflict over conceptions of place. Although in the pursuit of development there will almost

⁴⁵ Differences in strength and form of attachments, based on birthplace and length of association, have been identified in a number of studies, both in Australia and internationally, with some identifying such differences as generating conflict (Yung *et al.*, 2003), while others suggest that differing place identities thus generated can be accommodated (Hernandez *et al.*, 2007).

invariably be those who are disproportionately affected or dissatisfied, any process which may generate further conflict would appear best avoided.

Gloucester, despite the obvious division regarding mining, also appears to hold a relatively coherent view regarding the maintenance of a rural place identity. In exploring the possibilities for applying place-integrated SIA to other areas in the Hunter and Gunnedah regions, a potentially important consideration is that some areas may have more contested visions of the future of their places. To avoid the difficulties in measuring and mitigating differing felt losses of place, and the potential exacerbation of intra-place conflict which may accompany the privileging of particular senses of place by developers, decision-makers, or politically-dominant community actors, a more consensual approach to recognising varying senses of place may be of value.

7.4.3 Measurement Issues

SIA is by definition predictive, relying on the *ex-ante* determination of impacts. Psychometric studies addressing loss of place, such as Higginbotham *et al.*'s (2007b) examination of solastalgia in the Singleton and Dungog regions of the Hunter Valley, generally focus on *ex-post* impacts. The lack of *predictive* power suggested in the Gloucester survey, and the survey's inability to effectively discriminate between extant and potential impacts, thus complicates the recognition of loss of place as a social impact.

Additionally, sense of place, and its loss, are constructed by complex causal factors that reflect individual experiences and values, as well as the social, cultural, environmental, economic, and historical contexts a person lives within. This being the case, attempts at quantification provide at best a crude guide to felt loss of place. The need for reflexive, iterative development of variables and a strong understanding of particular place contexts in some measure complicates the use of a 'one size fits all' psychometric approach, with the strictures of impact assessment and decision-making structures potentially requiring such an approach.

Furthermore, there is a long-running debate as to whether it is possible to

psychometrically measure place, or its loss, with a number of place researchers positing that “place has a certain quality... which is largely unmeasurable, unobjectionable, and therefore very much inaccessible to conventional positivist methods” (Seamon, 1984:175). Quantitative place measurement was adopted as appropriate to this study in order to address particular research questions. The ambiguity demonstrated, however, particularly in regards to impact prediction, in concert with disputations related to the efficacy of place measurement tools in eliciting place constructs, suggest that alternative approaches to determining, predicting, and mitigating loss of place may be preferable from an applied standpoint.

7.4.4 The Ascription of Significance

A related issue concerns the often discretionary determination by consultants or decision makers of what constitutes a ‘significant’ impact. Significance refers to the determination of community concern regarding a particular impact, and thus whether a particular magnitude of impact is acceptable. While socio-demographic impacts can be assessed by determining acceptable thresholds, and changes to attitude, value, or behaviour assessed using proxies or particular socio-psychological techniques (Albrecht and Thompson, 1988; Social Policy Development Unit - The Cabinet Office, 1997), the understanding and valuation of perception-dependent place would appear most appropriately, and perhaps necessarily, done by those existing in place.

Thus, it appears that determinations of significance would be best ascribed by communities themselves, rather than by consultants or government experts. Although the latter may be possible, the context-specific nature of place would suggest that the true experts on a place are those who know and live in that place. Vanclay (2002:184) identifies the negative consequences of an over-reliance on expert opinion:

Expert opinions often vary markedly from local community opinion about likely social impacts and the desirability of alternatives. Many SIA studies

have substantially underestimated the social impacts that have been experienced by affected communities.

Even assuming a solid understanding of the dynamics of a place, there is the possibility that the complex and often oppositional nature of place may allow determinations of significance to be used to privilege politically-dominant viewpoints. Additionally, although recognition of place may identify a high level of significance to a community directly affected by a project, loss of place may be adjudged to be acceptable 'collateral damage' in order to achieve broader economic and development outcomes. These issues therefore suggest that it would appear of value to avoid a non-participatory, top-down SIA process that makes potentially arbitrary or flawed expert-determined judgements as to what level of place change is acceptable to a particular community.

7.4.5 Impact Assessment Decision-making

The technocratic, top-down nature of impact assessment decision making extant in the Gloucester area, and the broader Hunter/Gunnedah region, has implications for the recognition of loss of place beyond the determination of significance. An issue that emerged as primary and near-universal in interviews in Gloucester was that the current approvals process does not appear to account for community concerns. Thus, ascribing an issue as important and community-centric as loss of place to such a process would appear in large measure inimical to the community's stated desire for more legitimate community involvement in decision-making. Devolution of regulatory power to the local council, and associated resourcing, would appear to be one alternative approach. A potentially more efficient and more easily regulated method may involve the establishment of truly consultative, pre-development, empowering, educative, and place-conscious social impact assessment processes⁴⁶.

⁴⁶ Such processes have been identified regularly in the literature of both place and SIA. The rationale for and examples of these processes are described in section 4.3.1 – *Social Impact Assessment and Sense of Place: Natural Affinities and Unexplored Potential*.

7.5 *Alternative Paths to Place-conscious SIA*

Place-centred conflicts appear to commonly accompany the process of coal and gas development in the Hunter, Gunnedah, and Gloucester areas. Whilst mining operates with varying levels of community support across the region, there exists a constant stream of community opposition to coal development. Much of this opposition appears predicated on a desire to maintain places as they are, and to spare them from overwhelming and imposed change. Such conflicts are numerous, and have become entrenched and often dominant in the public discourse of the region (Connor *et al.*, 2008; 2009; Evans, 2008).

What role then could considerations of place potentially play in ameliorating conflicts, both within places and between place-centric communities and developers; and in facilitating the community-led definition of what people wish their places to be? While the recognition of loss of place as a social impact provides one potential stream, it appears fraught and perhaps impossible to operationalise. Potential may exist, however, for a more holistic integration which respects place, and simultaneously utilises it as a framing tool for appreciating and integrating the aims of coal-affected and coal-reliant communities. Albrecht *et al.*'s (2007) contention – emerging from research into coal-induced loss of place in the Upper Hunter – that a lack of control over place-destroying change processes exacerbates loss of place also supports suggestions for genuine community engagement.

Support for models which involve comprehensive community consultation and a respect for local knowledge is widespread, both with regards to place, and more broadly in the literature and practice of SIA in resource development⁴⁷. How, then, can practice be extended beyond the perceived motherhood statements and tokenistic gestures which were viewed widely by Gloucester residents as public

⁴⁷ See section 4.3.1 – *Social Impact Assessment and Sense of Place: Natural Affinities and Unexplored Potential*.

relations ‘greenwashing’, and towards an approach that engenders a genuine appreciation of place values and meanings in decision-making?

The intra-place diversity of senses of place, difficulties in empirically measuring place, the issue of ascription of significance, and the top-down, technocratic nature of impact assessment decision-making have been identified in this research as barriers to the effective recognition of loss of place as a social impact. Any SIA process which aims to respect place would ideally then be able to negotiate these difficulties, although the latter two concerns, embedded as they are in bureaucratic and political structures, present significant difficulties.

A number of applied SIA projects and studies of place have argued for, or themselves utilised, in-depth consultation to recognise place-related issues. Cheng *et al.* (2003) point out that such place-based approaches, whilst not without flaws, and largely unexplored in practice, can engender effective collaboration between people of diverse backgrounds and opposing viewpoints. Such an approach is predicated on open participation; joint learning, problem-solving, implementation and monitoring; proactive conflict resolution; and, crucially, a grounding in the appreciation of a “distinct geographic area toward which all collaboration participants express value” (Cheng *et al.*, 2003:88). The strong place identity and social networks, and the politically-engaged and communally-active population evident within Gloucester, suggests that such methods may be particularly suitable to small rural communities.

Actualisation of the principles advocated by Cheng *et al.* (2003), amongst others, is increasingly posited as desirable in the practice of social impact assessment, with numerous examples of the effective application of such approaches⁴⁸. Sairinen *et al.* (2010), in a recent paper, observe that:

⁴⁸ See section 4.3.1 – *Social Impact Assessment and Sense of Place: Natural Affinities and Unexplored Potential*.

Key shifts in governance in this domain entail choices and anticipatory discussions rather than attempts at control, societal versus technocratic approaches, collaborative versus hierarchical processes, and communication as mutual learning instead of communication to explain.

Encouragement of greater respect for and engagement with communities and places is a central part of the discourse regarding large-scale resource development, both academically and from the perspective of affected communities. There appears to be significant potential for such approaches to delineate an effective path to the mitigation of loss of place, and generate additional benefits regarding the amelioration of conflict and a clearer definition of the developmental aims of communities.

Such potential is widely recognised. Its lack of application, and the resistance of decision-makers and developers to such apparently positive processes (Sairinen *et al.*, 2010), is thus in need of comment. This is an overarching issue regularly cited in the SIA literature (for example, by Lockie, 2001; and Sairinen *et al.*, 2010), by the people of Gloucester, and by those who have participated in solastalgia and other coal-focused studies in the Upper Hunter (Connor *et al.*, 2004; Higginbotham *et al.*, 2010). Effective SIA, consultation, and the recognition of community input and knowledge is predicated on supportive legislative and regulatory instruments and agencies, and developers which value, respect, and integrate community aims, needs, and wants. While effective mechanisms for respecting senses of place and other issues of importance potentially generated by coal and CSM development may be proposed and developed, their implementation and efficacy is dependent on genuine engagement and respect by governments, regulatory authorities, developers, and communities themselves.

Chapter 8 – Conclusion

The development and continued expansion of coal mining and coal seam gas extraction in areas of the Gloucester Valley, Hunter Valley, and Gunnedah Basin has been accompanied by significant alterations to communities and physical environments. A consequence of these change processes, suggested in both research and public discourse, is the loss of sense of place. One community that appeared subject to such processes is that of the Gloucester Shire, where expanding coal and CSM projects appear to be engendering potentially significant changes in individual and community sense of place.

The research focused on an analysis of Gloucester, with the findings thus derived inducted to the neighbouring Hunter and Gunnedah regions. It aimed to answer two questions. The first aimed to explicate any felt loss of place in Gloucester, while the second considered the implications of any such loss for social impact assessment and mitigation processes:

- 1) Is the Gloucester community concerned about loss of sense of place as an impact of coal and coal seam methane development and expansion? and
- 2) If so, does this warrant the explicit inclusion (or more effective articulation) of sense of place as a social impact in Social Impact Assessment (SIA), as the primary mechanism for predicting and managing the social impacts of coal mining developments in the context of the Hunter/Gunnedah/Gloucester region?

A mixed methods research design was thus developed, utilising survey-based psychometric place mensuration techniques, allied with qualitative data derived from key informant interviews. The data collected indicated that concerns regarding loss of place were indeed extant for a majority of the Gloucester community. Of primary interest were the differing perceptions of mining, varying senses of place, and a significant level of concern that the continued expansion of coal and CSM would engender loss of place. In regards to the second research question, it is suggested that while loss of place appears extant, consideration of

measurement difficulties and the nature of impact assessment practice and decision-making points to a need for alternative approaches, other than the recognition of loss of place as one of many social impacts. Therefore, the approach suggested, as informed by the literature of place and resource management, and the increasingly posited need for participatory and consultative SIA, would utilise techniques which respect the values, needs, and aims of communities, and integrate place understandings and community knowledge into assessment and approvals processes.

The research design appeared largely adequate to answer the research questions. The qualitative data in particular provided both nuanced understandings of broader community perceptions, and deeper knowledge of attachments to place and the processes engendering place loss. While the quantitative data served its primary purposes of deriving a representative sample across the community, and providing a broad indication of felt loss of place, the failure of the survey data to predict the obviously extant concerns regarding significantly increased future loss of place suggests a limited predictive ability within psychometric approaches, or, alternatively, a faulty methodological design.

There are significant opportunities for future research, and ultimately practice, that draw on the rich theoretical and community-based understandings of place, and integrate those understandings into pre-existing but under-utilised educative and participatory SIA frameworks. A further field of complementary research may focus on the institutional, economic, and political barriers that appear preventative of such place-conscious, community-centric processes.

The continued expansion of coal-related development in Gloucester, the Hunter Valley, and the Gunnedah Basin would suggest that such research may be of significant utility in maintaining individual and communal sense of place. While such developments engender complex change processes, and a cohort of linked positive and negative environmental, social, and economic outcomes, it appears likely that the degradation and dissolution of unique senses of place may continue in the

absence of considerable mitigatory efforts.

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Appendix

Appendix A: List of Social Impact Assessments of Coal Mine Developments Being Assessed Under Part 3A of the EP&A Act 1979, as of 14.08.2010.

Moolarben Coal Project Stage 2 Environmental Assessment Report: Section 5 Impact Assessment (Berry and Moore, 2009).

Environmental Assessment Duralie Extension Project: Appendix G Socio-Economic Assessment (Gillespie, 2009).

Proposed Integra Underground Coal Project Environmental Assessment: Volume 1 Section 11-12 (Kelly, 2009).

Wallarah 2 Coal Project Social Impact Assessment Final Report (Martin and Associates, 2009).

Integra Open Cut Project Environmental Assessment: Chapter 16 Socio-economic Assessment (McCardle and Barrett, 2009).

Charbon Colliery Continued Operations Environmental Assessment: 5.1.4 Socio-economic Assessment (R.W. Corkery and Co. Pty Ltd, 2009).

Ulan Coal Continued Operations Project: Socio-economic Impact Assessment and Community Consultation Program (Sheridan Coakes Consulting Pty Ltd, 2009).

Ashton Coal South East Open Cut Project & Modification to the Existing ACP Consent Environmental Assessment Report (Wells Environmental Services, 2009),

Wilpinjong Coal Mine Mining Rate Modification Environmental Assessment (Gillespie Economics, 2010).

Proposed Modification to HVO South Coal Project Environmental Assessment

(Greenless and McLennan, 2010).

Austar Coal Mine Environmental Assessment Proposed Stage 2 Extension Project
(Jamieson and Pepper, 2010).

Environmental Assessment: Section 75W Modification Application Moolarben Coal
Project Stage 1 (Moore, 2010).

Section 5.0 Environmental Assessment: West Wallsend Colliery Continued
Operations Project (Umwelt (Australia) Pty. Limited, 2010).

Wawkworth Extension Project Environmental Assessment: Social Assessment
(Young and Russel, 2010).

Appendix B: Survey



What does Gloucester mean to you?

We are looking for help in understanding what the Gloucester area means to its residents.

This questionnaire is designed to gather information on the impact of coal and gas development on the 'sense of place' of people in Gloucester. 'Sense of place' is a term for those relationships with our community and environment that make us feel at home, and that are important to us. It is about the things that we value about the place that we live in, and about what gives Gloucester its strong and unique community identity.

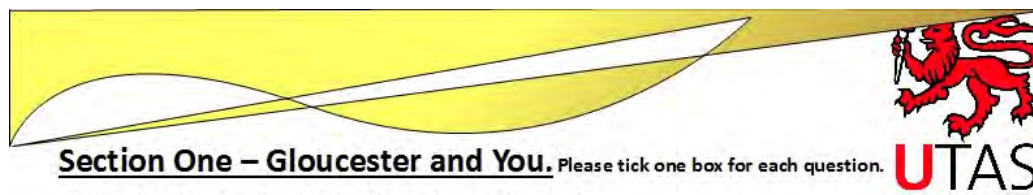
It's important that we get as many responses as we can. We have sent out 600 surveys in the Gloucester Shire, and the more we get back, the more accurate our understanding of people's views and concerns will be. Because it's impractical to survey everyone, and as you have been sent this survey, you are effectively representing the views of another 10 or 20 people. Coal and gas development is an important issue for Gloucester, and this is a good opportunity to make your point of view heard.

You must be over the age of 18 to complete the survey, and we ask, for statistical purposes, that the person in your household who is next to celebrate a birthday completes the survey. If that person is unavailable or does not want to do the survey, any member of your household is fine.

If you have any questions regarding this study please feel free to contact Warrick Jordan at wjordan@postoffice.utas.edu.au, or Dr. Pete Hay at Peter.Hay@utas.edu.au. The completed survey can be returned free of charge, by using the enclosed reply paid envelope, or returning to:

Warrick Jordan
Reply Paid 252
School of Geography and Environmental Studies
Private Bag 78
Hobart, Tasmania.
7001

Kind Regards,
Warrick Jordan and Dr. Pete Hay,
School of Geography and Environmental Studies,
University of Tasmania.



Section One – Gloucester and You. Please tick one box for each question.

1. How long have you lived in the Gloucester area (in years)?
☐ 5 years or less ☐ 6 - 10 ☐ 11 - 20 ☐ 21 - 30 ☐ More than 30
2. How many generations has your family been in Gloucester?
☐ I am the first ☐ Two ☐ Three ☐ Four ☐ Five or more
3. How important are environmental issues to you?
☐ Very important ☐ Important ☐ Of limited importance ☐ Unimportant
4. How far away do you live from a coal mine (in kilometres)?
☐ Less than 1 ☐ 1 - 2 ☐ 2 - 5 ☐ 5 - 10 ☐ More than 10
5. How far away do you live from a coal or gas exploration lease (in kilometres)?
☐ I am in one ☐ Less than 1 ☐ 1 - 2 ☐ 2 - 5 ☐ 5 - 10 ☐ More than 10
6. Is coal and gas development a good thing for Gloucester?
☐ Yes, very good ☐ Yes, but I have some concerns ☐ Neither good nor bad ☐ No, but there are some positives ☐ No, not at all

Section Two – Gloucester and Coal.

Please tick one box per question to rate your level of concern regarding each possible impact of coal and gas development.

	Unconcerned	A little concerned	Moderately concerned	Very concerned	Extremely concerned
7. Loss of agricultural land					
8. Damage to plants and wildlife					
9. Pressure on local infrastructure (e.g. roads)					
10. Problems for livestock and farming (e.g. dust)					
11. Reduction in water quality (e.g. tankwater, creeks)					
12. Deteriorating human health					
13. Loss of sense of place and community identity (e.g. unwelcome changes to the landscape and community that change things about the Gloucester area that are important to you)					
14. Lowered real estate values					
15. Conflict within the community					
16. Negative effects on the local economy (e.g. damage to the tourism industry)					
17. Reduced Air Quality (e.g. dust, odour)					
18. Damage to the landscape					
19. Social problems related to an influx of workers					
20. Climate Change					

Section Two Continued – Gloucester and Coal.

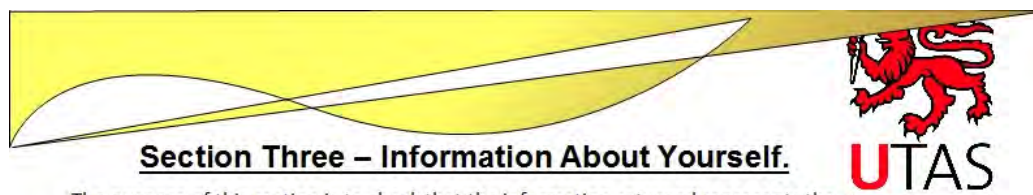
For each the following questions, please tick the square which fits most closely with what you think. It is very helpful for us if you can answer all the questions.
The first set of questions are about the situation as it is now. The second set are about the future.

Now

	Strongly Agree	Agree	Neither Agree Nor disagree	Disagree	Strongly disagree
21. Damage to the physical environment by coal mining and gas extraction threatens my way of life here.					
22. The coal and gas industries have made the Gloucester region a better place to call home.					
23. My sense of belonging to the Gloucester region has been undermined by unwelcome change associated with the coal and gas industries.					
24. I am worried that aspects of the Gloucester region that I value are being lost because of coal and gas.					
25. I am sad that familiar aspects of the Gloucester region are disappearing because of the coal and gas industries.					
26. I am considering moving away as I no longer feel at home here because of the coal and gas industries.					

In the Future

	Strongly Agree	Agree	Neither Agree Nor disagree	Disagree	Strongly disagree
27. Further damage to the physical environment by coal and gas mining will threaten my way of life here.					
28. Coal and gas mining will make the Gloucester region a better place to call home.					
29. My sense of belonging to the Gloucester region will be undermined by unwelcome change associated with the coal and gas industry.					
30. I am worried that aspects of the Gloucester region that I value will be lost because of coal and gas.					
31. I am sad that familiar aspects of the Gloucester region will disappear because of the coal and gas industries.					
32. If coal and gas continues to expand I may consider moving away as I will no longer feel at home here					



Section Three – Information About Yourself.

The purpose of this section is to check that the information returned represents the character of the Gloucester community as a whole. It is subject to the same strict ethical conditions as the rest of the study, and can only be viewed by the researchers.

33. Are you:

☐ Female ☐ Male

35. What is your age (in years)?

- ☐ 18 - 30
☐ 31 - 45
☐ 46 - 60
☐ 61 - 75
☐ 76 or over

34. Do you have any of the following qualifications?

- ☐ Tafe/technical college certificate or diploma
☐ Bachelors Degree
☐ Postgraduate qualification
☐ Prefer not to answer

Section Four – Your Thoughts.

36. Is there anything else you would like to say about how coal and gas development has or will impact your 'sense of place' in Gloucester - positively, negatively, or otherwise?

Thank you for your help in completing this survey. It is much appreciated. If you can mail back the survey using the enclosed reply paid envelope as soon as possible it will assist greatly in our research.

If you would like to discuss anything regarding the study, now or in the future, please feel free to email wjordan@postoffice.utas.edu.au, or write to Warrick Jordan, School of Geography and Environmental Studies, Private Bag 78, Hobart, Tas. 7001.

Appendix C: Interview Schedule

1. "How long have you lived in the Gloucester area?"
2. "What do you do for a living?"
3. "That sounds like a pretty special place to grow up in – can you tell me about why you like it here?" or "what attracted you here?"
4. Another question leading on from the previous that leads them to talk about their experience.
5. "Is there something special about the area around here? The country itself, or the community?"
6. "Is there a place that's particularly important or special to you or your family here?"
7. "Is that place the same as it always was?"
8. "Are things changing around here? What's the main cause?"
9. If the answer to 8. is not 'coal', ask "what about coal?"
10. "A lot of people love the country around here. Do you think mining will change people's appreciation of the natural environment?"
11. "Are people concerned about the town, the environment, and the community changing because of the mines? That people don't feel that Gloucester is the same place it used to be?"
12. "What are people most concerned about regarding the mines?"
13. "Do they look over at Muswellbrook and Singleton and feel concerned that Gloucester will end up looking like that?"
14. "Could the mining companies operate in a way that would keep changes to the town and countryside at an acceptable level for most people?"
15. "Is there enough community input into how natural resources are managed here?"
16. "Do the companies know, and respect what the community wants?"
17. "What about the state government and council; are they taking the community

and social impacts seriously?”