Healing Wounded Landscapes:
The Role of Landscape Architects in Achieving Post-Mining Sustainability

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Executive Summary
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The premise of this report is the formation of knowledge on seven key themes considered crucial to the success and failure of post-mining areas, with a view to determining how best landscape architects can contribute to mine closure planning and reclamation processes. The seven key themes and research investigations explored are: where mine closure thinking is today, changing mindsets within the mining industry, regional transformation of post-mined landscapes, community perceptions of altered terrain, new approaches to building local economic strategies, methods of community engagement, and the role of the landscape architect in the mining industry.

Through my investigative travels I have had the opportunity to visit Germany, South Africa and United Kingdom to explore the aforementioned themes. Through interviews, lectures, literature reviews, site visits and analysis and conferences I have met and gained knowledge from many amazing people including; landscape architects, architects, artists, community groups, mine closure practitioners, social and economical innovation reform organisations, local governments, mining companies, historians, environmental and social consultants and university lecturers and researches.

Post-mined landscapes reflect cultural values and ‘raise ethical, philosophical and physical questions’ (Berger 2002 p.7). The expertise required to respond to the vast number of questions asked of altered landscapes today cannot be found within the mining industry nor answered by one profession. To meet society’s social and environmental expectations today, new knowledge, thinking and skills are required to deliver reclamation outcomes considerate of more than solely scientific and engineering solutions. It is for this reason as Dempsey et al. (1979) suggests, if mining companies are to demonstrate seriously their commitment to quality landscape planning and closure outcomes the involvement of landscape architects from the initial stages of planning, through development and into the operational years of mining is required. Landscape architects as ‘Generalist’ are well equipped to deliver creative and innovative post-mining legacies for local communities. Their skill set and knowledge base also positions them to facilitate a genuine balance between the environmental, local social needs, economic interest and political pressures. However, while landscape architects can contribute to successful post-mined legacies for real transformation to occur within the mining industry must shift their focus from short-term profits. Long-term outcomes must become the focus that go beyond compliance and that considers environmental and social aspects as important as economics. For this to become a reality mining companies require a major rethink towards their business model, company values and approach to leadership.

It is evident landscape architects have a critical role to play within the mining industry and there appears to be an apparent overlapping of reclamation goals and landscape architectural knowledge and skills. Due to this fact the author will build upon the research and findings in this report to ‘investigate the reasoning for this incongruity and demonstrate precisely where and how the Landscape architecture profession fits into the mine closure cycle’ (Baida and Slingerland 2013). Future research will aim to further promote and educate on the benefits of landscape architects in the reclamation field. Conclusions drawn from future research along with the key recommendations for this report will be submitted to several national and international mining and landscape architectural publications and also presented at several national and international mining and landscape architectural conferences.
Preface

During my time in exploration as a field technician, working in South Australia’s far north outback undertaking electromagnetic field surveys in search of ore bodies I was introduced to my first operational mine, the Challenger gold mine. Surrounded by the red sand and native arid vegetation that encapsulates the natural beauty and biodiversity of the South Australian outback, the underground gold mine’s impact on the landscape was relatively low. Its remote location also brought with it a sense of ‘out of sight, out of mind’. However, as I continued as a field technician, I found myself hoping more and more the results of our work in the field would indicate there was no potential ore body located in the area that would require further drill samples leading to the possible start of a mining operation. This would allow the landscapes we imposed ourselves on to once again breathe a sign of relief as we moved on to the next.

The Challenger gold mine provided me the opportunity to reflect on the brutal impact societies’ culturally fuelled needs could have on a landscape. As much as I hoped for negative survey results it was a clear fact that personally I could not stand apart from this altered landscape.

While trying to come to terms with the impact society has on our landscapes, it was important I understood mining’s integral role in shaping Australia. Mining has been vital to supporting Australia’s economy and, as Hugo & Maude (1992, p. 68) explains, it played a key role in expanding the settlement frontier in Australia with many purpose built communities still existing today. With the boom or bust nature of mining and the associated impacts for landscapes, communities and the economy can fluctuate between the progressive and the crippling.

With Australia’s current political agendas and consumptive lifestyles, the mining industry will continue to grow and fuel the extraction of our natural resources impacting on many landscapes and communities. Today the mining industry is required by law to rehabilitate their landscapes and great steps have been taken to leave a positive environmental legacy. However, with the social fabric of many regional communities having been severely impacted by mining operations, mining legacies need to also consider how the local community will embrace their post-mining future.

Due to the size, scale and significantly adverse social and environmental impacts of mining’s future projects, it is critical the design professions evolve and position themselves to contribute to solving the challenges ahead. However irresponsible we may have been with the legacy of mining in the past, today we cannot escape our responsibilities. For this reason, this report views post-mined landscapes as opportunities that offer sustainable benefits not only to the environment but also communities, and potentially as a growth area for employment in the design field.

As a landscape architect, I believe I can play an important role in meeting today’s environmental and social challenges associated with post-mined landscapes and mining communities. By acknowledging the impact we have on our landscapes, the creativity and innovation of a landscape architect can have a significant influence on the social and environmental investigations into post-mined landscapes. Through such input we can start to challenge the traditional thinking around mine site rehabilitation and move beyond the idea that the original landscape should be restored. Landscape architects can bring resolution through a process of analysis, design and prototyping that includes considerations for aesthetics, social function and cultural issues. It follows; landscape planning must not rely solely on engineering or scientific methods.
It was because of this belief that I applied for and was awarded a Churchill Fellowship providing me the opportunity to travel to various countries and investigate the challenges and opportunities provided by mine closure and the influence landscape architects can have within the mining sector.

This report aims to, similar to the research of landscape architect, Alan Berger; *unearth the story about mine rehabilitation, to capture this truly unique form of landscape design for broader understanding…. to both reveal and to initiate an informed discourse on rethinking landscape reclamation in the design fields as well as in mine rehabilitation practice* (Berger 2002 p.8)

There is no silver bullet to the vast issues surrounding post-mined landscapes and communities and it is by no means an issue that I or my profession proclaims to be able to resolve with definitive answers. However, a mining operation has enormous potential to contribute to the sustainable development of a community with early community planning and successful collaboration between the design and science fields. Mine closure should not be viewed as a problem but as a natural conclusion to mining and a catalyst for creative solutions for post-mined landscapes.
Acknowledgements

I would sincerely like to thank the Winston Churchill Memorial Trust for the unbelievable opportunity to explore and research a topic that has the potential to positively alter the lives of many. Through my investigative travels I met many amazing people and learnt many amazing things for which I am indebted to the Trust.

I would also like to thank my directors at WAX Design for their continued support of my endeavours.

A big thanks needs to go to Athena Kerley, Julie Stacey, Warwick Keates and Guy Hobbs for sparing their time and their generous help on kindly reviewing my report.

But most of all a special thanks must go to all the wonderful and amazing people (See to appendix A) I met along the way for their hospitality, kindness and shared knowledge. It was because of these people that made my Fellowship so special.

My research travels required months of planning and correspondence so I would particularly like to thank, Sue Brandt, Ingrid Watson, Brigitte Scholz, Karsten Feucht, and Neil McInroy for their time, continued support and introductions to their friends and colleagues along the way.
Introduction

Sacred landscapes all over the world have become symbols of our societies’ thirst for our planet’s natural resources. 2010 saw the greatest ever use of raw materials, and according to a United Nations Environment Programme report (UNEP 2011), the exploitation of resources worldwide could triple by 2050. Australia’s increasing human occupation and cultural consumption will see the mining sector continue to alter landscapes and impact on communities through the extraction of natural resources. As Australia continues its push towards strengthening its mining industry, it is vital we now start to consider our mining legacy not just environmentally but also socially.

Since the introduction of the Mining Act in 1973 the remediation of mined landscapes has been mandatory with great steps having been taken by the mining industry to leave a positive environmental legacy and strengthen its reputation. In a similar vein, the ‘social licence to operate’, which was introduced in 2005, ensured acceptance of a mining operation by the local community. The social licence has led to a greater awareness of community needs and an increased level of community engagement during the development of a mining operation. As a result, communities enjoy social benefits derived from mining operations. Training programs, local employment, local business development, sporting club sponsorship and improved infrastructure are evidence that the mining industry takes social responsibility seriously. However, this is only part of the story as the social fabric of many regional communities has been severely impacted by mining operations. Life post-mining can see them without adequate schools, roads or hospitals, and lacking other vital social infrastructure (Maher 2011), as long-term visions and responsibility for the community have often been ignored in mine closure planning.

Today, however, it is evident mining companies are placing a greater emphasis on the social aspects of mine closure. It is critical, that the creative thinking of the design professions plays a key part in helping reach more intelligent and sustainable outcomes that balance social, environmental and economic agendas. Many questions need to be asked about the social aspects of mine closure; for example, how should the land be re-used? And what are the cultural benefits? Landscape architects cannot provide definitive answers but can assist in investigating new opportunities for the community. Through an active planning and redesigning process, altered landscapes can be utilised for community benefit. They can then break away from sole dependency on the mining economy and seek a diversification of socio-economic activities.

The premise of this report is the formation of knowledge on seven key themes considered crucial to the success and failure of post-mining areas, with a view to determining how best landscape architects can contribute to mine closure planning and reclamation processes.
The seven key themes and research investigations explored are:

1. Where Is Mine Closure Thinking Today?
   
   **INVESTIGATION** - Where is the current thinking on mine closure and sustainable development positioned within the mining industry?

2. Changing Mindsets.
   
   **INVESTIGATION** - How to affect an individual’s or company’s mindset / thinking / approach to achieve the required paradigm shift for socially driven outcomes in regards to mine closure and post-mined landscapes;

3. Regional Transformation - Best Practice
   
   **INVESTIGATION** - Investigate a region’s transformation where radical structural upheaval has occurred, as a result of rapid industry collapse, and how new perspectives have been used to create new landscapes;

4. Community Perceptions
   
   **INVESTIGATION** - Mining landscapes are often subject to negative perceptions. How can one’s perceptions be changed to highlight the opportunity presented by post-mined landscapes?

5. Building Local Economic Strategies
   
   **INVESTIGATION** - To understand the ideas and research behind a progressive approach to social regeneration and building local economic strategies;

6. Community Engagement
   
   **INVESTIGATION** - To explore what is considered best practice community engagement and whether mining companies are delivering this standard;

7. The Landscape Architects Role
   
   **INVESTIGATION** - Determine a clearer understanding of the role landscape architects are currently playing in the mining industry today and how to ensure future recognition of the value a landscape architect can contribute to mine reclamation.
Reclamation has been given little attention by landscape professionals in Australia. So it is the intent of this report to use the knowledge gained to provide a valuable resource for not only landscape architecture but also the Australian mining industry. The report will provide a critical platform to expand landscape architecture’s narrative in Australia and aim to draw attention to the value design professionals can add to the industry. A primary objective being to stimulate a discourse for the inclusion of landscape architects into the mining industry. It is evident the integration of design thinking into mining projects is not a new concept but the application of this internationally, and particularly in Australia, remains limited and is often ignored.

This report is broken into three parts. Part One, Australia at a Glimpse, offers a brief history of mining in Australia and discusses the current thinking on post-mined landscapes from within the landscape architecture profession. Part Two explores the eight key themes in detail based on my research and overseas investigations with key finding(s) draw from each theme. Part Three, delivers a final word, outlines key directions to assist guide landscape architecture and the mining industry on the rapidly expanding field of reclamation and concludes by outlining the next step for the author.
Part One: Australia at a Glimpse
Australian Mining History

With our thirst for raw materials increasing year after year, public perceptions of the effects mining has on communities and the environment grow more negative. However, it is important to understand the importance mining has played in shaping our planet. Mining has been critical to the progression of society over the past 200 hundred years, bringing changes in the global environment that are both ‘unprecedented in both scale and magnitude’ (Tredici 2008, p. 13). It has played an integral role in mass migration, generating incredible wealth, helping establish the identity of countries, powering industrial and technological revolutions, and as a result altering many landscapes worldwide.

The impact of mining has been particularly significant in Australia as it ‘has always been part of its history’ (Wildman & Baker 1985, p. 1). It has been vital to supporting Australia’s economy when other economic activities have faltered. Since 1788 when indigenous Australians mined the land for ochre and stone, mining activities have impacted Australian communities and landscapes. It was the 1850s in particular that signalled to the rest of the world the country’s potential as a mining nation, with its first boom as the subsequent result of gold discoveries in the Eastern states. This was the beginning of the transformation as described by (McQueen 2013), from a convict dumping ground and pastoral backwater into a liberated new nation. It was these turbulent beginnings that led to the birthplace of the Australian political system. The Eureka Stockade is viewed in Australian post-settlement history as one of the greatest victories for equity and fairness (Dirty Business: How Mining made Australia, 2013).

Mining has also ‘played a key role in expanding the settlement frontier in Australia’ (Blainey cited in Hugo & Maude 1992, p. 68) and it was during the 1860s that mining towns became a permanent fixture across regional Australia. Tents and shanties gave way to more permanent private and commercial buildings with mining companies employing large numbers to service established mines. Outback resource towns have long been home to communities brought about by mining operations. While the town and community would not exist without the mine, its operations can have significantly negative impacts on the surrounding environment and landscape as well as the social fabric of communities.

As mining continued to grow and expand through the decades, rising concerns for the environment started to build momentum during the 1970s. The detrimental effects on the environment had become a major public concern as a generation’s environmental awareness grew along with the legacy of abandoned mines across the landscape. Environmental protection issues were left to state and territory governments to resolve and enforce. While there was a heightened public awareness and increased lobbying against mining, the environmental rehabilitation of altered terrain and effected ecosystems was still not mandatory for mining companies. However, as Unger 2010 explains, in the early 1990s there was a change in legislation with mandatory rehabilitation of mine sites included in environmental policy, legislation and supporting guidelines. Key Commonwealth legislation dealing with environmental impacts and the Environmental Protection & Biodiversity Conservation Act 1999 were also introduced. This has since ensured standards of environmental performance across the states and territories are controlled and enforced by the appropriate regulators. Rolfe (2001 p.9) noted ‘most mining companies in Australia were obligated under their mining lease to rehabilitate mine sites’ and given their poor public image were happy to support government regulations.

Since globalisation, Australia’s mining industry has continued to strengthen and has emerged a world leader. Today the industry has consolidated its economic importance within the country,
contributing to GDP, exports, employment, investment and expenditure. It is clear mining
remains critical to so many aspects of technological, economic and social activity and
development in Australia. While most impacts are thought to be negative, Wildman & Baker
(1985) highlight that mining offers a range of benefits not normally available to regional
communities, such as, infrastructure development, increased employment and skills training.

Community expectations of mining companies’ responsibility towards the environment and
support for the local community have increased over the years making it increasingly difficult to
leave an altered landscape and simply walk away post-mining. This has ensured mined
landscapes are reintroduced into the natural cycle and made reusable for humanity, resulting in
the emergence of the social license to operate. Doleschal-ridnell (2011) explains this is an
unwritten verbal agreement between the local communities and mining companies that
promotes self-regulated, critical and sustained processes by companies to meet community
demands and expectations. This has lead the industry to develop guidelines and best practice
approaches to assist companies to engage with communities, operate in an environmentally
responsible manner and to generally integrate community concerns into its operations.

With Australia’s 400 operational mines and its significant investment in exploration the future for
the mining industry may look to be secure and lucrative. However, this future may be as volatile
as its past. Challenges such as, the recovery from the global financial crisis, fluctuating
commodity prices, uncertainty around a carbon price and mining taxes, rising community
awareness and sustained public pressure will impact on future operations and the industry as a
whole. As a result mining is likely to have an ongoing battle to achieve the right balance between
social, economic and environmental outcomes under the constant scrutiny of governments,
stakeholders, regulators and society. Therefore, the following question will be continually asked
of the industry ‘what happens when mining stops? What will we be left with?’
Enter Landscape Architects

Only recently has the landscape architect’s profession begun to push for recognition and consideration in the development of mining operations and mine closure planning. For years landscape architects have applied their creative thinking and skills to projects ranging from the development of ecosystems, to landform and planting design, to land-use planning, to fusing art and science in the mediation between nature and culture. However, a landscape architect’s presence is ‘relatively untapped within the mining industry’ (Dempsey et al. 1979 p.36).

In a profession whose scope and ambitions are often not valued or understood, landscape practitioners today are beginning to grapple with the magnitude and scale of permanent landscape destruction as a result of natural resource extraction. Landscape architects are beginning to explore how, as a society we value and deal with post-mined landscapes. Such landscapes can provide new narratives for a profession that some feel are inadequately dealing with large-scale environmental issues. Berger (cited in Poli 2009) explains that landscape architects ‘tend to still be focused on discrete locations and places and unfortunately too often on superficial cosmetics’.

The planet’s demands for natural resources has never been greater with millions of active and abandoned mines covering hundreds of thousands of square kilometres. With the world’s population increasing rapidly and new extraction technologies making old operations economically viable once again, more and more communities are being affected by mining operations. This has resulted in many questions being asked of how we deal with such wounded landscapes.

To date, in Australia, current rehabilitation practices have been focused on an ecological approach, as a result of government regulations introduced in the 1970s. No longer are post-mined landscapes remaining untouched, by law; mining companies are responsible for their rehabilitation. Rolfe (2001) notes the goal of rehabilitating sites has been in favor of developing native bushland and reinstating biodiversity is a main objective. This raises concern, however, about rehabilitation focusing solely on environmental issues when there are major social implications that must be considered. With numerous communities in severe socio-economic decline as mining operations are being down sized or facing closure, Heike (2004) argues, landscape planning cannot and must not be allowed to strictly take place on an ecological plane: processes of changing perception and the values and aims of our society have to be included as well.

With the introduction of the ‘social license to operate’ the importance of social as well as environmental mine closure outcomes are being realised. Landscape architects are realising post-mined landscapes offer them the unique opportunity to readdress such landscapes by exploring new social and ecological thinking and experimenting with environmental systems. Such thinking and approaches are leading to a change in perception of post-mined landscapes with the recognition they can offer long-term sustainable outcomes for both the community, by creating new economic opportunities, and for the environment.

The attention of the design profession is slowly being diverted towards the huge footprint left by mining on the world’s landscape today, as the value and input designers can contribute to post-mining landscapes and communities is beginning to be realised. Around the world designers are exploring new approaches to mine site rehabilitation looking towards ‘creativity to drive new
solutions to old problems’ Digby (2008, p. 89). The question facing landscape architects today is how should they deal with post-mined landscapes: to ‘reclaim’ or to ‘restore’?

Reclamation, which can also be referred to as revitalisation, starts with the assumption that the ecological clock cannot be turned back to an earlier time. Its broad goals are to minimise the negative impacts that the site may have on the surrounding environment and to maximise its aesthetic and ecologically functionality. Reclamation projects are usually large scale and heavily disturbed and cry out for some form of productive reuse. A core principle of reclamation is that everything that happens to a given piece of ground becomes an inseparable part of what it can become in the future (Del Tredici, 2008 p.13).

Rehabilitation, on the other hand,

Starts with the linked assumptions that it is both possible and desirable to re-establish some portion of the original ecological conditions of a site. People who advocate strict rehabilitation face two very difficult questions: to what former time period should the site be restored? And how should one cope with the unpredictable environmental changes that impact the site? (Del Tredici, 2008 p.13).

Generally designers are ‘choosing to reclaim, rather than restore’ (Berger 2008 p.xxi) leaving behind the notion that altered landscapes can be returned to an original state. Reclamation stems from a beginning as a practical need, a public health necessity, a legal problem and a technological challenge (Turner 2008). Today, however, landscape architects recognise the landscape is not bound to a previous life and are searching for deeper meaning in their need to reclaim. Many questions are being considered, such as: What ethical values determine thoughts and methods of reclamation? How does society view post-mined landscapes? Would society approve of altered landscapes that are transformed to support productive uses rather than being left to heal themselves? Answers to these questions must be explored in the design fields, to progress the idea of reclamation and embed it within a new discourse that explores not only technical components of a mine site but also non-physical phenomena, such as perceptions, histories and cultural values. ‘Reclamation will eventually be absorbed into Landscape architect practice’ (Berger 2008 p.xxi), as landscape architects integrate the profession into the mining sector. This will ensure their value through the notion that mine closure outcomes offer sustainable benefits and opportunities, not just to the environment but also a community.

The changing perception and values of our society, to one that is more socially and environmentally conscious has helped lead a shift in attitudes towards post-mined landscapes. It is with such a shift in attitudes that the design profession is having a greater influence within the mining industry, slowly initiating a discourse between the design profession and the science and engineering professions who have traditionally dominated within the mining industry. Landscape architects are now posing the question of restoration versus reclamation as a means to achieve more intelligent mine closure outcomes for communities and the environment.
Part Two: Fellowship Investigations
Introduction

Through my investigative travels I have had the opportunity to visit Germany, South Africa and the United Kingdom to explore key themes crucial to the success and failure of post-mining areas. Through interviews, lectures, literature reviews, site visits, research and conferences, I have gathered information and gained knowledge from landscape architects, community groups, mine closure practitioners, social and economic innovation reform organisations, local governments, mining companies, historians, environmental and social consultants and university faculties. Part Two explores the eight key themes in detail based on my research and overseas investigations with key finding(s) drawn from each theme.

The seven key themes and research investigations are:

1. Where Is Mine Closure Thinking Today?
   **INVESTIGATION** - Where is the current thinking on mine closure and sustainable development positioned within the mining industry?

2. Changing Mindsets.
   **INVESTIGATION** - How to affect an individual’s or company’s mindset / thinking / approach to achieve the required paradigm shift for socially driven outcomes in regards to mine closure and post-mined landscapes.

3. Regional Transformation - Best Practice
   **INVESTIGATION** - Investigate a region’s transformation where radical structural upheaval has occurred, as a result of rapid industry collapse, and how new perspectives have been used to create new landscapes;

4. Community Perceptions
   **INVESTIGATION** - Mining landscapes are often subject to negative perceptions. How can one’s perceptions be changed to highlight the opportunity presented by post-mined landscapes?

5. Building Local Economic Strategies
   **INVESTIGATION** - To understand the ideas and research behind a progressive approach to social regeneration and building local economic strategies;

6. Community Engagement
   **INVESTIGATION** - To explore what is considered best practice community engagement and whether mining companies are delivering this standard;

7. The Landscape Architects Role
   **INVESTIGATION** - Determine a clearer understanding of the role landscape architects are currently playing in the mining industry today and how to ensure future recognition of the value a landscape architect can contribute to mine reclamation.
WHERE IS MINE CLOSURE THINKING TODAY?
Cornwall, United Kingdom – Mine Closure 2013

INVESTIGATION:
Where is the current thinking on mine closure and sustainable development positioned within the mining industry?

SYNOPSIS:
The mining industry today appears to have developed a social conscience. The social aspects of closure and recognition of mining as a catalyst for positive legacies are today a focus within the mining industry. However, it noted by a keynote speaker at Mine Closure 2013, Samantha Hoe-Richardson from Anglo America, ‘the industry needs to be perceived to be doing the right thing’, requiring one to ask the question, ‘is the current industry catch phrase of sustainable development simply lip service driven by reputation and compliance?’

If the industry is going to be measured by short-term production rates and profits can the current business model deliver sustainable development?
Context

Mine Closure 2013 (MC13) was fittingly hosted at Eden. It was the eighth annual conference in the international mine closure conference series and it brought together industry experts from around the world to provide opportunities to network, present research findings, and share best practice examples of mine closure. 180 delegates from 26 countries attended the conference that saw over 60 presentation on topics including community and social issues, ecosystem reconstruction, planning for closure and new approaches. The conference focused on the exchange of knowledge and ideas that encourage the mining industry to move towards universal goals, practices and standards, accepted universally by all stakeholders. MC13 provided the opportunity to gain an insight into the mining industries current thinking and approaches to mine closure and the perceived challenges and opportunities it faces.

The Cornwall region in the United Kingdom is steeped in a rich history and offers valuable insights and lessons on mine closure, best practice and social regeneration. The metal and china clay mining history of Cornwall has left thousands of hectares of contaminated and derelict land and many socio-economic challenges. Today, it is these negative legacies that drive creative and innovative approaches to regeneration that look beyond just environmental values and involve new thinking and a shift in attitudes. For example, Cornwall’s Eden Project has paved a new path for the people of the post-industrial area of Cornwall. Previously they had lost their economy and purpose and questioned what the future held for them. The Eden Project is, arguably, the world’s most well-known post-mined landscape. It demonstrates the great success and positive social outcomes that can come from a negative mining legacy. However, Eden did not grow from best practice guidelines, toolkits or examples but from the question ‘what will the future be?’ (Kendle 2013).

Today, the Eden Project is visited by one million people from across the world each year proving that abandoned mines are capable of exciting regeneration and transformation creating a new future and hope for the local community. It has encouraged new collaborations between a number of different stakeholders ‘recognising that all sectors share responsibility for finding solutions and benefiting from a share in the opportunities (Whitbred-Abrutat 2004 p.10). As an educational charity, it has generated 1.2 million pounds for the local economy by exploring new ways of living and creating a line of site on how people’s lives are connected to nature and mining.

Mine Closure Thinking Today

From the outset of MC13 it was evident that the mining industry has developed a social conscience and is moving towards an era where social considerations to closure are becoming of greater importance and driving closure planning decisions. The tone was set by the keynote speakers who reinforced the need to focus on what will be left for the community once mining activities stop. The idea of leaving a positive legacy was a continuous thread and a topic of discussion throughout the conference.

Other key messages and common themes demonstrating the industry’s current thinking and positioning on mine closure were reiterated through the numerous papers and presentations on the social aspects of closure. While each paper had its own focus similar agendas could be drawn, these include:
- The importance of more creative thinking and innovative solutions to address the social consequences of mine closure.
- Success is often judged in the very short-term, from a single aspect or narrow perspective, such as ecological conditions (Coppin 2013). However, successful mine closure requires more than the mitigation of adverse environmental impacts.
- Closure planning and engaged, meaningful community consultation at the earliest possible stage is critical.
- Understanding that closure planning can actually have positive benefits for both the mining company and surrounding communities (Hattingh 2013).
- Closure assumptions are made by the wrong people, with different groups dominating decision making at different stages of the mine life cycle (Limpitlaw and Mitchell 2013).
- Define opportunities to add value beyond what is legally required – focusing on legal compliance may simply defer liabilities until later and cause erosion of reputation (Limpitlaw and Mitchell 2013).
- Promote the development of diverse teams (Limpitlaw and Mitchell 2013).
- A focus should be on building community resilience so that the community becomes more able to adapt to changing socio-economic and environmental circumstances on closure (Adey & Whitbread-Abrutat 2013).
- Mining operations should act as a catalyst for (sustainable) socio-economic development.
- Applicable to all mining projects is the integration of closure and post-closure considerations as part of an investment from day one of the project (Adey & Whitbread-Abrutat 2013).

As the conference progressed it was apparent the mining industry was able to ‘talk the talk’ on achieving post-mining sustainability and that in fact the application of the messages were being slowly absorbed. Motivation behind a shift in mindsets is a matter for debate and is discussed later in this theme. However, several case studies presented at MC13 demonstrated the changes in mine closure practice during the past decades. Limpitlaw and Mitchell (2013) explain that in the late 1970’s it was acceptable to simply comply with legislation, which resulted in many negative legacies left behind. However, today, mining companies are exploring how post-mining landscapes might be best designed to serve future needs of the community.

**Reflections on shifting mindsets**

Whether driven by community expectations, a company’s values or corporate reputation, social aspects in mine closure are becoming increasingly important and a change in perspective to in closure planning is now evident. This can be attributed to a number of factors including; rising community expectations, increased scrutiny from regulators and government, introduction of the social license to operate, and increased public pressure. Such factors have resulted in companies placing a greater emphasis on integrating social aspects and community concerns within their overall closure plans. While seeing change in mine closure planning and practices is encouraging, it is clear the driving factors for change are external to the industry. This suggests that as societies’ values change, thinking and practice within the mining industry is forced to meet new expectations with companies aware of what a good reputation means to business and future operations. As was noted by a keynote speaker ‘the industry needs to be perceived to be doing the right thing’ (Hoe-Richardson 2013). The notion of wanting to be perceived to be doing the right thing begs the question ‘who and what is this business here for?’ (Avery and Bergsteiner 2011 p.5). This question must be answered if one is to determine whether or not the mining industry is walking it’s talk. Avery and Bergsteiner (2011) explain if the primary goal of a company is to maximize shareholder value, as is the approach adopted in the Anglo/US world, a ‘focus on short-term profits discourages long-term thinking, investing and planning’ (p. 5).
For a real shift in mindsets to occur, where a company’s values and agenda will not be called into question, ‘the mining industry requires a major rethink in terms of how companies currently do business (Adey & Whitbread-Abrutat 2013 p.9). Companies and individuals within them need to consider the adoption of a more sustainable strategy and the notion of ‘responsible leadership’ that separates itself from the business-as-usual and begins to base decisions and performance over the long-term. Theme Two discusses this in more detail.

With the above being the case for many mining companies, it is the belief of the author, that a lot of the industry talk is propaganda driven by company reputation and compliance.

**Short-term Perspectives**

There are lots of well meaning people trying to deliver sustainable development but the truth is shareholders say ‘jump’ and mining companies say ‘how high’. The first things to be hit to ensure profits and dividends are jobs, safety and the environment. As discussed by Stacey and Stacey (2013)

*Classical economic theory separates the economy from the environment and people (Hall, 2013, cited in Stacey and Stacey 2013), and has, as its central value, growth and development (Kovel, 2002, cited in Stacey and Stacey 2013). Simultaneously, the legal framework within the directors operate, requires them to deliver short-term financial results, even to the extent of resulting in irresponsible social or environment outcomes (Avery, 2005, Bogle, 2008, cited in Stacey and Stacey 2013).*

Executives rise and fall on meeting short-term targets and results and, as Avery and Bergsteiner (2011 p.13) explain, if ‘remunerated on a short-term basis may have no incentive for seriously pursuing long-term change’. If this is how the industry is going to be measured then the current business model is not geared to deliver sustainable development. How can companies simultaneously deliver the legal requirements for maximizing profits and the legal requirements for sustainable development? A company’s key focus on production and short-term profits will always override goals focusing on qualitative long-term plans associated with closure and future land uses.

**Hurdles to Shifting Mindsets (Thinking Outside the Industry)**

While mining say they are aiming for creative and innovative solutions to meet the challenges they face today, their ability to deliver creative, innovative and ‘out of the box’ outcomes for the future are limited. These limiting factors include the fact that mining companies are no longer the experts on all mining related topics and the difficulties of increased scrutiny.

**New Experts Required**

The industry seems focused on resolving its pressing challenges internally as it has done in the past. However, such challenges are no longer only physical and biophysical environmental components but social and community concerns as well. This means the industry is limited in the expertise to find adequate solutions to the social aspects of closure. The industry needs to engage professions such as social planners and landscape architects, who possess skills in such areas to reach successful community driven outcomes.
As was evident from the themes and topics discussed at the conference, the industry is fully aware that reclamation is not driven exclusively by engineering and scientific parameters. However, they seem reluctant to engage professions that it feels do not have adequate knowledge in mine closure. But with the new challenges facing the industry it must be recognized that expertise in areas not previously associated with mining are required.

**Difficulties of Increased Scrutiny**

Mining companies are under an ever-increasing amount of scrutiny from all stakeholders. As a result, numerous guidelines and frameworks such as the International Finance Corporation (IFC) performance standards are employed within the mining sector. The combination of increased scrutiny and adherence to international standards are both good in their own right, but are not conducive to creativity, innovation and experimentation. But it is these factors that has allowed projects such as the Eden Project, to create, arguably, today’s most successful example of a post-mining landscape. By adopting creative and innovative processes with uncertain outcomes, a company can develop a poor corporate reputation that can affect future mining and social licenses.
THEME 1

Where is Mine Closure Thinking Today?

Cornwall, United Kingdom – Mine Closure 2013

KEY FINDINGS:

• A slow paradigm shift is evident with mining companies placing a greater emphasis on integrating social aspects and community concerns within their overall closure plans.

• While mining companies are exploring positive social legacies, the motivation behind this appears to be driven by compliance and reputation rather than an authentic concern for the community.

• Legal frameworks, which require companies to deliver short-term financial results means the current business model for many companies are not geared to deliver sustainable development.

• The mining industry must utilise new areas of expertise, such as the design professions, if it is to deliver successful reclamation outcomes.

• The mining industry requires a major rethink in terms of how companies currently do business (Adey & Whitbread-Abrutat 2013 p.9).
THEME 2

Changing Mindsets
Johannesburg, South Africa – Mining Transformation Solutions

INVESTIGATION:
How to affect an individual’s or company’s mindset / thinking / approach to achieve the required paradigm shift for socially driven outcomes in regards to mine closure and post-mined landscapes.

SYNOPSIS:
New mining legislation currently sees South Africa’s mining industry focused on a transformation process aiming to address inequality, poverty and unemployment. While it may be generally inherent that people care for communities, it seems the bottom line is what matters for mining companies. This often skews their commitment to sustainable and social outcomes.

Is legislation change effective in implementing successful transformation or is an alternate driver for change required? Evidence of companies exploiting the legislation suggest not. For companies to commit beyond compliance a major shift in industry mindsets and values is required.
Context

Johannesburg, South Africa, is a city shaped from the past century of gold mining. The city along with many smaller settlements grew along the gold reef during the 1886 gold rush. Today, Tang & Watkins (2011) explain approximately 400,000 people live in informal settlements along the mining belt, presenting many opportunities and challenges, both socially and environmentally, which need to be addressed collaboratively, intelligently and creatively. South Africa’s rich mining history details many similar stories to Johannesburg across the country’s landscape affecting numerous communities and mining operations.

Today, reform in South Africa’s mining regulations has kicked into gear the development potential of its mining industry, with the number of mines jumping from 993 in 2004 to 1,600 in 2011. While this may have contributed to an improved unemployment figure, the benefits of a strong mining industry come with additional stresses placed on the countries natural environments and communities. It is critical the industry focuses on long-term strategy with meaningful engagement and relationships formed between the government, industry and community. Building relationships and engaging with communities is a step in the right direction towards avoiding a repeat of the turmoil and violence, which cost 46 lives during a clash between striking mine works, police and the army at the Marikana mine site.

Although Australia’s situation and mining communities are vastly different, many valuable lessons can be learnt from South Africa as its mining industry begins a shift towards a socially conscious way of operating.

A Change in South Africa’s Mining Legislation

Transformation of the South African mining industry has largely been enforced through changes in mining legislation. The Minerals and Petroleum Resources Development Act (MPRDA) was introduced in 2002, closely followed by the Mining Charter, which introduced the idea of transformation within the industry. The Department of Mineral Resources (DMR) states that the charter is ‘aimed at transforming the mining industry to redress historical imbalances engendered by apartheid so that the industry is consistent with the changes in South Africa’s overall transformation of its social, political and economic landscape’. The Mining Charter was introduced with the hope that mining companies would not only meet commitments set out in the Charter but continue beyond compliance to permanently transform the industry.

As a means of ensuring effective transformation as a result of the legislation changes Social and Labor Plans (SLP) focus on community engagement, human resource development, local economic development (LED) programs, and promoting employment, are required to be submitted before the granting of mining or production rights.

The introduction of the SLP has forced the mining industry to consider infrastructure, LEDs and mine closure as catalysts for the creation of jobs, rebuilding of local economies and social regeneration in an attempt to decrease poverty. This has resulted in community engagement being viewed as critical to the success of mining operations rather than just a public relations exercise.

While it is generally agreed South Africa’s new legislation is a move in the right direction, there are still many issues and concerns surrounding the implementation, criteria, enforcement, compartmentalisation and the interpretation of the legislation. A major concern still is a
company’s commitment to the legislation, with mining companies being able to exploit the legislation so as they can been seen to be legally compliant rather than affecting real change.

**Does a Change in Legislation Equate to a Change in Mindset?**

It is the belief of Sue Brandt, CEO of Mining Transformation Solutions (MTS) that mining companies need to demonstrate their commitment to economic and social transformation beyond the minimal legislative requirements if real transformation within the mining sector is to be seen. MTS is an organisation that work hard at changing internal thinking and structures within the mining industry, enabling companies and communities to move beyond the ‘tick box’ approach to transformation and focus on the successful implementation of SLP and LED programs.

It is generally inherent in people that they care for communities but the bottom line is what matters for mining companies often skews their commitment to sustainable and social outcomes. From this perspective MTS ensure companies are accountable for their outcomes working with an understanding that leaving a positive legacy for the community post-mining is a non-negotiable. However, it is clear transformation in South Africa’s mining industry is not a result of a change in thinking and mindsets toward more socially orientated practices but is compliance driven as a result of the recently introduced legislation. Some mining companies may have a greater capacity, more resources or actually just care more about sustainable development and transformation. However, at the end of the day the cost implications to a company’s profits will ultimately decide the level of transformation the company commits to.

**How Mining Companies Commit Beyond Compliance.**

While many issues can contribute to a company’s poor social and environmental performance, the idea of changing a mining company’s mindset towards sustainable development does not have a simple or short-term answer. The answer, however, lies in assessing companies values to determine drivers of behaviour at a corporate level and adopting the idea and theory of responsible leadership.

In a report by Stacey and Stacey (2013 p. 1) it is explained that a mining company’s board is ‘responsible for setting the culture and values of the corporation, which drive performance and priorities’ and is suggested ‘that on the ground performance may be indicative of the nature of leadership and decisions in the topmost ranks of the company’ (2013 p.1). It is clear, as Stacey and Stacey (2013) note, that from the public statements issued by mining companies they are happy to ‘talk the talk’…

*Regarding their support for environmental stewardship, ethical behaviour and fair treatment of communities, often captured within the topic of sustainable development. Yet in practice, there are many examples where companies fail to deliver on these (Stacey and Stacey 2013 p.1)*

Research undertaken by Stacey and Stacey (2013) highlights that at board level, financial capital ranked as the greatest priority for mining companies while environmental and social capital ranked the lowest. Their research also found that ‘only 14 per cent of directors felt that board decisions are consistent with their personal values’ (p.11). Bogle (2008 cited by Stacey and Stacey 2013 p.3) explains that,

*In order to break the paradigm from the prevailing exclusively financial definition of value, to a business model in which social and environmental issues are afforded equivalent priority, directors of mining companies need*
to internalize social and environmental values as well, and bring these longer term, potentially intangible values to bear in decision making.

A commitment from a mining company for long-term social and environmental outcomes requires the company to rethink its shareholder first approach and as suggested by Avery and Bergsteiner (2011 p.5) it must ‘see itself as an interdependent part of the community’. They continue to explain that business today has a higher level purpose than a sole focus on profit. A change in how business works is not easy and requires an alternate approach to leadership bringing with it a major shift in mindsets and values.

Responsible leadership, with the notion of values at its core, is today being called upon, as explained by (Freeman and Auster 2011 p.5) ‘to become the norm’ for companies who are aiming ’to enact new values, such as ‘responsibility’ and ‘sustainability’. Responsible leadership as defined by (Pless 2007 p. 451 cited by Cameron 2011) is

*Responsible leadership can be understood as the art of building and sustaining social and moral relationships between business leaders and different stakeholders, based on a sense of justice, a sense of recognition, a sense of care, and a sense of accountability for a wide range of economic, ecological, social, political, and human responsibilities.*

It is the author’s view that for responsible leadership to have real meaning and lead to a change in the way a company does business, the attributes of virtuousness and authenticity must be included in its definition.

Virtuousness, as Cameron (2011 p. 27) explains, ‘represents a universal and stable standard of good’ that can provide a fixed, unchanging reference point to guide ‘leadership in times of ambiguity, turbulence, and high velocity change’ (p.30). In a world where change is constant companies and leaders can quickly lose their way if ‘no undisputed guiding principle exists’ (Cameron 2011 p. 30). Some may argue that ethics can play the role of a fixed reference guide, but as (Cameron 2011) explains, ethical standards are socially constructed and change across different contexts, therefore, they do not remain stable and are inadequate as fixed points. Virtuousness can serve as a fixed point because, as Peterson and Seligman (2004; Kidder 1994 cited by Cameron 2011 p. 30) describes,

*Virtuousness represents what people aspire to be at their best – goodness and nobility- and these aspirations are universal and unchanging in essentially all societies, cultures, and religions.*

It is for this reason that virtuousness must be an attribute linked with responsible leadership.

Authenticity is another attribute required in discussions around the definition of responsible leadership. A starting point for authenticity as explained by Freeman and Auster (2011 p.15) is ‘the idea of simply acting on one’s values or being true to oneself’. They continue to recognise that values are both difficult to know and realise meaning authenticity does not simply end with an announcement of individual or corporate values to then be acted upon. Rather (Freeman and Auster 2011) see authenticity as an ongoing ‘creative project’ (2011 p.15) where one’s values, past, connection to others and aspirations intersect. ‘Authenticity becomes the project of finding this unique expression of our own humanity’ (Freeman and Auster 2011 p.21).
Virtuousness and authenticity represent aspirations about the lives we want to live with the ‘assumption that an inclination exists in all human beings towards moral goodness’ (Dutton and Sonenshein 2007 cited in Cameron 2011 p.28). By adding two such attributes to the definition of responsible leadership it moves the idea beyond ‘accountability, dependability, authority, and empowerment’ (Cameron 2011 p.32) to a responsibility ‘associated with promoting goodness for its own sake’ (Cameron et al. 2003 cited by Cameron 2011 p.26). Maal and Pless’s (2006 p.1) explain it as,

A specific frame of mind promoting a shift from a purely economistic, positivist and self-interested mindset to a frame of thinking that has all constituents and the common good in mind.

Responsible leadership is a complex issue and implementing such a leadership approach is a major challenge for a mining company. However, as Avery and Bergsteiner (2011) explain, research and practice shows that by adopting such a leadership approach it leads to higher resilience and company performance over the long-term. They believe that a focus on the short-term is not only detrimental to shareholders and other stakeholders (communities) but also to a company’s survival. A major rethink of the entire business model is required if sustainable development and transformation within the mining industry is to become more than lip service.
THEME 2
Changing Mindsets
Johannesburg, South Africa – Mining Transformation Solutions

KEY FINDINGS:
• Change driven by legislation will always be limited as some mining companies will look to exploit it.
• To affect real change the idea of responsible leadership can play a key role.
• At board level, financial capital, ranked as the greatest priority for mining companies while environmental and social capital ranked the lowest (Stacey and Stacey 2013).
• A commitment from a mining company for long-term social and environmental outcomes requires the company to rethink its shareholder first approach to business.
• Business today has a higher level purpose than a sole focus on profit.
• What a mining company says it is going to do and what it actually delivers can be two very different things.
THEME 3
Regional Transformation – Best Practice
Großräschen, Germany – International Bauausstellung (IBA) Frürst-Pückler-Land

INVESTIGATION:
Investigate a region’s transformation where radical structural upheaval has occurred, as a result of rapid industry collapse, and how new perspectives have been used to create new landscapes.

SYNOPSIS:
Once considered Germany’s most valued mining region, the Lusatian mining region has today suffered structural collapse through loss of employment and loss of population due to a downturn in industry. With the region severely depressed an International Building Exhibition, IBA Fürst-Pückler-Land, was established to re-conquer the post-mining terrain with a combination of technical and creative innovation. Over a ten year period IBA SEE has transformed the region with key projects becoming a catalyst for future change. A key to the transformation was convincing the local community decline should be viewed as an opportunity. The opportunities created by the post-mining landscapes have provided hope again for the local residents.
Context

The Lusatian mining region, Eastern Germany, was originally shaped by agriculture during the 1850s. This period also saw industry begin to boom with the beginning of the coal mining industry. By the 1930s Germany was dependant on the mining region for production of electricity resulting in a growing population and the development of new housing settlements. It was during this period, as noted by Telschow (1993), the transformation of the regions landscape occurred, from one of forests and marshes into a unique industrial landscape marked by open-cast mines, slag heaps, factories and settlement buildings. Kuhn (ed. 2012) explains, that locals held differing attitudes towards the cultural change, with regional pride in the new significance of industrial progress on the one hand; and on the other a growing feeling of dread regarding the ‘consequences of unbridled industrial production’ (Kuhn ed. 2012 p.45) on the landscape. This environmental awareness grew during the 1950’s under the watch of the German Democratic Republic (GDR). This, however, conflicted with the GDR’s policy that soon saw it become the world’s largest producer of lignite coal (Hunger ed. 2005). Kabus (2012) explains the rapid expansion of open-cast mining changed the face of the region with 17 new open cast mines opening within five years.

The growth of the mining sector was not only devastating to the natural environment but villages began to disappear in the name of progress. ‘Seventy one villages in the district of Cottbus were abandoned and bulldozed completely between 1945 and 1989 requiring some 25,000 people to lose their homes and be relocated’ (Kabus cited in ed. Wiedemuller 2005 p.45). Although the GDR introduced laws for the recultivation of open-cast mines, the push for coal and devastation of communities and the environment continued through until the unification of the two German States in 1990. Unification saw the once dominant mining sector in the Lower Lusatia suffer massive cut backs in lignite production with many factories and power stations shutting down.

In the matter of a decade the region suffered structural collapse through loss of employment and loss of population. In the united Germany this left the once affluent mining region severely depressed. As a result, an International Building Exhibition was established. The International Building Exhibition has a tradition dating back 100 years, endeavouring to find ‘innovative solutions to contemporary living, building and urban planning problems’ (Kuhn ed. 2010 p.30). International Building Exhibition; IBA Furst-Puckler-Land, shortened to IBA SEE, looked to re-conquer the post-mining terrain with a combination of technical and creative innovation. Over a ten year period and through 30 exemplary projects IBA SEE re-ignited hope in the region through the transformation of the landscape and integrating people into the structural change.

Transformation of a Region

Objectives for the IBE SEE in the Lusatian region were to address renewal that dealt with structural change and explained by Professor Kuhn as,

Lusatia was to become a workshop for new landscapes, the artificial post-mining landscapes were to develop into a new type of cultural landscape; one that did not deny its industrial past and was directed into a new modern era within the long tradition of engineering and technical innovations (ed. Kuhn 2010 p10).

Key to the objectives was to find new uses for empty industrial buildings and wastelands and to recultivate and improve ravaged landscapes.
The beginnings of IBA-SEE saw an international workshop initiated to help develop ideas and concepts for new landscapes. The workshop germinated 30 projects that aimed to provide the economic, creative and ecological foundation required for change in the region. These ranged from major tourist draw cards, to nature conservation, to the creation of new hope for the residents left in the region. The overriding concept of IBA SEE was to flood the abandoned open-cast mines to cover the landscape scars caused by past mining operations. The 30 projects are scattered across nine zones within the region, or ‘landscape islands’, chosen for its unique set of challenges and opportunities. The landscape islands provided an anchor for the different projects ensuring they responded to key themes, which included industrial heritage, waterscapes, energy landscapes, new territory, border landscapes, urban landscapes and transitional landscapes. The landscape islands will form Europe’s largest ‘artificial’ Lake District offering excellent opportunity for touristic development.

**Engaging Community**

It is important the local community seek the opportunities created by the disturbance of landscapes through the extraction of minerals. Without the resulting environmental damages, economic decline and social conflicts caused by decades of industrialisation and its subsequent collapse, public attention would have not been drawn to it. Hence, IBA SEE would have not been initiated. It is such attention that provides a catalistic will to change, bringing with it intellect and creativity. ‘A disturbance is the perception of a defect that opens chances for reform, for redesign’ (Wiedemuller 2005 p 105).

A major hurdle for the transformation in the Lusatian mining region was convincing the local community what they perceived as negative changes resulting from the decline in industry were in fact opportunities for reinvention. A paradigm shift in the communities thinking was required, the local community had to be inspired to once again become active custodians of the landscape and bringing with it a new sense of optimism about their future.

Jürg Monalta, Swiss director, rose to the challenge in 2007 to deliver a project not concerned with a physical outcome, but to create new hope and confidence for the people who remained in the region for life post IBA SEE. The project, a large scale performance based art project called ‘Paradise 2’ was developed for the IBA finale in 2010. The project was not understood by all along the journey but Jürg’s passion and commitment ensured the story of the people was heard. For three years Jürg and his team worked with seven thousand people from the region exploring ‘people’s wishes, dreams, bold ideas, worries and visions’ (Monalta 2010 p.53), asking them to ‘participate, think and feel in each step of the projects realisation’ (2010 p.53). The resulting seven art projects were realised between 2007 and 2010. The final project, the Lake Symphomy, was delivered as part of the IBA finale. Staged in a landscape destroyed by mining and where the village of Bückgen once stood. 3,500 people lost their homes due to the destruction of the village. The profound upheaval of the landscape and village were themes of the symphony delivered by over 300 singers and musicians from the local community as well as political speakers. More than ten thousand visitors experience the people of Lusatia stand together with new found strength and pride in their region. Jürg noted the community had changed from bystanders to actively intervening in change in the region.

The community taking their destiny into their own hands was a vital step in the transformation process. There was fear about who would continue to push for change and innovation in the region, however. ‘Paradise 2’ has continued to help a number of local inhabitants recognise the opportunities that their new landscape can provide for the future. With the local community becoming active custodians of their landscape ‘IBA may no longer exist as an institute but the
processes it has triggered cannot be reversed’ (ed. Kuhn 2012 p.23). ‘Paradise 2’ has proven a strong catalyst for providing courage and convincing people through communication to stimulate new ways of thinking.

An example of this is a former plumber of the region, who worked in the mining industry. Today, he has now founded a company that offers tours of the region highlighting its industrial past as well as the story of the new lake lands. Critical to the success of transformation in the region was the change in one’s perception of the landscape and to see new possibilities.

**Keys to Transformation**

The project outcomes and continual transformation and development in the Lusatian mining region today demonstrate the opportunities inherent in the rehabilitation of post-mining landscapes. The International Building Exhibition helped to develop 30 project concepts to involve local people and build collaborations which allowed creative thinking to discover new ideas and potential. Ten years of transformation and cultural change has seen the former mining region, as Scholz (2010) explains, create a new identity that offers reminders of the region’s history but also seizes new opportunities with confidence.

The following outlines key considerations and principles for transformation summarised from the research ‘Transforming Landscapes- Recommendations based on three industrially disturbed landscapes in Europe’, which focussed on an international initiative for the qualitative examination of large-scale landscape designs. See Appendix B for the ten principles formulated on the basis of IBA’s experience in the mining region that aim to establish a common understanding for the treatment of post-mining landscapes.

- **Shrinking regions**
  - Decline should be viewed as opportunity, with the realisation that declining regions are often liberated from economic demands and are finally in a position to conduct transformation experiments.
  - It needs to be recognised that communities post-mining will not be in a period of growth but this does not need to be viewed as a negative. It is about the controlling of a shrinking process.

- **Restoring the past versus looking to the future**
  - Redesigning industrially damaged landscapes cannot function as a reconstruction of pre-industrial conditions.
  - The invention of new, interesting landscapes gives rise to further innovation by attracting modern enterprises.

- **Innovation and planning**
  - For innovative restructuring of disturbed landscapes, the planning process must be open, reversible and subject to change. The design of the process is as important as the intended outcome.
  - Mining companies and communities should collaborate with the design professions to instigate innovation and for the promotion of a new view of the landscape. However, the planning process must involve the local community to help shape the cultural landscape.
  - The planning must convey a convincing overall concept as well as have appeal with concrete, attractive and interesting projects.
- The overall strategy and individual projects successfully interact when the 'large' planning and the 'small' project correspond with and benefit from each other. Landscape development as a response to structural change cannot be realised in the form of a 'grand' concept, but rather as the sum of large and small individual projects which are aggregated and cumulated to create synergies.

- Among the individual projects which are to affect innovation, the so-called 'beacon' projects assume a special role. Beacon projects, placed at strategic locations are characterised by their radiant effect attracting other projects.

- **Management**
  - The sustainable restructuring of landscapes requires perseverance and broad acceptance. Therefore the process management is faced with the task of justly balancing different demands. The design on the landscape transformation must create a balance between:
    - Traditional and new landscape elements
    - Long-term goals and short-term projects
    - Stringent management and broad participation
    - Orientation to good examples elsewhere and local identity
    - Standard solutions and specifically individual ways
    - Public and private involvement
    - Investment in construction and in socio cultural projects

- The restructuring of post-industrial landscapes is a demanding task which requires diverse knowledge and broad based support on both the conceptual and implementation level. An essential part of the management is the establishment and maintenance of networks in which different levels of knowledge, abilities, responsibilities and creative potential supplement and enrich each other.

**Measures of transformation**

To ensure an authentic transformation process Hunger (ed. 2005 et al p.145) believes measures of transformation based on criteria of quality are required. He suggests they may include:

- **Protection of the environment:**
  Does the proposed transformation of the landscape contribute to the conservation of natural resources or to the repair of disturbances and to the reestablishment of ecological balance?

- **Social acceptability:**
  Do the proposed solutions improve the living conditions of the local inhabitants? Do people support the restructuring of their landscape?

- **Economic feasibility:**
  Are the restructuring proposals compatible with the requirements for economic development? Are they economically feasible?

- **Attractive design:**
  Do the restructuring measures improve the design quality of the landscape?

Through a transformation process a mining company cannot position itself as an authoritative figure but needs to be the catalyst for change. By integrating collaboration and communication into the process the restructuring of cultural landscapes over a long period driven by champions within the community can be achieved.
THEME 3
Regional Transformation – Best Practice
Großräschen, Germany – International Bauausstellung (IBA)
Frürst-Pückler-Land

KEY FINDINGS:

- Decline should be viewed as opportunities with the realisation declining regions often are liberated from economic demands and are finally in a position to conduction transformation experiments.

- Redesigned post-mined landscapes cannot function as a reconstruction of pre-mining conditions.

- Convincing local communities what they perceive as negative change as a result of mining are in fact opportunities for reinvention.

- Local communities need to become active custodians of their landscapes.

- Successful post-mining legacies do not need to be physical outcomes. Creating hope and changing perceptions is a powerful tool to ensure local community support for the transformation.

- For successful transformation to occur it is important measures of transformation, based on criteria of quality, are formulated.
INVESTIGATION:

Mining landscapes are often subject to negative perceptions. How can one’s perceptions be changed to highlight the opportunity presented by post-mined landscapes?

SYNOPSIS:

As Kuhn (2005 cited by Hunger 2005 p.4) explains, ‘how we judge and change landscapes depends on our perceptions of them’. If one’s perception of a post-mining landscape is negative can we change that perception?

Architect, Karsten Feucht, believes we can, however, it requires creating platform for people to interpret landscapes in new ways. As a result he developed ‘Experience Strip Mining’ tours in an operational coal mine.

The tours are focused on allowing participants to form unbiased views of the landscape to initiate a change in one’s perception of post-mined landscape.
Context

The push for coal and the expansion on the lignite mining industry in the name of progress, devastated communities in Germany’s Lusatian mining region. (Kabus cited by ed. Hunger 2005 p.45) explain, seventy one villages in the district of Cottbus were abandoned and bulldozed completely between 1945 and 1989 requiring some 25,000 people to lose their homes and be relocated. The subsequent downsizing of the industry after reunification further compounded the structural collapse through loss of employment and population. Therefore, it is understandable the local community perceive the post-mining landscapes around the Lusatian region negatively, associating them with the experience of loss. It is also important to consider societies’ perceptions of altered landscapes with regards to its support for productive re-use of such landscapes.

Can landscapes associated with dust, noise, mining and disturbance become attractive and serve a purpose once again in the eyes of society? As Kuhn 2005 (cited by ed Hunger 2005 p.4) explains, ‘the transformation of landscape begins in our minds. How we judge and change landscapes depends on our perceptions of them’. If society’s or an individual’s perception of a post-mining landscape is negative, how can we change a collective or one’s perception? Architect Karsten Feucht believes mine tourism, is key to changing perceptions and attitudes towards post-mined landscapes.

Theme Three considered perceptions as a key for transformation amongst the local community whereas Theme Four considers the wider context, by exploring a means to evolve society’s perception of mining landscapes by raising expectations of what they may become.

Mine Tourism and Changing Perceptions

Mined landscapes, such as those found in the Lusatian region, should be viewed as experimental fields where cultural interest and ideas can be explored. However, this is often not the case with much of society viewing the results of mining and the severe disturbance of landscapes and community negatively. Mining tourism is generally associated with mining heritage but can provide the unique opportunity to change the human perception of how post-mined landscapes are viewed and valued.

In 2002 IBA SEE began offering ‘Experience Strip Mining’ tours in the operational open-cast mine in the town of Welzow. The tours were developed by Karsten Feucht together with architect and artist Rainer Duvell. An architect himself with a background in sociology, Karsten (2012 p.7), believes ‘conversation is the strongest building material’ and continues to explain ‘when it comes down to it, a location is much more cemented by its reputation that by its physical structure’. The renowned constructivist biologist Humberto Maturana described this as ‘constructing the reality through the communication about our perceptions.’

The ‘Experience Strip Mining’ tour leads people through the surreal landscape left by lignite mining asking participants to form an unbiased view of the landscape. By asking people to question the reality and preconceived ideas about the landscape the tour assists people to discover for themselves the value of a place and not be told what to see.
Seeing What is Really There

As humans we perceive things not through what they actually are but as a result of society’s definition of it. For example, society values a mining landscape to be a redundant landscape that has had its ecosystem destroyed and raw materials extracted with little to no real value left in it, so that is exactly how people perceive it. The mining tours aim to allow participants to interpret the landscape in new ways.

The reality of such a landscape is what we see and communicate, not what we are told it is. This is highlighted by an article run in a German newspaper that described the post-mining landscape as ‘unbelievably bizarre, almost pristine – as through unsullied by human hands’ when in fact as Feucht (2012 p.70) explains, is a paradox as nowhere else have humans reformed their surroundings as significantly as mining sites. The tours help people discover a place in an authentic way and as there are no wrong or right perceptions there is truth to how people see the landscape. People decide the reality of the place. The mine itself is unable to tell us whether it is ugly or a thing of surreal beauty. It is people’s perceptions that decide.

Key to the tours is allowing an open space for the communication of each person’s perception of the landscape to be discussed openly without judgement. Karsten describes an open discussion at the end of a tour;

One person says ‘cool, it sort of looks like Mount Etna’. Another says, ‘this is awful!’ while a third person comments, ‘we extracted 300 million tons of coal with machines right here’. And a fourth person has tears in her eyes, ‘about right here is where our village and church must have been.’ People are able to interpret and discuss the landscape in their own way allowing others to see it through their eyes assisting to discover the worth of the place (Feucht 2012 p.72)

Do Perceptions Change?

Jana Tschitschke discovered during pre and post tour interviews of participants for her thesis ‘Corporate Communication/Linguistics’ that perceptions do change. She found 90 percent of participants pre tour associated the landscape with moon landscape, coal, extraction, problems, dusty, noise and pollution, however, post tour found 80 percent of the participants perceived the landscape as tranquil, the future, life, visionary ideas and opportunity.

Possibilities

In the period the tours were operating, the number of tourist rose to 8,000 a year contributing significantly to the local economy. Most significantly, 8,000 people discovered a new perception of a barren landscape from eyesore to opportunity. Feucht explains that it is an example of how it is possible to offer a platform for a conscious reinterpretation of altered landscapes. Such tours hold great value in exploring how people and society perceive post-mined landscapes to inspire and create new realities for the landscape. Through exploring perceptions the meaning of landscapes can be redesigned. Mr Feucht is exploring a new and unique field of landscape design that focuses on changing the landscape through interaction and the perceptions of its users to create a new reality.
THEME 4
Community Perceptions
Großräschen & Berlin, Germany – Transform

KEY FINDINGS:

- As humans we perceive things not through what they actually are but as a result of society's definition of it.

- ‘Conversation is the strongest building material - when it comes down to it, a location is much more cemented by its reputation that by its physical structure’ Karsten (2012 p.7).

- New industries such as mining tourism can provide the unique opportunity to change the human perception of how post-mined landscapes are viewed and valued.

- Mining tourism has the potential to contribute economically to the local economy.

- Community perceptions of post-mined landscapes can dramatically alter, whether positive or negative, community support or resistance towards alternate land uses for the landscape.

- How a community perceives a mining landscape plays a key role in community support in transformation.
THEME 5
Building Local Economic Strategies
Manchester, United Kingdom – Centre for Local Economic Strategies

INVESTIGATION:
To understand the ideas and research behind a progressive approach to social regeneration and building local economic strategies.

SYNOPSIS:
Research suggests past local economic strategies with a heavy focus on economic growth have been a significant cause of failing economies. The Centre for Local Economic Strategies suggests the idea of community and place resilience as a progressive approach to local economic activities.

Resilience focuses on the community’s ability to bounce back from sudden change. Traditional the mining industry has directed it’s thinking towards developing sustainable communities. Requiring the question to be asked, sustainable or resilient communities?
Context

It is not only mining communities in the United Kingdom that need to look towards social regeneration and restructuring of their local communities. Many towns and cities, such as Manchester and Newcastle, face huge problems of inequality, failing economies and the reinvention and reuse of post-industrial landscapes. Both cities grew from unplanned urbanisation as a result of the rapidly expanding industrial and mining sectors. Manchester’s growth in part was based around textile manufacturing during the industrial revolution and Newcastle grew as an important centre for the wool trade and later become a major coal mining area. The great depression of the mid 20th century saw unemployment hit record heights in the cities and a severe there was a decline in social and economic conditions.

The 1990s brought about investment, gentrification and rebranding, promoting Manchester and Newcastle as reinvigorated post-industrial towns. However, as the Centre for Local Economic Strategies (CLES) argues the good times were not shared by all with the trickle down of wealth not spread across all people and places. As a result cities, towns and communities across the United Kingdom are not well positioned to deal with major change. McInroy and Longlands (2010) argue that local economic development needs to reassess its traditional heavy emphasis on economic concerns as economic development is not simply about growth but needs to encompass balancing growth with environmental and social considerations.

Theme Five, while not looking directly at mining communities, investigates research undertaken by CLES (Centre for Local Economic Strategies). As the UK’s leading independent charitable research organisation, with a focus on economic development, regeneration, place-making, and the idea of ‘place and community resilience’. Their research and progressive approach to economic activities can play a vital role in the economic and social resilience of mining communities where dealing with major economic and social change must be viewed as inevitable.

Resilience Verse Sustainability

The idea of place and community resilience has a great relevance to mining communities and the mining industry today. The discussion and thinking within the mining industry is very much focused on the development and delivery of sustainable communities. In Australia for example, the Minerals Council of Australia promotes the partnership between the mining industry, government and society for a shared responsibility to ‘assist in the development of strong sustainable communities’ (Digging Deep 2010). However, CLES believe it is resilient communities that we should be striving for. They define the difference as: 

> Resilience focuses on the proactive capabilities of a system to not simply exist but instead survive and flourish instead of embracing stasis, resilience embraces the norm of change, flexibility, rapid unpredictability and networks’ (McInroy & Longlands 2010 p.13)

Economic turbulence coupled with the unknown challenges of peak oil, fluctuating commodity prices and climate change, ensures communities are entering a new era where constant change is inevitable and normal. This requires one to ask the question ‘a sustainable community or resilient community?’
As pointed out by McInroy & Longlands (2010 p.14) ‘in resilience, elements within a system are in constant flux, unpredictable and highly complex’, hence mining communities should be developed/built/regenerated based around the idea and thinking of resilience, able to ‘bounce back’ from sudden change.

**Place Resilience**

In light of the recent Global Financial Crisis and given the boom or bust nature of mining communities, CLES has developed a new strategic model for understanding how local economies work. CLES believe the resilience model should become the core approach to economic development as a means to evolving communities and their local economies to be able to regenerate, support and strengthen themselves and adapt to new challenges. Change from the loss of a community’s primary economic activity, environmental change, demographic shifts or different political agendas can result with positive or negative impacts on a place depending on its resilience. Research highlights resilience has its roots set in relation to natural disasters and ecosystems but is gaining momentum in social and economic contexts attracting attention from academia. CLES has defined place resilience as

‘The capacity of a place to be ready to deal with change and opportunity. This will require an adaptability so a place can respond, take advantage and learn, so that the place and its citizens are better equipped to deal with opportunities and negative change in the future.’ (McInroy & Longlands 2010 p.14)

And is based on two key principles:

- It assumes that humans and nature are wedded together and evolving together, therefore they should be conceived as one.
- Resilience rejects a notion that systems change in a linear way. (McInroy & Longlands 2010 p.14)

The resilience of many communities across the UK was found wanting in the wake of the GFC. CLES believes that past local economic strategies with a heavy focus on economic growth has been a significant cause of failing economies. They continue to explain that local economic development needs to pull away from the traditional notion of growth as the economic imperative and driver for a better quality of life. Rather, development should be delivered ‘within environmental limits, the nature of the place and fairness rather than just growth for its own sake’ (McInroy & Longlands 2010 p.22). It is with this understanding that new thinking towards local economic strategies needs to consider what CLES call the ‘softer aspects’ of place, such as community participation and environmental sustainability.

**Resilient Mining Communities**

McInroy and Longlands (2010 p.8) highlight the need of mining communities and the mining industry to readjust their thinking around the idea of sustainable communities as ‘no place can rely on past success to succeed in the future’. To successfully implement local economic development strategies and projects for mining communities, a rigorous and realistic assessment of the community is required. Through the application of the resilience framework, which conceptualises the nature of resilience for a community, such an understanding can be gained providing a mining company with a valuable resource to assist ‘develop resilient bottom up solutions to particular local needs and aspirations, by helping to create the conditions within which things can happen’ (McInroy et al. 2009 p.9).
Critical thinking and long-term approaches that forge new partnerships, networks and initiatives, need to be applied to local economic strategies that do not stress economic growth and adequately prepare local economies for the rapid changes they face today. It is through this new approach and methodology of resilience that communities can build local economic strategies with real rigor derived from the reality of local conditions.
THEME 5
Building Local Economic Strategies
Manchester, United Kingdom – Centre for Local Economic Strategies

KEY FINDINGS:

- ‘Resilience focuses on the proactive capabilities of a system to not simply exist but instead survive and flourish instead of embracing stasis, resilience embraces the norm of change, flexibility, rapid unpredictability and networks’ (McInroy & Longlands 2010 p.13).

- There is a need for mining communities and the mining industry to readjust their thinking around the idea of sustainable communities.

- Local economic development needs to pull away from the traditional notion of growth as an economic imperative and driver for a better quality of life but deliver development ‘within environmental limits, the nature of the place and fairness rather than just growth for its own sake’ (McInroy & Longlands 2010 p.22)
THEME 6
Community Engagement
Cornwall, United Kingdom – Mine Closure 2013

INVESTIGATION:
To explore what is considered best practice community engagement and whether mining companies are delivering this standard.

SYNOPSIS:
Creative community engagement plays a far greater role than just consulting, but the initial approach and conversations with a community around post-mining legacies set the tone for the entire closure program. However, mining companies continually get community engagement wrong. This is unacceptable if companies are serious about delivering social outcomes. Mining companies need a serious rethink of its approach to community engagement.
Context

Community engagement as a process is not foreign to landscape architects, who view community conversation and collaboration as critical tools for achieving smarter design outcomes. By exploring and listening to the needs of the local community, landscape architects utilise this knowledge to deliver principles, strategies and designs derived from the reality of local conditions that are supported by the community. As discussed in previous Themes, participation of those affected by decisions is the cornerstone of collaborative planning and a key feature of successful transformation and regeneration initiatives. It’s also good business for mining companies as community resistance and costly delays to projects and operations can be avoided.

As part of Mine Closure 2013 the workshop ‘Community Engagement or Community Enrage?’ was run by Juliet Rose, Community Programme Manager and Jane Knight, landscape architect, of the Eden Project. From the beginning, both placed a strong emphasis on the community consultation process to deliver an outcome with full community support. Caroline Digby, Director of Post-Mining Alliance also explored how to hold better conversations with local communities about the future.

Best Practice Engagement

The workshop encouraged a ‘creative community engagement’ process. A process that does not make assumptions and takes a collaborative approach, ensuring everyone has the chance to participate. A key message of the workshop was creative community engagement plays a far greater role than just consulting but the initial approach and conversations with a community around post-mining legacies set the tone for the entire closure program. Such an approach acts as a catalyst for constructive conversations about the future of a community, helping bring people together and allowing a community to redefine itself and figure out what it needs. Numerous techniques, key concepts, preparatory activities and delivery methods discussed during the workshop are noted in Appendix C.

Why Mining Companies Get It Wrong

It was pointed out from those within the industry attending the workshop ‘mining companies are not in the business of community engagement, but rather the extraction of minerals’. However, while this may be the case the importance of engaged community relations is readily acknowledged. This is an alarming notion that the mining industry can admit their engagement process is at times inadequate but also understand the importance of getting engagement right. It must be understood that mining companies are in the business of community engagement, especially if one is to believe the industry’s, so-called, paradigm shift towards sustainable development.

It was determined during the workshop mining companies tend to deliver an end product with a predetermined outcome via a stand and deliver approach, speaking at the community rather than actually listening to community concerns and ideas. Such an approach is the quickest way for a mining company to drive a wedge between itself and the community leading to an “us versus them” mentality. As a result, this approach and attitude to the consultation process often only attracts the most vocal and angry members of the community, while the majority do not attend as they are tired of the paternalistic consultation process and have become disillusioned as their voices are not heard and outcomes are never changed.
Landscape Architects and Community Engagement

Community engagement is an area where landscape architects are well equipped to integrate their skills within the mining industry, to assist a company’s relationship with the local community.

The approaches to community engagement addressed at the workshop, from a landscape architect’s perspective, only served to reaffirm the skills and community consultation methods landscape architects are familiar with in delivering projects with real community benefit, collaboration and input. However, it was evident mining companies have had difficulty with their community engagement process. Landscape architects can significantly contribute to the mining industry to help deliver meaningful community consultation and through the interpretation of community knowledge. Through their excellent written, verbal, multimedia and audio-visual communication skills, landscape architects are specifically skilled to be able to actually listen to communities and discover where a company’s plans and a community’s aspirations converge and communicate this in a manner that people can relate to.
KEY FINDINGS:

- In today’s society it is not acceptable for a mining company to deliver poor community engagement and to suggest the extraction of minerals is their business and not community engagement, cannot be used as an excuse.

- Mining companies have traditionally, delivered community engagement focused on a stand and deliver approach, which does not result in authentic, meaningful engagement.

- The community engagement methods addressed during the workshop, reaffirmed the community consultation skills and methods landscape architects are familiar could be utilised within the mining industry.
THEME 7
The Landscape Architects’ Role
Northumberland, United Kingdom – Banks Group

INVESTIGATION:
Determine a clearer understanding of the role landscape architects are currently playing in the mining industry today and how to ensure future recognition of the value a landscape architect can contribute to mine reclamation.

SYNOPSIS:
Landscape architecture is relatively unknown in the mining world. Therefore, it is critical as the mining industry evolves and new expertise and thinking is required within it, landscape architects must not only reacquaint themselves with the mining industry and rethink design approaches towards altered landscapes but promote the professions skills.

The expertise and creative ideas of a landscape architect can help to facilitate a genuine balance between the environmental, local social needs, economic interest and political pressures. This however, requires willingness by those traditionally involved within the mining industry to experiment, learn and see what the design world can offer.
Context

Landscape architects in the United Kingdom have not been alien to the mining industry with their input evident in not only ecological and environmental issues, but also in the planning process of mines and in community relations. While traditionally the role of a landscape architect has been tailored towards environmental restoration, it continues to evolve within a more socially aware industry today. A landscape architects education makes them well equipped to deliver unique post-mined landscapes that positively enhance the social and economic context of the surrounding community. However, very few landscapes architects are employed within the mining industry.

A hurdle for the expansion of landscape architectures narrative into the mining industry is, as Arbogast (2008 date p53) explains, the ‘acceptance of the landscape architect as a peer by scientist on an interdisciplinary team’. Landscape architects must promote what they do and what skills they can bring to the table to ensure their value is recognised.

Theme Seven investigates a landscape architects early involvement with the mining industry, how their role has evolved within it and how to ensure a future where the value a landscape architect can bring to mine reclamation is recognised.

Landscape Architects in the Early Days

The diverse services offered by landscape architects have often been sought after alongside mine planners, engineers and ecologist within the United Kingdom’s mining industry. History and the literature highlights examples such as the Cleveland Potash mine at Boulbly that in 1968 employed an architect and landscape design team to work with mine designers to achieve the best layout with regards to its operations and environmental considerations. The result saw berms designed to screen the mine from nearby roads and shrub and tree plantings on its grassy slope helped to create a more aesthetically pleasing mine site for the local community.

Around the same time in 1970 a Laporte industries mine near the village of Eyan had extensive involvement from a landscape architect and the final result was transforming what had been an unsightly tailings dam into a grassy meadow. A laporte executive stated ‘We believe today that we were successful in our planning application because we used the top managers, lawyers and landscape architects from the very beginning, working with us and the general public to determine the needs of each group and see how they might best be met’ (Dempsey et al 1979 pg37).

Another example comes from Eire where Tara Mines Ltd engaged a European landscape architect to collaborate with the mining engineers to alleviate community concerns regarding dust and noise. Mature trees were planted to reduce fugitive dust and additional landscaping was introduced to screen the mining operations. Dempsey (1979 et al p.37) notes ‘the tree planting was successful from an ecological as well as a community acceptance aspect.

The Landscape Architects’ Role

As discussed, landscape architects have previously played key roles within the United Kingdom’s mining sector in community relations and environment field. However, as the mining industry evolves and new expertise and thinking is required within it, landscape architects must not only familiarise themselves with the mining industry but rethink design approaches towards
altered landscapes. Correspondingly, the mining sector to begin to ‘familiarise itself with the capabilities of landscape architects’ (Dempsey et al 1979 p.37).

Companies, such as the Banks Mining, have begun this process employing a landscape architect who is responsible for restoring old coal mining sites taking into account the company principle ‘that what is created must be an improvement on what was there before’ (web site 2013). With the input of a landscape architect and through a collaborative process involving the engagement of communities, smarter outcomes are being delivered and unique design approaches explored. An example is the Lady of Northumberlandia, a stunning landform sculpture of a reclining woman, which not only creates a tourist attraction for the area but also provides high quality open space for the local community. Constructed of 1.5 million tonnes of surplus soil and clay transported from the neighbouring mine, the resulting a female figure is 100 feet high and a quarter of a mile long, making her the world’s largest form and contributing a 46 acre community park with 4 miles of footpaths on and around the landform. The idea first germinated in 2004 when it was recognised during the mine application process there was opportunity to create a spectacular piece of land art that would provide a legacy for future generations along with generating local employment.

Integral to the project was the creativity from world-renowned artist Charles Jencks and the guidance and facilitation from the Banks Group landscape architect, Mark Simmons. The human landform was inspired by the distant Cheviot Hills ‘which are pulled into the foreground by the curves and shapes of the female form used for Northumberlandia’ (website 2013). Graceful, sweeping curves and interlocking shapes are linked via a path network that allows visitors to fully explore the landform. A lake is used to introduce movement and reflection to the site while the pale coloured paths are designed to contrast with the natural green of the grass creating a pattern across the landform. Charles Jencks talks about Northumberlandia

To see the world in a Grain of Sand, the poetic insight of William Blake, is to find relationships between the big and small, science and spirituality, the universe and the landscape. This cosmic setting provides the narrative for my content-driven work, the writing and design. I explore metaphors that underlie both growing nature and the laws of nature, parallels that root us personally in the cosmos as firmly as a plant, even while our mind escapes this home (Jencks 2011 Cited by website 2013)

Jencks’s description of the project highlights the thinking a designer will use to explore post-mined landscapes. Design professionals can bring a creative thought process, not clouded by economic, scientific or engineering concerns and an understanding of the landscape and how it is perceived. Such thinking is by no means more or less valid than the thinking and input of an engineer or scientist. However, for the delivery of such innovative community driven projects the landscape architect needs to play a key role, requiring a willingness by those traditionally involved within the mining industry to experiment, learn and see what the design world can offer.

**Ensuring Landscape Architectures Future within the Mining Industry**

Landscape architect, Diana Balmori, (cited by Beardsley 2001) argues the ‘profession appears to be finished as its edges have been overtaken by architects and environmental artist’ (p.2) with the profession lacking a core. In the view of the author the profession is far from finished but rather better described as diverse, which causes considerable difficulty when trying to define a core for the profession. Today, landscape architecture influences and contributes to a diverse range of projects, from storm water management, to land art design to the design of new landscape systems, stretching across a number of professions. Hence it could be argued that it
is professions, such as ecology and architecture, whose edges have been over taken by landscape architecture.

Defining a core for the profession may be a difficult task it can be said that core attributes of a landscape architect is their ability to creatively solve problems, question traditional thinking and explore innovative design solutions. Furthermore, their motivation is not short-term economic returns or self interest but to deliver design outcomes that mutually benefit the environment and society with the common good in mind.

Landscape architects are well equipped to deliver a true systems approach to projects. While the diversity of the profession makes it difficult to define its core for landscape, it must to be considered as one of the profession’s greatest strengths. It is a profession not caught up in a singular mindset and the expertise and creative ideas of a landscape architect can help to facilitate a genuine balance between the environmental, local social needs, economic interest and political pressures. However, the value of a landscape architect and the contribution and skills they can offer are still a relative unknown within the mining world.

Arbogast (2008), explains landscape architects are often misconceived as solely artist or horticulturalist. As a means to break down such misconceptions, she believes, 

*The landscape architect must show a willingness to explore the objective worlds of science and engineering to gain an in depth understanding in geomorphology, top soil (salvage, maintenance, and redistribution), revegetation, slope stabilisation, grading, tailings disposal, drainage control, surface and ground water and fugitive dust* (Arbogast 2008 p.53).

**The Need for Collaboration**

The design professions do have a role to play in the mining industry but Arbogast (2008 p.55) explains, ‘Restoring ecosystems and biologic processes involves more than naming a plant palette’. She asks, if landscape architects are not familiar with basic earth science concepts, how can they recommend design alternatives for post-mined land uses? However, while this may be true, mine closure and reclamation is today agreed to deliver more than just environmental concerns but incorporate social considerations such as; community perceptions, and historical influences. Therefore, scientist and engineers cannot be expected to consider such factors making it critical allied professions establish opportunities for collaboration.

Arbogast (2008) explains, by combining science and design one can use the latter to teach the former. Through collaboration and encouraging interaction between science, engineering and the design professions each will develop a greater understanding and appreciation of the value each profession can contribute. Dempsey et al. (1979) suggests, if mining companies are to demonstrate seriously their commitment to quality landscape planning and closure outcomes the involvement of landscape architects from the initial stages of planning, through development and into the operational years of mining is required.
KEY FINDINGS:

- Landscape architecture does not approach problems from a single mindset but explores a range of possible solutions and possesses the skills to facilitate a genuine balance not only between social, environmental and economical considerations but also between the allied professions.

- Landscape architects do have a vital role to play within the mining industry so it is essential the profession begins to build an awareness of the values and skills they are able to contribute to mine closure and reclamation.

- For the delivery of such innovative community driven projects a willingness is required by those traditionally involved within the mining industry to experiment, learn and see what the design world can offer.
Part Three: Fellowship Directions
Final Word

‘Despite all our discussions of sustainability, all the political efforts to save energy and increase our efficiency in handling resources, the exploitation of resources is still increasing’ (ed Kuhn 2012 p. 6). This continues to pose the question of how we deal with altered landscapes. Simply leaving them is no longer an option in first world countries but, as ed Kuhn (2012) explains, they must be reintroduced into the natural cycle and made reusable for humanity.

Not every community and mining operation around the world has the same financial, technical, or administrative resources available or the population density requiring a creative reuse of the mined landscape. For example, a regional, purpose-built mining community, may not benefit from the likes of developing an ‘Eden Project’ once operations finish. All communities should be treated as unique with closure and reclamation plans established in context of their local conditions. Adey and Whitbread-Abrutat (2013 p.9) suggest, Potentially, mine closure planning for communities like these should be carried out to focus on developing successful retrenchment and retraining policies, as opposed to trying to maintain them in areas that do not have suitable alternative sources of livelihoods that can be developed further to support communities post-mining.

However, no matter the intended post-mining outcome, the development of holistic closure plans and reclamation goals that take into account economic, environment and social concerns is non-negotiable.

Post-mined landscapes reflect cultural values and ‘raise ethical, philosophical and physical questions’ (Berger 2002 p.7). The expertise required to respond to the vast number of questions asked of altered landscapes today cannot be found within the mining industry nor answered by the one profession. To meet society’s social and environmental expectations today, new knowledge, thinking and skills are required to deliver reclamation outcomes considerate of more than solely scientific and engineering solutions. Landscape architects collaborate with a number of professions, requiring a universal perspective to ensure all relevant information and knowledge has been considered and understood before a planning and design outcome can be reached. If the mining industry is serious about delivering socially driven reclamation, Dempsey et al. (1979 p.37) suggests, ‘the mining industry must make a commitment to incorporate the work of landscape architects into the early design and planning work for mining developments’.

The key recommendations that follow are drawn from the research undertaken during investigations into the seven key themes discussed in this report. They are intended to better equip landscape architects with the required knowledge on the issues that impact and influence reclamation and mine closure. They also aim to provide guidance for landscape architecture along with the mining industry on the emerging and rapidly expanding field of reclamation.
Key Recommendations

THEME 1: Where is Mine Closure Thinking Today?

- Mining companies must shift their focus from short-term to long-term thinking regarding post-mining legacies if one is to believe the authenticity of mine closure and reclamation goals.
- Research is required to explore how mining companies are able to deliver creative and innovative post-mined landscapes while achieving a balance between the increasing expectations placed on them, by of outcomes such as the Eden Project, and being one of the most heavily scrutinised industries in the world.
- Further research and investigation is required to identify the apparent overlapping reclamation goals and the role landscape architects can play in the integration of innovative and holistic social considerations in mine closure and reclamation.

THEME 2: Changing Mindsets

- Mining companies must commit to long-term social and environmental outcomes. This will require a major rethink towards its business model, company values and approach to leadership.
- For real transformation to occur, which goes beyond compliance, a company must reconsider its approach to leadership and reassess their company values. A focus must be for long-term performance not driven by the prevailing paradigm of short-term profits.
- Companies must adopt a responsible leadership approach with the imbedded connotation of authenticity and virtuousness to implement the structural change required to deliver sustainable development.

THEME 3: Regional Transformation – Best Practice

- Mining companies and communities should collaborate with the design professions to instigate innovative approaches and for the promotion of a new view of the landscape.
- Mining companies must seek to engage with landscape architects to assist in generating new perceptions for post-mining landscapes through skills such as; community engagement, visualisations and design.
- The planning process must involve the local community and encourage active participation to help shape the cultural landscape.
- Measures of transformation, based on criteria of quality, need to be formulated for successful transformation to occur.
- For the successful restoration of cultural landscapes a convincing overall concept is required that integrates overall planning strategies and small achievable projects.
THEME 4: Community Perceptions

- Mining tours, such as the ‘Experience Strip Mine’ tours should be developed, where applicable, at the beginning of mining operations to develop a community open-mindedness where the results of mining are perceived as opportunity.

- The new and unique field of mining tourism that explores community and society perceptions of post-mined landscapes requires further investigation regarding its application to assisting society in better understanding and accepting the cultural landscapes that they help to create.

THEME 5: Building Local Economic Strategies

- Mining companies must explore the idea of place resilience and adopt/develop a place resilience framework, similar to the resilience framework developed by the Centre for Local Economic Strategy (see Appendix D), as part of their social impact assessment.

- Reclamation goals must consider ‘place and community resilience’ thinking when developing local economic strategies to ensure communities can adapt to sudden change.

THEME 6: Community Engagement

- The mining industry must utilise the skills of landscape architects to undertake community engagement in order to improve communications and relations between themselves and the community.

THEME 7: The Landscape Architects’ Role

- Landscape architects must begin immediately to familiarise themselves with the mining industry.

- The mining industry must familiarise itself with the capabilities of landscape architects.

- Landscape architecture must build and promote an awareness of the values and skills they are able to contribute to mine closure and reclamation.

- Mining companies must engage landscape architects to demonstrate seriously their commitment to quality landscape planning and closure outcomes. The involvement of landscape architects must also be considered from the initial stages of planning, through development and into the operational years of mining (Dempsey et al. 1979).

This report through its critical research, investigative findings and recommendation builds a platform from which the mining industry can begin to rethink its approach to reclamation where, Arbogast (2008) explains, form is to become as important as function and meaning to become as important as purpose on the post-mining landscape. It also creates a platform from which landscape architecture can begin to play a more vital role reshaping altered landscapes to create positive mining legacies helping communities begin to revalue post-mined landscapes.
When we turn to reuse and redesign of previously destroyed landscapes, we may find surprising, sometimes unimaginable possibilities emerging (Kuhn 2012, p. 6). The most successful examples of redesigned landscapes have evolved from negative legacies that have become the catalyst for transformation. The transformations of such landscapes are ‘distinguished by the creative approaches applied to problems traditionally resolved by engineers and scientists (Baida and Slingerland 2013).

For the mining industry to deliver on reclamation goals that integrate cultural, historical and social concerns, the design professions must be engaged. Landscape architects have applied their professional skills and creative approaches to open space and planning strategies, community consultation, development of ecological systems, graphic communication and landform design for nearly 100 years. Through this time they have not simply focused on the application of design outcomes but have worked collaboratively across many disciplines. They contribute a broad knowledge and skill set to deliver holistic design outcomes incorporating information provided by engineers and scientists. Landscape architects as ‘Generalist’ and as the cultural critic, Frederick Turner, makes clear, the size, scale and complexities revolving around mine closure and reclamation requires one to consider not only the traditional aspects of closure, such as neutralizing acid drainage and slowing the erosion of exposed terrain, but also categories, such as postmodern montage art, landscape design and frontier history. Aesthetic, spatial, temporal and philosophical considerations are also required when looking at such landscapes, reinforcing that mine reclamation is more complex than quantitative considerations alone. ‘Understandably, the engineers and scientists working on these sites cannot be expected to develop mine closure plans that address these additional concerns’ (Baida and Slingerland 2013).

It is evident that as society creates environmental and social disasters as a result of our consumptive lifestyles, landscape architects have a critical role to play within the mining industry. Although there appears to be an apparent overlapping of reclamation goals and landscape architectural knowledge and skills, there is a lack of landscape architects working in the reclamation field, despite the outward appearance that these two sectors could benefit from each other.

As a result the author will build upon the research and findings in this report to ‘investigate the reasoning for this incongruity and demonstrate precisely where and how the landscape architecture profession fits into the mine closure cycle’ (Baida and Slingerland 2013).

Future research will aim to further promote and educate on the benefits of landscape architects in the reclamation field. Conclusions drawn from future research along with the key recommendations for this report will be submitted to several national and international mining and landscape architectural publications and also presented at several national and international mining and landscape architectural conferences.
Appendices
South Africa, Johannesburg
10th August – 20th August

Sue Brandt - Chief Executive Officer
Mining Transformation Solutions
Sue’s dedication in all areas of transformation, social and labour plans and stakeholder engagement, which has led to her involvement in planning, management and implementation in more than 80 mining companies across South Africa.

Maritha Marneweck - Chief Executive Officer
Mining Transformation Solutions
Maritha is widely known in the mining industry as an experienced consultant in social and labour planning and community development interventions.

Lorna Ernst - Regional Transformation Manager
Mining Transformation Solutions
Lorna is responsible for developing key regional strategic relationships with and between the various stakeholders so as to expedite collaborative connections and synergies in support of regional socio-economic development.

Tony Frost - Founding Member
Sirocco Strategy Management
Tony Frost is passionate about the natural heritage of our planet and is an expert on the subject of strategies in business and, in particular, the importance of people in making the strategy work.

Ingrid Watson - Head of the Biophysical Environment programme
University of Witswatersrand - Centre for Sustainability in Mining and Industry (CSMI)
Ingrid manages the Biophysical Environment programme at CSMI. Her experience has focused on environmental management and sustainable development in central and southern Africa, India and Canada.

Julie Stacey
University of Witswatersrand - Centre for Sustainability in Mining and Industry
Envalution - Managing Member
(Check out her support letter) Julie has been involved with the mining sector for 24 years and has represented industry and South Africa at policy liaison and negotiating forums, such as the United Nations. She now works as an independent consultant with her main areas of business focus relate to coaching for sustainable wellbeing, strategy and facilitation, complex decision-making, and leadership.
Phil Harrison - Professor
University of Witswatersrand - School of Architecture and Planning - Professor
Philip Harrison is the South African Research Chair in Development Planning and Modeling at the University of the Witswatersrand. He has worked in the field of urban planning for around 25 years and also serves on South Africa's National Planning Commission.

Dylan Weakly - Associate Researcher
University of Witswatersrand - School of Architecture and Planning
Dylan recently completed an MSc by research in Town Planning at Wits University.

Hannah le Roux - Senior Lecturer
University of Witswatersrand - School of Architecture and Planning
Hannah le Roux teaches, practices, curates and writes about architecture. Her current research, lived modernism, is based on the observation of change in time of modernist spaces, and proposes and maps designerly practices that catalyze the social appropriation of space.

Tahira Toffah - Architect and Urban Designer
University of Witswatersrand - School of Architecture and Planning

May Hermanus - Executive Director
The Council for Scientific and industrial Research
Hermanus is the Director and Adjunct-Professor at the Centre for Sustainability in Mining and Industry (CSMI) at Wits University where she is responsible for developing a centre of excellence for public education in the fields of occupational safety and health, the environment and sustainable development.
Germany, Berlin and Großrächessen
27th August – 7th September

Brigitte Scholz - Project coordinator + Professor
IBA SEE + University of Arts and Social Sciences
At the International Building Exhibition Fürst-Pückler-Land (IBA SEE) Brigitte headed the projects section. Her topical focus is the involvement with the potentials of the “new land” subsequent to mining.

Jürg Montalta - Director
IBA SEE
Stands for a new manner of participation in regional development and landscape design not only with but by the people. Jürg conduct several art projects for the finale of the International Building Exhibition Fürst-Pückler-Land (IBA SEE).

Karsten Feucht - Perception Tour Guide + Managing Director
IBA SEE + Transform
Karsten studied architecture that involved psychological, sociological and philosophical interests. He believes the reality of a place, a city or a region of space is the result of a social and cultural construction.

Rainer Düvell - Managing Director
Transform
Rainer studied architecture and sculpture at the Weissensee Art Academy in Berlin. As an artist he has helped evolve the Perception Workshop.
The United Kingdom, Manchester, Newcastle, Edinburgh and Cornwall
7th August – 30th September

Neil McInroy - Chief Executive
Centre for Local Economic Strategies
Neil is a geographer with 20 years experience in developing partnerships and innovative policy responses to global, regional and local economic, social and environmental challenges, Neil’s particular skills are in local economic and social research and strategy building.

Anthony Woods-Waters - Chief Executive
Building Futures East
Anthony has managed the development of Building Futures East from its inception and has 18 years experience as a manager in the Public Sector.

Mark Simmons - landscape architect
Banks Group
As the lead landscape architect for Banks Group Mining Mark advises on the sustainable restoration of surface mines throughout the UK with an emphasis on positive legacies.

Diarmuid Lawlor - Head of Urbanism
Scotland Design School
Diarmuid is an urbanist, with a multi disciplinary background and has 20 years experience of helping make well informed decisions about complex, connected urban policy and investment challenges.

Riccardo Marini - Senior Consultant + City Design Leader
Gehl Architects + the City of Edinburgh Council
As an urbanist, town planner and architect Riccardo’s career has focused on the development of Place-Making as the cure to the legacy of modernist land-use planning theory and practice.

Caroline Digby - Director
Post-mining Alliance
As Director of Post-mining Alliance Caroline is experienced in working with partners and community groups to develop better solutions to the problems of mining legacy and mine closure.

Juliet Rose - Communities Programme Manager
Eden Project
With a solid background in environmental management planning, Juliet leads programmes that use pioneering techniques to engage communities in local development and drive regeneration.

Jane Knight - landscape architect
Eden Project
Jane is a chartered landscape architect with over 30 years of professional experience gained in the UK and overseas who has worked at the Eden Project since 2002.

Allan Comp - Historian
Allan is a historian with a long engagement in cultural resources, community redevelopment and environmental reclamation who seeks to engage the arts and humanities in environmental recovery.
Ten Principles Concerning the Treatment of Post-Mining Landscapes

APPENDIX B
Overall the Principles for the Treatment of Post-Mining Landscapes do not represent a universal strategy, but an important basis for being able to identify and communicate the key qualitative demands made on redeveloping mining landscapes in all their dimensions in future. Their value lies in their claim to set standards that can be examined all over the world in the appropriate context and under different conditions and to serve as quality standards.

1. **Setting an Example:**
The development of a post-mining landscape must be exemplary. As a consciously planned treatment of a cultural landscape, the development has a model character and must contribute to the implementation of international goals and standards of sustainable development.

2. **Using Resources:**
The legacy of mining, land, buildings and infrastructures are industrial-heritage resources for sustainable development. The preservation and reuse of typical components creates special places that shape the look of a region and the bridge the past and the future.

3. **Fostering Identity:**
A post-mining landscape must have its own, new characteristics. The original landscape and the lost cannot be replaces. New developments must begin at meaningful locations, with the goal of promoting identification and shaping a new identity.

4. **Broadening the Planning Horizon:**
The planning for a post-mining landscape must begin before mining lays claim to the land. From the beginning, planning must represent goals for the future design and development and make possible new options for temporary use. Planning must accompany mining processes and react flexibly to changing framework conditions.

5. **Shaping the Process**
The process of redesigning must be tangible. Information, staging the changes, and intermediate uses are important elements of the process that convey change and provide departure points for a change of identity.

6. **Allowing for creative Innovation**
The development of new cultural landscapes requires avant-garde and creativity, exchange of insider and outsider perspectives, as well as open decision making structures. The process must be organised in such a way as to facilitate innovation solutions and new pathways.

7. **Generating Pictures:**
Pictures and outlines of a future development are important as eye-openers and vehicles for imagining the future. Even at the beginning of the conversion process events and constructed images are indispensable as landmarks to manifest the goals and perspectives of development.

8. **Ensuring Transparency:**
The development of post-mining landscapes must be open and transparent. The triad – comprehensive participation by those who are affected, common decision-making, and the implementation of planning with the participating actors – must be guaranteed in all phases of planning.
9. **Building the Organisational Structure**
The implementation of the planning goals must be secured by an organisational structure that is capable of acting sufficiently equipped with funding and personnel. The organisational structures take over the process management, establishes networks, and organises funding and promotions. The requirement for these functions is a binding legal framework that identifies planning levels, tasks and responsibilities.

10. **Taking Responsibility**
The polluter-pays principle applies to rehabilitation. The task of qualitative development that produces added value cannot be solved on the local level alone. It must be supported by entrepreneurial and higher-level public responsibility as well as by cooperation among local authorities and additional partners.
The following techniques, concepts, preparatory activities and delivery methods where discussed during the ‘Community Engagement or Community Engagement’ workshop help as part of the Mine Closure 2013 conference.

- The recognition that while engaged and on-going consultation may seem like an expense in the short-term, by creating partnerships within and with the community costly long-term delays due to community opposition can be avoided and cost savings through community collaborations can be expected.
- Help communities redefine themselves as positive, imaginative places to live and visit
- Ensure you have the right skills and knowledge for the project by partnering with external organisations with the necessary expertise.
- Successful community engagement does not make assumptions about its audience.
- Ensure everyone can participate in some way.
- Education and better communication of the issues are essential tools for raising the level of performance in post-mining regeneration activities.
- Successful engagement is often limited by lack of capacity and know-how, particularly in the socio-economic aspects of such work.
- Consistency is the key to engagement with mining communities. As the process occurs over a lengthy period the community can become despondent if consultants dip in and out and approaches to consultation are constantly changing.
- Lead in activities help to build trust in the community.
- Mining companies need to become more accepting of qualitative information.
- Reporting people’s ideas back to them during the consultation process shows that they are being listened to and their ideas being considered.
- Engage young people early on in mining communities, as they will often be the generation left with the legacy.
- Do not raise expectations of the community. Be realistic.
- Work in partnerships.
- Recognize that physical transformation is not enough
- Create a convivial space that is inclusive and will appeal to people of different ages and abilities.
- Inspire but do not lead. Start conversations and show some of the possibilities – but the issues and opportunities need to come from the community.
- Take an intergeneration approach
- Flexible facilitation in an informal style helps get the best out of people.
How the place resilience framework works

The CLES resilience framework provides a visual representation of how a local place is structured from an economic perspective. It also identifies the outside influences that have an effect on how it functions.

The framework has been designed to ensure all parts of the economy are represented: the social; commercial; and public economies. The commercial economy is often seen as the priority for economic development, but the resilience model demonstrates that the public sector can have considerable influence on a locality through procurement spend, planning and employment opportunities. Likewise, the social economy does not regularly feature in economic development strategies but plays a crucial role in providing the foundations for any healthy and effective economy both directly through local employment, local supply chains, volunteering and social enterprise, but also indirectly through development of social capital and promotion of civil engagement and participative democracy.

What makes the resilience model stand out is that whilst it focuses on traditional elements of ‘the economy’, it hones in on the relative strength of the reciprocal relationships between the public, private and social economies. We believe these relationships and connections help to generate resilience within an area. Stronger mutual relationships allow a locality to be more flexible and reactive if faced with an economic or environmental change.

For further reading please visit http://www.cles.org.uk/category/publications/cles-research/


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