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An Exploratory Study Into Stakeholder Perceptions of a Proposed Geotrail in the Perth Hills

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THESIS

AN EXPLORATORY STUDY INTO STAKEHOLDER PERCEPTIONS OF A PROPOSED GEOTRAIL IN THE PERTH HILLS

This thesis is presented in partial fulfilment of the award of an Honours Degree

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USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

ABSTRACT

Geotourism is a form of natural area tourism that can include natural and human-made sites of geological significance. This new form of tourism provides destinations with an opportunity to provide a unique product to visitors. The purpose of the study was to explore the perceptions of tourism stakeholders on a proposed geotrail in the Perth Hills. Due to the limitation of appropriate frameworks and models surrounding geotourism development, Steps 1 to 5 of Gunn's (2002) Site Design Steps was used for the identification and development of individual geosites within a proposed geotourism trail in the Perth Hills. Fourteen tourism stakeholders were identified using a snow-ball interview technique, with convenience sampling used to identify prospective tourists. Participants were given a 'key stakeholder information booklet' prior to the in-depth, semi-structured interviews conducted between September and November 2010.

The findings were combined to create a market analysis of the tourism industry in Western Australia and the eastern region of Perth. The market analysis identified the different tourism markets, characteristics of visitors, existing tourism products, established geotourism products, current major tourist attractions in Perth and the surrounding areas, and new market opportunities for geotourism and geotrails within the Perth area. The program definition of the project identified three significant geosites in the Perth Hills – the Red Hill quarry, Boya Mountain Quarry and the Zig Zag. These sites were then assessed for their on-site and off-site factors and provided to stakeholders for consideration as geosites within the proposed geotrail.

Although there were differences on how each stakeholder group perceived the geotrail, each group supported the geotrail plan and viewed it as an opportunity to increase tourism in the Perth Hills. Without the input of stakeholders various concerns with the geotrail would not have been realised, relating back to the reviewed literature and influencing the amended geotrail route. Overall, stakeholders that were interviewed found the geotrail plan to be an interesting concept. However, there were some doubts as to how successful the trail would be and if there would be enough visitations to warrant the development of the trail. However, the general consensus of the interviews was that any new product that would create an increase in tourism in the Perth Hills and provide visitors with more activities would be supported by all stakeholder groups.

DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

     i.   Incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education;

    ii.   Contain any material previously published or written by another person except where due reference is made in the text of this thesis; or

   iii.   Contain any defamatory material.

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ACKNOWLEDGEMENTS

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CHAPTER ONE - INTRODUCTION

1.1 Background to the study

Tourism is the world's largest and fastest growing industry and by the end of 2010 tourism will have contributed US $9.3 trillion to the world economy (Ecole Hoteliere de Lausanne, n.d.). Between 1990 to 2009 there was an average increase of 3.8% in international tourist arrivals worldwide. This was assisted by favourable global economic growth in the 1990s, but was adversely affected by several international events in 2001 and 2003, and the economic crisis in 2008 and 2009 (Australian Government, 2010). This economic crisis, better known as the Global Financial Crisis (GFC), created a decline in global tourism by 4.3 per cent. However, tourism in Australia is expected to grow by 3%, with domestic overnight trips increasing by 4% and international arrivals by 4.3% (Australian Government, 2010). These figures, along with the appreciation of the Australia dollar, show the great potential of the Australian tourism industry.

Australia tourism is a $41 billion industry that provides employment for half a million Australians, and contributes $24 billion of Australia's total export earnings (Australian Government, 2010). Australia's 17 iconic tourism destinations provide visitors with a variety of experiences to be had (Tourism Australia, n.d.). Fifteen are nature-based, showing the importance of natural attractions to the Australian tourism industry. During 2009, there were 3.31 million international nature visitors, 12.46 million domestic overnight nature visitors, and 12.55 million domestic day nature visitors within Australia, with an average of 3% increase over 6 years for international nature visitors (Tourism Research Australia, 2010a).

1.1.1 Tourism in Western Australia

Tourism Western Australia is the State's peak tourism marketing agency which has divided Western Australia (WA) into five tourism regions. They are Australia's South West,

Experience Perth, Australia's Golden Outback, Australia's Coral Coast, and Australia's North West (Figure 1). As each of these regions has an array of unique attractions, Western Australia attracts visitors with diverse preferences.

There is an overwhelming majority of domestic visitors (18,045,000) compared to international visitors (684,000) visiting Western Australia. However, domestic visitors (2.6 nights) stay for much shorter periods than international visitors (30.7 nights) (Tourism Research Australia, 2010b).

Figure 1: Tourism Regions in Western Australia (Access WA, n.d.)

The 'Experience Perth' region is the most popular in WA for both types of visitors (Tourism Research Australia, 2010c). It extends to the north just beyond the coastal town of Lancelin to the southern city of Mandurah, and to the east beyond Northam (Figure 2). For visitors to the 'Experience Perth' region 'food and wine' experiences were the most popular, with nature-based experiences ranked second. Within this region is the Perth Hills which will be the focus of this study.
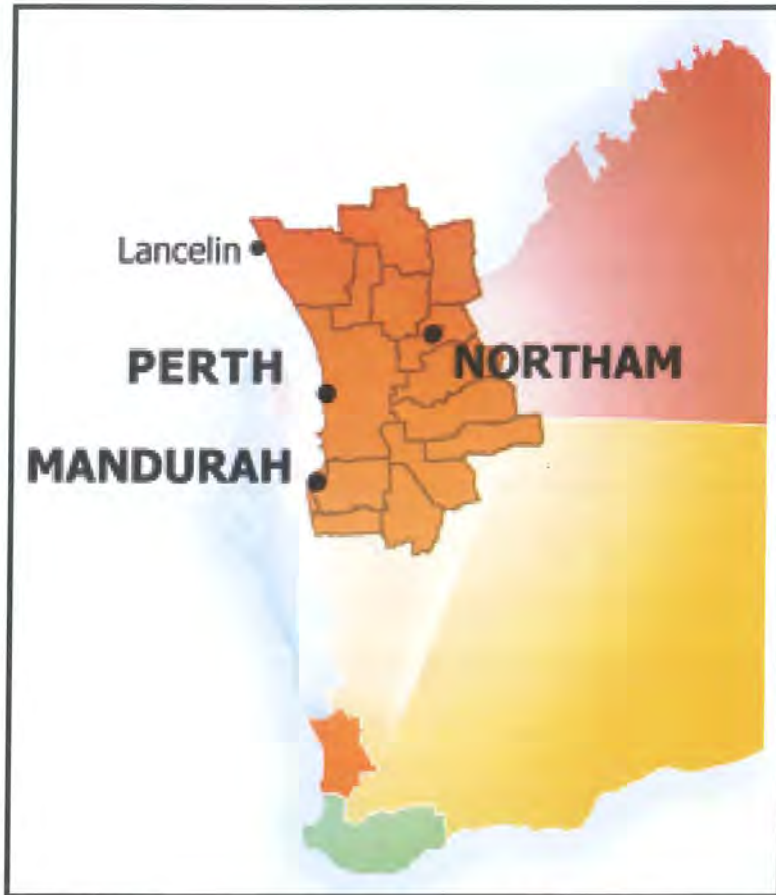
Figure 2: Experience Perth Region (WA Country Pubs, n.d.)

1.1.2 The Perth Hills study site

The 'Perth Hills' is the name given to the area located to the east of the city of Perth, Western Australia, where the coastal plain meets the Darling Ranges (Figure 3). This region does not have a distinct geographical border; however it consists of the local government areas (LGA) of the Mundaring and Kalamunda Shires. These two LGAs

together, with the addition of the neighbouring Cities of Swan, Belmont and Bayswater and the town of Bassendean councils, make up the Eastern Metropolitan Regional Council (EMRC).

Figure 3: Topography of the Swan Coastal Plain, the Dandaragan Plateau and the Darling Plateau (Gozzard, 2007, p. 13).

The EMRC provides services for regional development, environmental management, waste management, and risk management (EMRC, 2009). In terms of tourist attractions, the Mundaring Weir is one of the most recognisable landmarks in the Perth Hills. It is the start of the pipeline that supplies water 700 kilometres away to the Kalgoorlie Goldfields. Other attractions include the Bibulmun Track, Munda Biddi, vineyards, art galleries, heritage trails, restaurants and cafes, and most importantly the widespread natural bushland, providing visitors with numerous walking trails, waterfalls and wildflowers.

Unknown to most visitors to Perth, the Perth Hills have sites that are significant in explaining the geological history of Western Australia. The Hills, which are also commonly referred to as the Darling Scarp, are a part of the Darling Fault that extends over 1000 kilometres from the area east of the Shark Bay landform in the north, to the east of Albany on the south coast. This fault is an ancient geological discontinuity that separates the Archaeon Yilgarn Craton from the younger Pinjarra Orogen and overlying Phanerozoic Perth Basin. The high ground of the Perth Hills have been formed by the Archaean granites and gneisses of the Yilgarn Craton, whereas the City of Perth has been built on sandy limestone and dune sand, arising from the sand dunes of Pleistocene age formed during the last Ice Age (Maher, 2010a) (Figure 4). The Perth Hills also contains geological sites of Indigenous significance and early European settlement. These important sites have the potential to be developed into a geotrail within the region that could attract both local and international visitors.
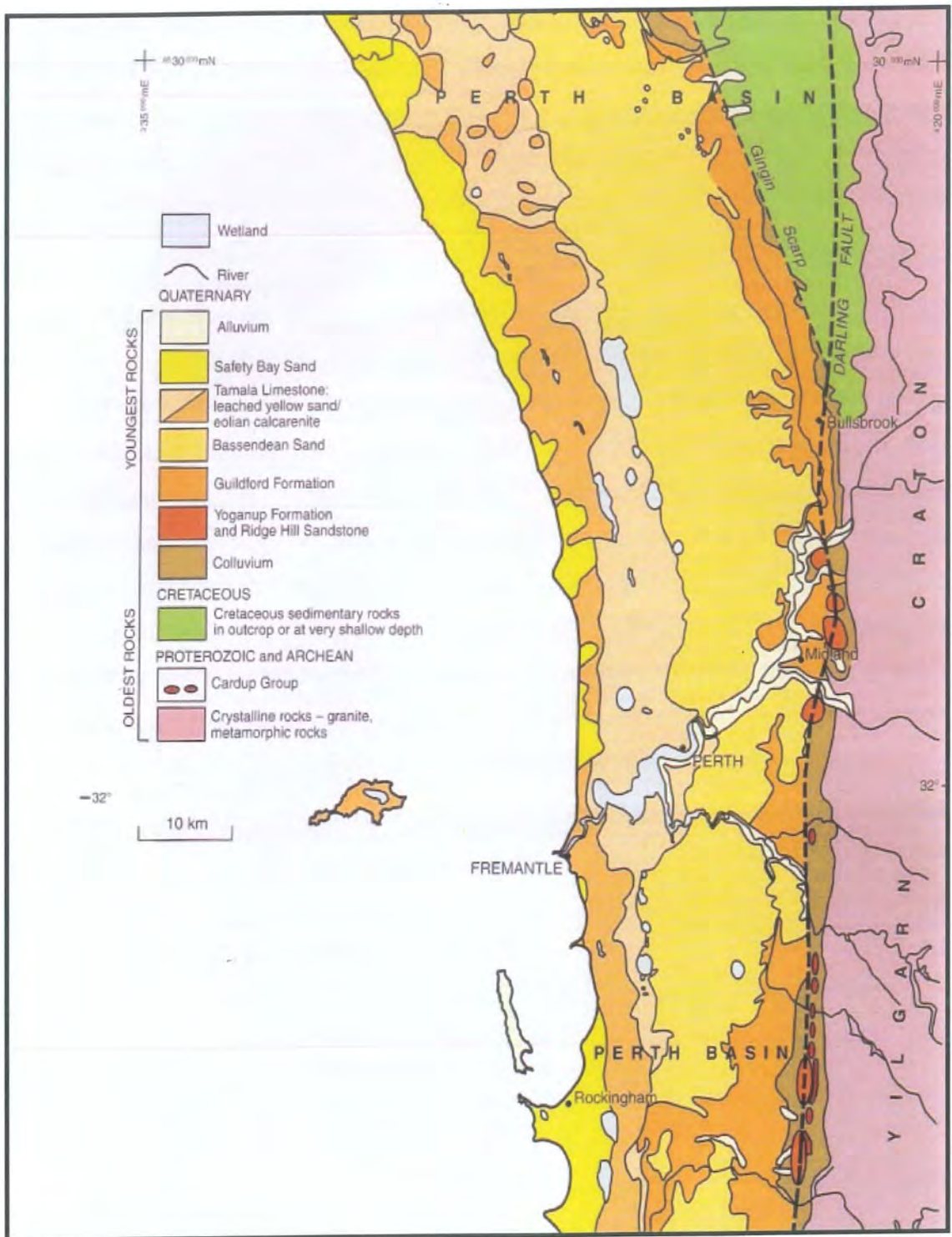
Figure 4: Simplified geology of the Perth Region (Gozzard, 2007, p. 7).

1.1.3 Geotourism

Geotourism, although a new term, is not a new form of tourism. A fascination with the planet has made people travel to places to experience and make a connection with the environment for centuries (Hose, 2010). Geotourism has increased in popularity since the beginning of the geopark movement beginning in Europe in 2000, and exists throughout the world (McKeever, Zouros, Patzak & Weber, 2010).

Geotourism has expanded through the introduction of the Global Geopark movement and the publishing of several geotourism books (Dowling & Newsome, 2006; Dowling & Newsome, 2010; Newsome & Dowling, 2010). Its emergence has been facilitated by the demand for specialized, niche forms of tourism and a growing understanding of the importance of the Earth's heritage. The definition of 'geotourism' is complicated due to the lack of a universal acceptance. However, the definition that is used for this study is:

> A form of natural tourism that specifically focuses on landscape and geology. It promotes tourism to geosites and the conservation of geo-diversity and an understanding of Earth sciences through appreciation and learning. This is achieved through independent visits to geological features, use of geotrails and view points, guided tours, geo-activities and patronage of geosite visitor centres. (Dowling and Newsome, 2010, p. 3).

1.1.3.1 Geodiversity, geoheritage and geoconservation

Stanley (cited in Jose, 2002, p. 1) states:

> **Geodiversity** is the variety of geological environments, phenomena and active processes that make landscapes, rocks, minerals, fossils, soils and other superficial deposits which provide the framework for life on Earth…it is also the link between people, landscapes and their culture through the interaction of biodiversity with soils, minerals, rocks, fossils, active processes and the built environment.

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Geoheritage, on the other hand, involves sites that have geological features considered to be unique, outstanding, and having significant scientific and educational value for the good of the community (Roberts & Freeman, 2008). Preserving the geoheritage of a place is called **geoconservation**; geological sites that are a part of the natural environment have to be managed for their protection. However, geoconservation is not as common as the conservation of historical and cultural sites (Creaser, 2010), possibly because the slow rate at which geological processes often occur and can lead people to mistakenly think that the resources are inexhaustible (Jose, 2002). The inclusion of geology into conservation policies is needed so that people are more aware of the significance of these areas, preferably through local communities taking ownership, given that they understand the difference the areas make to people's lives including their economic benefits.

1.1.3.2 Geoparks

To help conserve geodiversity and geoheritage a number of geoparks have been established around the world. According to UNESCO a geopark is a 'nationally protected area containing several geological heritage sites of particular importance, rarity or aesthetic appeal. Such parks achieve their goals through a three-pronged approach - conservation, education, and geotourism' (UNESCO, 2009, para.1). The European Geoparks Network (EGN) was formed in 2000 by four European countries (France, Greece, Spain and Germany) which came together to find a solution for declining rural economies. Encouraged by their progress, UNESCO became a collaborative partner with this Network with the common goals of educating the public on geological heritage and promoting sustainable development (Patzak, n.d), which in turn led to the Global Geopark Network (GGN) based on this European framework (McKeever, Zouros, Patzak & Weber, 2010).

Australia established its first Global Geopark in 2008, the Kanawinka Geopark (McKnight, 2008). The name Kanawinka is used for the geological fault line that is across the region, which was also used as a Parish name in 1911, thus linking Indigenous, European and geological history together in one name (McKnight, 2008). The Geopark has three major geological and geographical features - volcanoes, limestone and coastline. The boundaries of the Geopark extend from the South East of South Australia to the South West of

Victoria; being over 400 km long and 120 km wide, it runs through a wide limestone region and one of the world's largest volcanic plains (Lewis, 2010).

1.1.3.3 Management of geosites

Geotourism can have positive and negative impacts on a site, regardless of whether it is remote or close to communities. Any human activity, including tourism, can cause not only environmental impacts but also socio-cultural and economic impacts. Crucial aspects of geosite protection are visitor and site management. There have been geological sites that have been damaged due to large numbers of visitors, vandalism and graffiti, dumping of waste, pollution, sewerage and careless visitors (King, 2010).

Removing iconic materials can be detrimental to a site. Fossil collecting in particular is popular on the black market and can create issues when these important items are taken from geoheritage sites. However, in some instances, the removal of fossils is allowed (King, Ford & Edmonds, 2010). Management of geosites has minimized site damage by sacrificing other sites of lesser importance through increased visitation and public marketing efforts (King, 2010).

1.1.3.4 Geotourism stakeholders

An important aspect in the management of geosites is the recognition and inclusion of stakeholders. A stakeholder has been identified as any group or individual who can affect or is affected by the achievement of the organisation's objectives (Freeman, 1984), but in tourism, stakeholders have been identified in broad groups as local residents, business owners, government officials and tourists (Schianetz, Jones, Kavanagh, Walker, Lockington & Wood, 2009). In general, cooperation between stakeholders helps ensure successful management (Martin, 2010). To reach its full potential for a geotourism destination, effective communication and collaboration between stakeholders is needed (Moreira & Bigarella, 2010; Pforr & Megerle, 2010; Tongkul, 2010).

Some tourism development bodies include public involvement with local communities, particularly Indigenous groups to create better outcomes for all stakeholders and more sustainable programs. An example of this is the Grand Canyon for which American Indian tribes have a unique government relationship that allows use of the Canyon for tribal needs and developing tribal businesses, which also facilitates visitors with learning about Indigenous cultures (Martin, 2010). Cooperation between the tribes and park management has provided benefits through protection and cultural programs while still generating shared economic benefits from tourism (Martin, 2010).

Another example is in Ireland, where the introduction of geotourism has improved the economy, and led to more geotourism projects and products that are available to visitors (Maher, 2010b). Both these studies highlight the importance of stakeholder involvement within geotourism development so that all stakeholders can benefit.

1.1.3.5 Education in Geotourism

Education is one of the most important aspects of geotourism. Through education and learning people can understand why geoconservation of significant geological sites is important. Some visitors to a geotourism site are not interested in learning about its importance, but merely seek to enjoy its aesthetic appeal (Amrikazemi, 2008).

Interpretive facilities are important in geotourism to expand tourists' aesthetic appreciation of a site to an understanding of its geology and geomorphology (Dowling & Newsome, 2006). Interpretive facilities can include guide books, tourism brochures, information centres, museums, websites, informational films, guided tours, informational signs, and informational shelter posters. Hughes and Ballantyne (2010) discuss the importance of 'connecting' with visitors; visitors must connect new information to other pieces of information and things they already know to actively process information into their long-term memory. This can be conducted through choosing the most appropriate interpretive medium (such as signs, audio-visual display, tours) through using stories, visitor participation and analogies, metaphors and humour.

Education of visitors is an important aspect of geotourism which includes proper training and education of tour guides, staff, and management are also needed to pass on the knowledge very effectively. Some education institutions have identified the opportunity in developing courses specialising in geotourism, such as Edith Cowan University in Western Australia, AGH-University of Science and Technology in Krakow, and 'Geopark Ranger' initiatives developed in Geoparks (Frey, Schafer, Buchel & Patzak, 2006).

Education and awareness are also important aspects of risk management; informing visitors of what they can and cannot do can prevent accidents from happening. As geotourism involves visitation to sites of geological importance, many of which may be in hazardous areas, strategies and sufficient barriers are need to minimise risk and damage to visitors or geosites. Due to the dynamic geological activity within parks, ongoing risk assessment, management and evaluation are needed to keep visitors safe (King, 2010).

1.2 Significance of the study

Geotourism provides many opportunities for destinations, hosting sites of geological significance, such as the Perth Hills. The development of a geotrail linking significant geosites would provide a unique attraction to the area and perhaps create a differentiating identity for the region, as well as creating opportunities for employment, and other economic benefits for the area, and provide education on geoconservation to protect important geosites.

There have been numerous studies based on stakeholder perceptions of tourism development (Byrd & Gustke, 2006; Choi & Murray, 2010; Easterling, 2005; Huang & Confer, 2009; Timur & Getz, 2009; Weaver & Lawton, 2004) but few specifically address geotourism. This study will identify and investigate the values and beliefs of stakeholders, identify levels of support, and analyse the viability of geotrail development within the Perth Hills. Depending on the outcome of the study, this may create opportunities for local governments and businesses to begin this development.

1.3 Aim of the study

Geotourism is a relatively new concept in tourism that provides destinations with unique opportunities for new products and attractions, which can assist local communities by creating employment and income and attracting new tourists. However, the introduction of new tourism developments within an area has to be planned properly, to maximise benefits and minimize costs, particularly through successful engagement with stakeholders. Research on stakeholders' perceptions is needed to understanding current issues, including the protection and appreciation of these sites, the environmental sustainability of these areas, and the socio-cultural importance of certain sites. This in turn, can allow free communication, collaboration, and lessen any chance of future conflict. This research into stakeholder perceptions of the development of a geotrail will provide insight into the values and beliefs, and identify differing levels of support among stakeholder groups.

The purpose of this study is to explore the perceptions of stakeholders in regards to the development of a geotrail in the Perth Hills, and determine the levels of support within stakeholder groups. Specifically, this study will use a qualitative method to investigate stakeholder perceptions and, through analysis of these perceptions, identify issues and support for the development of a geotrail.

The research questions and objectives for this study are:

1.3.1 Key Research Question

What are the perceptions of stakeholders regarding the development of a proposed geotrail within the Perth Hills?

1.3.2 Research Objectives

- To identify a geotrail within the Perth Hills area
- To explore the perceptions of stakeholders on the proposed geotrail plan
- To identify stakeholder groups that support or reject the proposed geotrail plan, and use their input to improve the design

1.3.3 Subsidiary Questions

- What are the socio-cultural, natural and economic issues that may arise in the development of a geotrail?

- Do stakeholders know of any additional geosites that may be incorporated in the geotrail?

1.4 Thesis Structure

The structure of this thesis has begun with an introduction into the study, outlining the significance of the study and how the research will benefit the academic community within the topic of geotourism. Following on from this current chapter, chapter two will review current and relevant literature regarding tourism development stakeholders in semi-rural areas followed by chapter three which discusses the methodology of the study. The fourth chapter presents the findings of the research which will follow Steps 1 to 5 of Gunn's (2002) Site Design Steps to identify a geotrail within the Perth Hills (Figure 5). Steps 1 to 5 will include a market analysis, program statement, site selection, site analysis and synthesis. Chapter five presents the perceptions of stakeholders that were identified in the synthesis stage, as well as issues, concerns and recommendations for the geotrail that may have been identified by stakeholders that relates back to the reviewed literature in Chapter 2. The proposed geotrail in the Perth Hills includes the City of Swan as well as the Shires of Kalamunda and Mundaring.
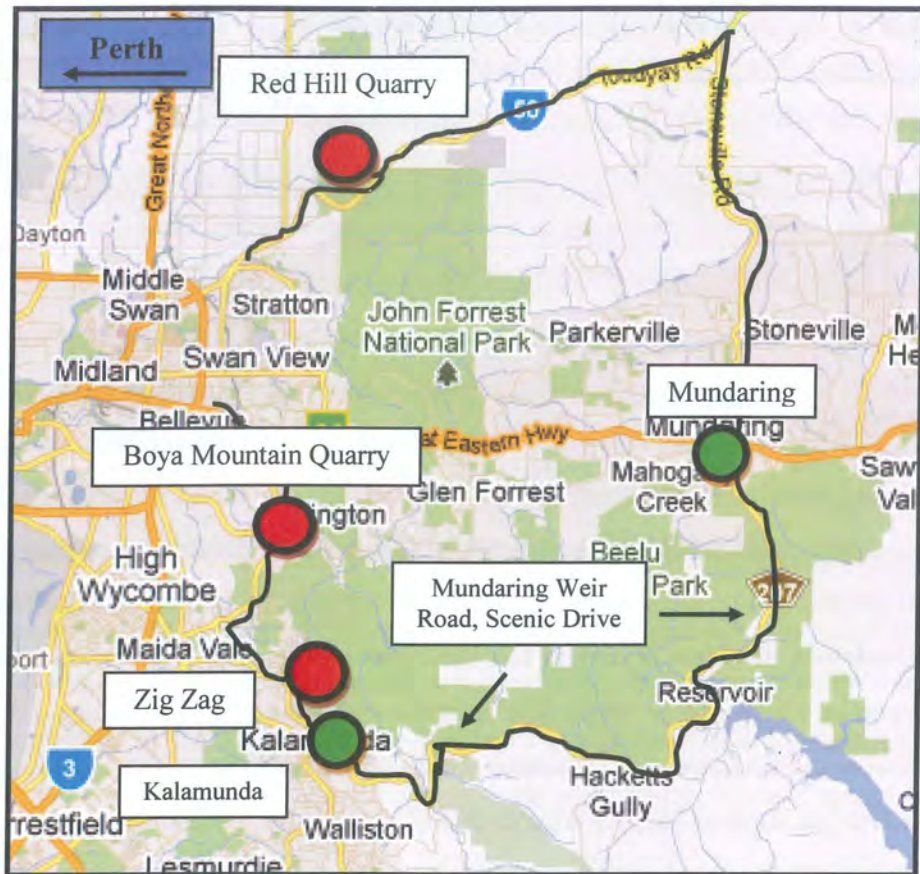
Figure 5: Proposed geotrail in the Perth Hills

Legend

🔴 Already identified geosites

🟢 Village hubs

CHAPTER TWO - LITERATURE REVIEW

2.1 Introduction

Natural area tourism can be explained simply as tourism in natural areas (Newsome, Moore & Dowling, 2002). It is important in Australia as many of its tourism icons are nature based; for example Uluru, the Great Barrier Reef and the Bungle Bungle Range. In 2008, more than 3.4 million international visitors to Australia participated in nature tourism, with over 44% participating in at least three nature activities (Tourism Research Australia, 2009).

Geotourism, as a subsector of natural area tourism, can also occur in urban environments (Dowling & Newsome, 2006), with geosites occurring naturally in wilderness areas and man-made in urban environments. Tourism development in natural areas has been identified by some academics as ambiguous due to its sustainability paradigm arising from the use of natural and cultural resources in creating economic growth whilst still preserving these resources (Ioannides, 2005). However, sustainable geotourism in urban locations is less problematic and can generate local income and employment. Research published on geotourism is limited as it is a new term and field that explains why people visit places to look and learn about one or more aspects of geology and geomorphology (Joyce, 2006). This creates a limitation for literature reviews as theoretical frameworks are not well established; however the numerous studies of tourism development stakeholders in rural-urban areas can be adapted.

2.2 Defining Geotourism

Hose published the first constructions of a definition for geotourism stating it as 'the provision of interpretive and service facilities to enable tourists to acquire knowledge and understanding of the geology and geomorphology of a site (including its contribution to the development of the Earth's science) beyond the level of mere aesthetic appreciation' (2005, p. 28). This was further refined to include conservation principles and human aspects, and formed the definition into 'the provision of interpretive facilities and services to promote the values and societal benefit of geologic(al) and geomorphologic(al) sites and their

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materials, and to ensure their conservation for the use of students, tourists and casual recreationalists' (Hose, 2010, p. 13). Several other academics have defined geotourism (eg. Joyce, 2006; Slomka & Kicinska-Swiderska, 2004), with the most recent definition of geotourism is

> A form of natural tourism that specifically focuses on landscape and geology. It promotes tourism to geosites and the conservation of geo-diversity and an understanding of Earth sciences through appreciation and learning. This is achieved through independent visits to geological features, use of geotrails and view points, guided tours, geo-activities and patronage of geosite visitor centres. (Dowling and Newsome, 2010, p. 3).

In contrast to the above, *The National Geographic* (n.d.) has defined the term 'geotourism' as 'tourism that sustains or enhances the geographical character of a place – its environment, culture, aesthetics, heritage, and the well-being of its residents' (para. 1). This definition is basing the term on a geographical sense of tourism, where as Newsome and Dowling's (2010) definition is geology-based. For the purpose of this literature review, Newsome and Dowling's definition will be used from now on.

Brozinski (2010) presents an argument on the geotourism and the 'Popularisation of Geology' (PoG) which can be viewed as a general way of educating people on geology or specific geological information, however PoG lacks the foundations to support tourism ventures. Geotourism and PoG contain similar data and are both focused on educating the public, but geotourism can be understood as including other forms of tourism such as restaurants, hotels and souvenirs whereas PoG is a single entity (Figure 6).
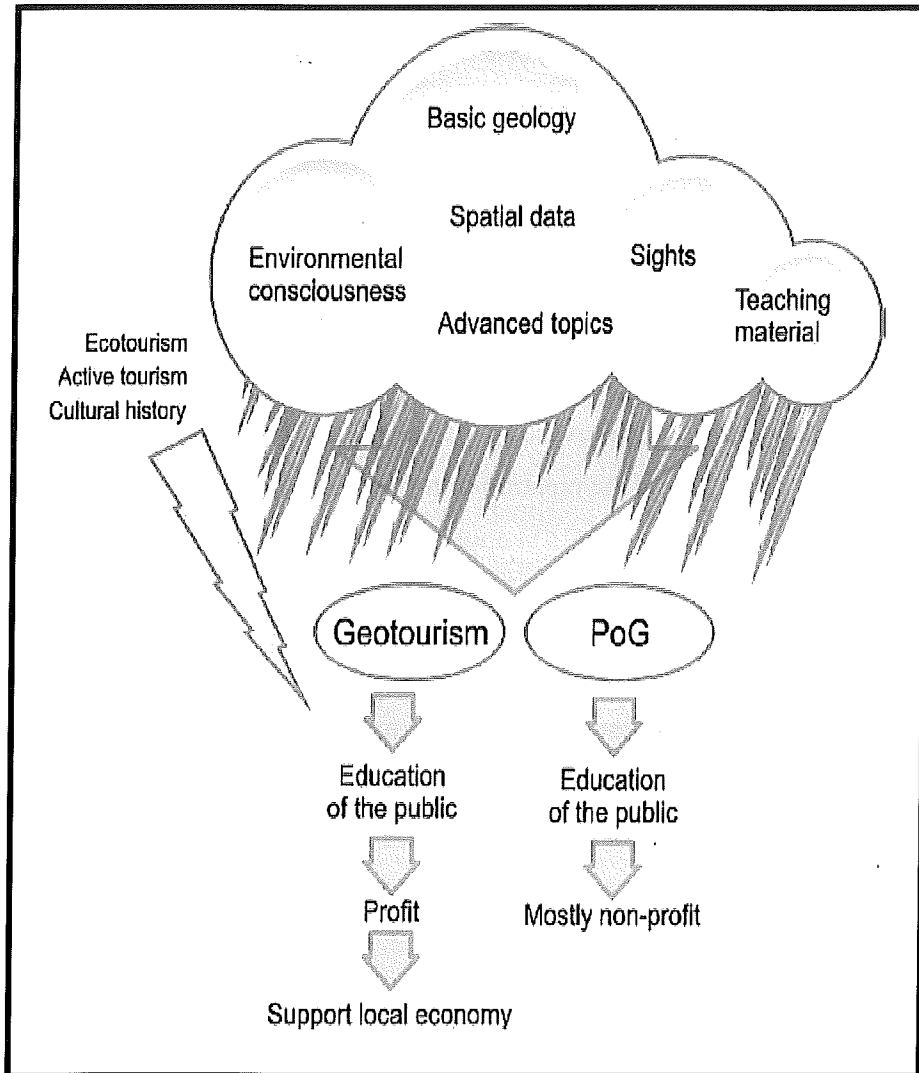
Figure 6: Geotourism and PoG (Brozinski, 2010, p. 47)

2.3 Destination classification – the natural-urban spectrum

The *Tourism Opportunity Spectrum* (TOS) (Appendix 1), which was adapted by Dawson (2008, p. 4) from the *Recreational Opportunity Spectrum* (Clark and Stankey, 1979) to identify a destination as urban or natural. The TOS is a tourism planning tool that enables a rational and comprehensive overview of an area which assesses the tourism opportunities available and highlights market competition, the development of market niches, and new types of tourism that could be developed that will be compatible with each type of environment (Dawson, 2008). TOS can be used for long-term tourism management as it provides indicator standards that can be compared to the natural status of the area, while

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also considering social conditions. The conceptual spectrum of the TOS approach ranges from ecotourism to urban tourism, with nature-based tourism, rural tourism, and rural-urban tourism being the intermediate dimensions.

A study by Huang and Confer (2009) used the TOS as a model for management of tourism in both front and back-country settings. This study came to the realisation that tourism in front-country parks and protected areas does not entirely coincide with the TOS, as front-country settings may have a unique setting, and therefore have distinctive characteristics located in different environmental settings along the spectrum. Huang and Confer (2009) counter this problem by highlighting the creation of a spectrum of opportunities for tourists and to pursue different recreational pursuits in appropriate managerial settings. This allows areas with different conservation value to still be visited while making tourists aware of the permitted activities.

Hall & Boyd (2005) adopted a two-dimensional continuum approach to identifying areas by the quality of its wilderness (Figure 7).

Settled Land	Undeveloped Land		
Increasing Remoteness			
Increasing Primitiveness (Naturalness)			
	Wilderness Quality		
NO WILDERNESS QUALITY	LOW	MEDIUM	HIGH
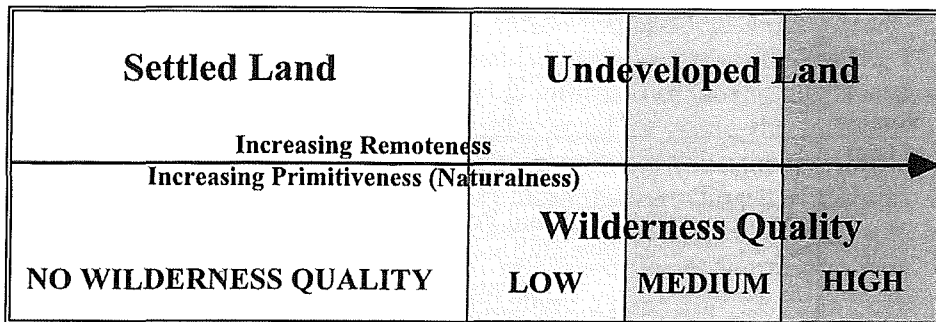
Figure 7: The Wilderness Continuum Concept (Hall & Boyd, 2005).

This continuum approach has also been expanded to highlight the key characteristics of nature-based tourism within three dimensions being identified; naturalness, accessibility and trip numbers. Naturalness can be shown by factors of primitiveness, such as prevalence of indigenous plant and animal species in the area. Accessibility is related to the remoteness of the area. However, it can have social and physical dimensions with physical accessibility

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referring to the ability to reach the area, and social accessibility referring to the socio-cultural limitations that might be involved with travel (Hall & Boyd, 2005).

The Perth Hills are an example of an area that fits more than one category - it is seen neither as highly urban nor rural. Within the TOS it exhibits elements of urban and rural-urban tourism and has 'low wilderness quality' due to having natural areas but also suburbs, shopping centres and main roads.

Weaver and Lawton (2004) identify this area as the ***urban-rural fringe***, which can be defined as the area extending from the built-up edge of an urban area to the outer limit of daily commuting activity. This area is also identified as an important area of research due to the urban-rural fringe accounting for a large portion of residential and tourism activity in Australia (Weaver & Lawton, 2004). Some authors refer to these as peripheral areas (Hall & Boyd, 2005) which tend to be geographically remote from mass markets, have a lack of political and economical control, import products due to lack of innovation, weak economic linkages, and often have high aesthetic amenity values. Both terms represent characteristics of the Perth Hills and will be used in this study. As literature on the urban-rural fringe is minimal, peripheral area studies will be included to gain an overall knowledge of the issues surrounding tourism development within these areas.

Gunn (2002) presents a rural-urban destination zone that identifies the relationship between the city (primary attraction) and the rural area (secondary attraction) (Figure 8). These areas are usually linked via a circulation corridor, and advantages for both city and rural communities can be achieved if there is cooperation, including tour efficiency, increased attractions and more promotional information for the public (Gunn, 2002).
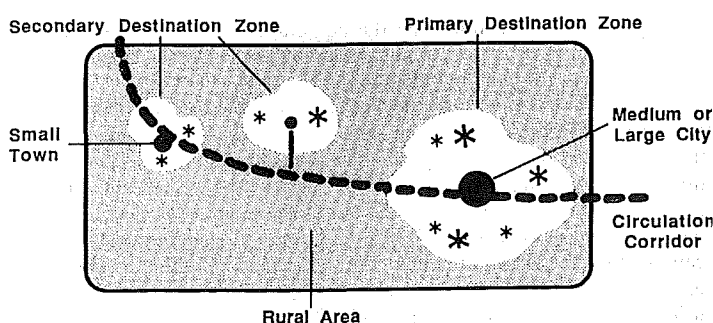
Figure 8: Rural-urban destination zones (Gunn, 2002, p. 224)

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If this diagram was represented in the context of this particular study then the primary destination zone would be Perth and the secondary destination zone would represent Mundaring and Kalamunda. The large and small asterisks represent attractions which would be scattered throughout the region, linked to the main circulation corridor (Great Eastern Highway). This rural-urban destination zone diagram relates well to this particular study, and the use of this model for tourism planning as it depicts geotrail development in a straight-forward manner.

2.4 Tourism development stakeholders

Many tourism studies (Byrd and Gustke 2006; Easterling, 2005; Huang & Confer, 2009; Timur & Getz, 2009; Weaver & Lawton, 2004) perceive that successful tourism development requires the cooperation of all stakeholders. Collaboration between stakeholders can be complicated, difficult to achieve, and also time-consuming (Schianetz *et al.*, 2009; Yuksel, Bramwell & Yuksel, 1999). However, it can be useful for avoiding stakeholder conflicts and reducing long term costs, and being politically legitimate (Yuksel *et al.*, 1999). Building on the knowledge of stakeholders can encourage a sense of identity (Schianetz *et al.*, 2009; Walden, 2010) which can be fundamental for creating goals and collective learning within a community (Senge, Kleiner, Roberts, Ross, Roth & Smith, 1999). It is also important to foster joint consideration in regards to social, cultural, environmental, economic and political issues surrounding tourism developments (Medeiros de Araujo & Bramwell, 2000).

Unfortunately there is no universal outline of who is deemed an important stakeholder. Many studies identify tourism development stakeholders as local residents, business owners, and government officials (Byrd & Gustke, 2006; Schianetz *et al.*, 2009; Timur & Getz, 2008), with some recognising that tourists should be included also, as they can be affected by tourism development (Lewis & Newsome, 2003; Schianetz *et al.*, 2009; Weaver & Lawton, 2004). Identifying the *relevant* tourism development stakeholders is the first and most important step in collaborative planning for technical, political and operational reasons (Medeiros de Araujo & Bramwell, 2000).

The two main approaches to identifying stakeholders have been interviewing a sample of stakeholders and asking them for other relevant stakeholders so as to form an exhaustive list that can be prioritised (Currie, Seaton & Wesley, 2009; Timur & Getz, 2008), and holding workshops for stakeholders which can facilitate their involvement in the planning process (Beeton, 2002; Johnston & Payne, 2005; Medeiros de Araujo & Bramwell, 2000; Schianetz et al., 2009). Both methods require considerable resources to be effective, and as the research period for this study is only a few months there would not be sufficient time for extensive stakeholder identification. Instead, for the purpose of this study, tourism stakeholders will be grouped under the categories of community, businesses, government and tourists.

2.5 Segmenting Stakeholder Attitudes

There is extensive research on the relationship between tourism and stakeholders which focuses on individual stakeholder groups (Byrd & Gustke, 2006). There have been studies carried out on individual groups' attitudes (Choi & Murray, 2010; Easterling, 2005; Huang & Confer, 2009; Weaver & Lawton, 2004) and perceptions (Timur & Getz, 2009). Most studies finding different levels of support for tourism development among stakeholder groups. Moreover Byrd and Gustke (2006, p. 188) state that 'it is imperative to understand stakeholders' perception of tourism...in order to understand their level of support for sustainable tourism development'.

Stakeholders will support tourism developments that they perceive as beneficial to a destination; conversely support for adverse developments will not be forthcoming and stakeholders may take legal or illegal actions to stop them. One way of understanding stakeholder's support levels is through segmentation, which involves four characteristics; measurability, accessibility, substantiality, and actionability (Byrd & Gustke, 2006). However there have been arguments for a new approach to segmentation (Arimond & Elfessi, 2001; Owen, 1998).

Specifically Byrd and Gustke (2006) use a decision-tree analysis to study relationships between dependent and independent variables. A sample of country residents, business owners, local government officials, and tourists were mailed a questionnaire inquiring

about their attitudes and perceptions of tourism development, their participation in local activities such as politics and tourism, and their views on environmental impacts of tourism. Supported by a response rate of 21.40%, the study revealed three main stakeholder groups. Based on the level of support for sustainable tourism they were; 18.33% moderately to neutrally perceived that tourism had a negative impact on their community; 64.17% neutrally to moderately perceive that tourism had a positive impact on their community; of these 64.17% there were two sub-group of physically active moderates and passively active moderates; 17.5% moderately to strongly perceived that tourism had a positive impact on their community. Females were more supportive of tourism development than males, residents and tourists were more supportive than business and government officials, and stakeholders who participate in some form of recreational activity were more supportive of sustainable tourism development than those that do not.

Weaver and Lawton (2004) researched visitor and residential attitudes toward the development of tourism within the hinterland (area between urban destinations) in the urban-rural fringe between Brisbane and the Gold Coast (Queensland, Australia). The questionnaire profiled behaviours and attitudes of recreational visitors, and responses were subjected to the hierarchical cluster analysis. The researchers achieved a 37.5% response rate (1,244 correctly completed surveys) but only 2% represented local residents which were insufficient to provide a true representation; regardless, residents showed that people wanting to protect the hinterlands are more likely to reside in Brisbane than the Gold Coast, and a cluster analysis showed that there were four levels of support for development.

Integration sceptics (16.6% of respondents) were strongly biocentric and more likely to view tourism development as a threat to the hinterland. Some 18.6% of respondents showed lower-than-neutral enthusiasm for the hinterland, were unsure about increasing the amount of protected space, did not relate their time to an increased level of environmental awareness, and were somewhat supportive of hinterland-coast tourism integration. A further 27.7% held a position on integration that was in-between 'integration enthusiasts' and the preceding group. Integration enthusiasts represented 37.1% of respondents who are biocentric and supported the notion of tourism integration and increased visitation (Weaver & Lawton, 2004). The results obtained by Byrd and Gustke (2006) and Weaver and Lawton

(2004) revealed widely differing views on tourism development by different stakeholders, ranging from sceptics to enthusiasts.

2.6 Power stakeholders in tourism development

Beeton (2002) claims that power can exist in hierarchical and non-hierarchical forms. Hierarchical power is imposed power, which is often seen as the political power held by leaders, councils, elders, or state and national governments, whereas non-hierarchical can exist among communities and groups and be seen as social power. Beeton (2002, p.81) states 'understanding how the power relations work and what they are in any community is crucial to developing a sustainable tourism industry within a sustained community'.

Foucault (cited in Beeton, 2006, p. 81) maintains that knowledge defines power, not hierarchy or status; however, Kayat (2008) considers that power relates to the amount of resources a stakeholder has. The social exchange theory (or power theory) is a sociological approach to studying the relationships between tourism and communities, and the exchange of measurable resources (Andriotis, 2005). It is also a part of the stakeholder theory, as this examines individual interests of certain stakeholders and tries to satisfy as many of these interests by understanding the relationship between stakeholders and the firm (Freeman, 1984; Kayat, 2008). It can explain relationships between development managers and stakeholders, and the social exchanges between these parties. It involves power exchanges between stakeholders and the production entity (Savage, Nix, Whitehead & Blair, 1991), with power reflecting Kayat's interpretation.

A stakeholder with the resources needed for development will have more power than stakeholders without relevant resources (Kayat, 2008). Kayat, in a 2008 study of tourism development stakeholders of a homestay programme in the area of Kampung Pelegong, Malaysia, identified that the level of interest by stakeholders depended on their power (or lack of) to affect the homestay programme, their dependency on the programme, and the stakes they have on the programmes development. A community may have high stakes in a development but not be dependent on the programme. The high stakes arise from the level of impact on the community, and how development authorities will treat the community throughout the development.

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These results further highlight the importance of involving all stakeholders and recognising their level of interest and support for a development. Reed (1997, p. 589) states that 'agencies, such as governments, are unlikely to be neutral as they are more likely to be purposeful and goal-oriented, and use their power to achieve goals'. This statement is reinforced by a study by Schianetz *et al.*, (2009) that found participants of a tourism development workshop mentioned a lack of trust with government authorities, as the government might not have the expertise to effectively foster participative planning tools, nor the trust of some communities due to government relationships with stakeholders. This 'lack of trust' can be linked with the doubt placed on government motives in a study by Johnston and Payne (2005). Nature-based tourism was being developed in the north-western Ontario communities to strengthen local and regional economies. Workshops with the surrounding communities were organised to understand local views on tourism development, with themes arising such as concern for host-tourist interactions, environmental impact, and tourism management. In the discussions on tourism management, the views of the residents were that government agencies, especially in the capital city, could not be trusted, and residents expressed that local involvement in decision-making was very important, with local control being the most desired form of management.

However, this brought about a level of contradiction; whilst the community wanted to be in control of tourism management, they also expressed the need for regulation so that the level of impact to community and environment was controlled and managed. Many locals felt that tourism operators should be capable of regulating themselves, but they were not sure if they would do it if left to their own devices (Johnston & Payne, 2005). This highlights two issues regarding power relationships between stakeholders, and the benefits of involving people from all stakeholder groups involved with tourism planning to minimise conflict and maximise benefits for all.

2.7 Summary of the literature

In Australia, some of the most iconic tourist sites are geological in nature, making visitation to natural sites an important part of the nation's tourism mix. Geotourism is a relatively

new term for an old idea of travelling to geological sites, but there is an increased focus in integrating aspects of geotourism into existing products and to develop areas into geotourism destinations. The classification of rural and urban areas can help tourism developers in recognising the destination's status and the implications this may involve. Through this, the Perth Hills has been identified as being within Weaver and Lawton's (2004) concept of an urban-rural fringe.

The importance of including all stakeholders within the planning process allows for a positive exchange of knowledge, cooperation and collaboration with development efforts, and also creates an identity for a destination; however, not including stakeholders can result in doubt, conflict and sabotage. Extensive lists of stakeholders should be developed, but due to the limited resources available to the researcher, stakeholders in this study are simply identified as community, business, government and tourists; this is consistent with the literature. Understanding stakeholder perceptions is important for tourism development research so that issues and concerns can be realised and managed before significant time or money is expended for a project. This study on researching stakeholder perspectives on the development of a geotrail in the Perth Hills is significant as this will give decision makers an idea as to how successful this project would be, and if there is an opportunity to add a geotourism attraction to the tourism mix in this region.

CHAPTER THREE - RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the theoretical framework, research design and research method. The theoretical framework includes justification for the choice of framework, and the limitations and assumptions involved in using this framework within the study. The research design and method justify the choices of paradigm, data collection method, target population and data analysis procedures.

3.2 Theoretical framework

Due to the limitation of appropriate frameworks and models surrounding geotourism development, Gunn's (2002) Site Design Steps (Figure 9) will be used for the identification and development of individual geosites within a proposed geotrail in the Perth Hills. The first 5 steps of Gunn's model will be used for this study. Steps 6, 7, 8 and 9 will not be included as this requires an analysis on the conceptual design, financial, social, and physical feasibility of the trail, construction drawings, implementation, and evaluation of the finished product which are beyond the scope of this project. The Site Design Steps that will be used within this research include market analysis, program statement, site selection, site analysis, and synthesis.

This model incorporates the special needs of tourism within the planning and design process, and involves stakeholder input within the crucial synthesis stage (Step 5). Several other factors also influenced the choice of this model as the theoretical framework for this study; this model is appropriate for rural and small community settings and, as the Perth Hills is located in a rural-urban setting, tourism sites demand a higher level of resource protection especially within nature based tourism subsectors such as geotourism. This model incorporates the need for environmental perspectives from stakeholders, especially for economic, social, cultural and natural impacts. Overall, this model was considered to be an appropriate framework for the purpose of this study.
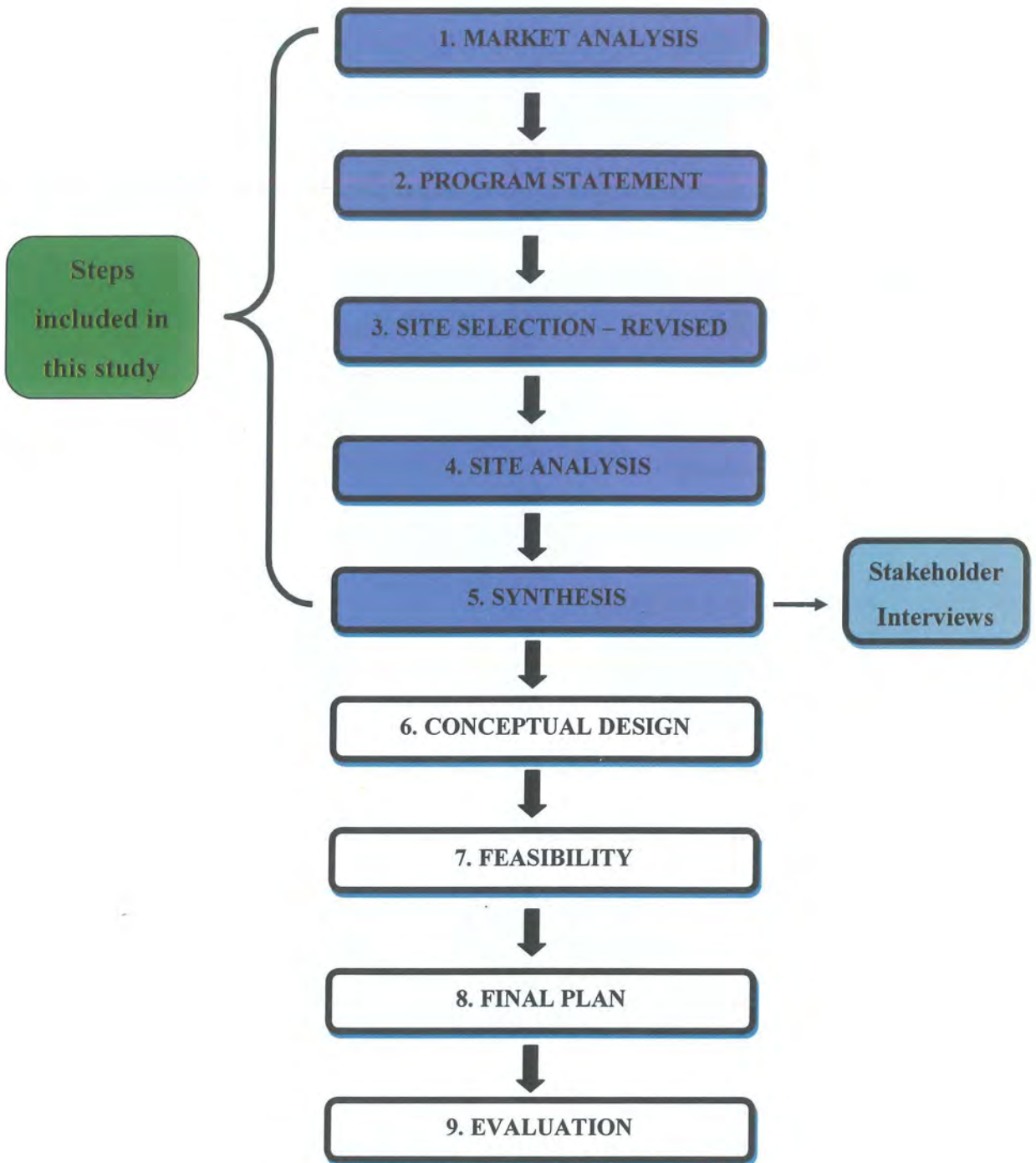
Figure 9: Site Design Steps (Gunn, 2002, p. 363)

3.2.1 Basic Assumptions

The fundamental assumption on which this study is based is that stakeholders have perceptions about developing a geotrail, and are either largely supportive or opposed to the plan. This also assumes that stakeholders will provide their ideas on behalf of the organization and stakeholder group they are representing, and not from their own personal beliefs. Another assumption is that the stakeholders interviewed represent the wider views of that particular stakeholder group.

3.3 Conceptual Framework

Based on the basic assumptions stated above, an adaptation taken from the literature reviewed (Chapter 2) was developed as the conceptual framework for this study (Figure 10). The framework clearly identifies the key stakeholder groups identified in the literature, the gathering of stakeholder perceptions, and the differing of opinions regarding the support of the geotrail plan.
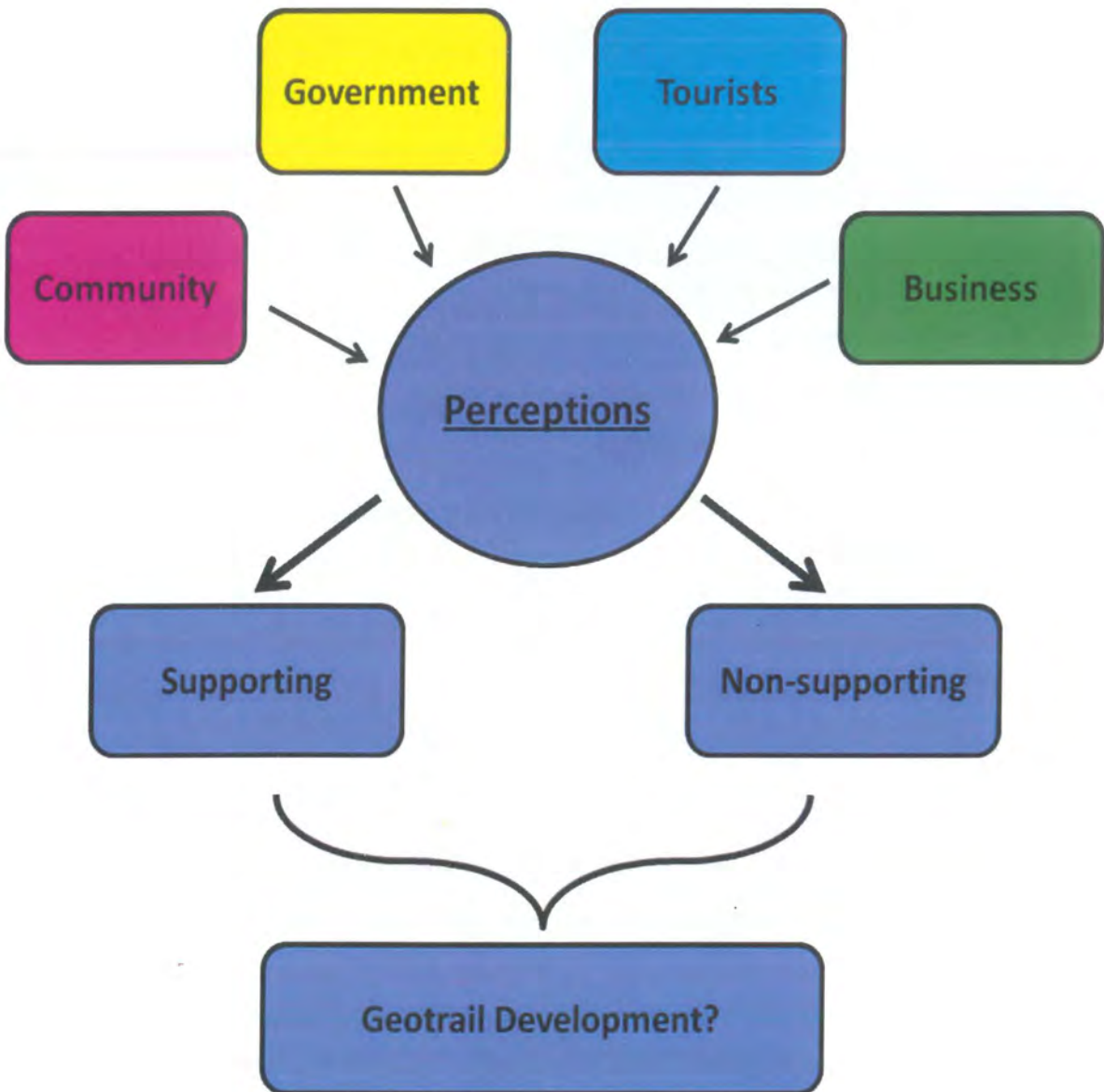
Figure 10: The Conceptual Framework showing use of stakeholder perceptions, in support of or opposed to a geotrail development.

3.4 Research Questions and Objectives

3.4.1 Key Research Question

What are the perceptions of stakeholders regarding the development of a proposed geotrail within the Perth Hills?

3.4.2 Research Objectives

- To identify a geotrail within the Perth Hills area
- To explore the perceptions of tourism stakeholders on the proposed geotrail plan
- To identify stakeholder groups that support and reject the proposed geotrail plan, and use their input to improve the design

3.4.3 Subsidiary Question

- What are the socio-cultural, natural and economic issues that may arise in the development of a geotrail?
- Do stakeholders know of any additional geosites that may be incorporated in the geotrail?

3.5 Purpose of the Study

The purpose of the study is to explore the perceptions of tourism development stakeholders on the development of a proposed geotrail in the Perth Hills. This will be done by identifying geosites of Indigenous, early European and geological importance within the Perth Hills and, with the use of Gunn's (2002) Site Design Steps, plan a proposed geotrail. In addition to this information, obtain stakeholder responses to the geotrail plan so that it can be amended and improved.

3.6 Choosing a Paradigm

This study will research perceptions of key stakeholders in regards to the development of a geotrail in the Perth Hills. According to Jennings (2010) this will use an interpretive social science paradigm to gather knowledge and identify similar ideas between stakeholder groups.

Based on the purpose of the study, qualitative information is required. As this study involves exploring stakeholder perceptions of a proposed geotrail, collecting qualitative data would allow concerns and issues to be raised, and also allow stakeholders the freedom to make suggestions. Though quantitative data would have provided statistical information, this would not have provided an in-depth insight into the issues and concerns stakeholders may have regarding the geotrail.

3.6.1 Rationale for a Qualitative Approach

The use of qualitative research methods is appropriate for exploratory studies such as this study (Jennings, 2010). By using such methods, a larger amount of rich information can be gathered from a smaller group of people, rather than a small amount of information from a wider group of people. This allows the researcher to gain a deeper knowledge of the issues involved in the study (Jennings, 2010).

Due to the lack of sufficient literature on the topic of geotourism stakeholders, an inductive approach was identified as suitable, and due to the exploratory nature of this study, a qualitative methodology allows flexibility in data collection and is not based on random sampling of the target population (Jennings, 2010).

3.6.3 Content Reliability and Validity

The reliability and validity of the study refer to the consistency and stability of the data that was collected. They are facilitated by the use of semi-structured, in-depth interviews to measure the concept of the study (Jennings, 2010). Reliability and validity were maintained throughout the data collection phase; questions that were asked of participants were from a

neutral perspective. This avoided any imposed bias influencing their answers; questions were open-ended to provide participants with the opportunity to compose, elaborate and explain answers, and give the opportunity for the researcher to probe and clarify responses. This promotes a rapport between participant and researcher (Smith, 2010).

All participants were asked permission to record the interview and signed a consent form outlining their rights as a research participant. They were made to feel comfortable before, during and after the interview to allow freedom of speech and truthful answers to emerge. In the interviews, the researcher avoided using jargon as this can lead to confusion and miscommunication.

Participants were given a 'key stakeholder information booklet' prior to interviews which contained information on the proposed geotrail. This booklet outlined the information gathered in the first four steps of Gunn's (2002) Site Design Steps and explained the importance of stakeholder inclusion in the synthesis stage (Step 5). It provided all participants with the same information so that individual perceptions could emerge, and also alleviated any feelings of doubt or confusion participants might have had.

Participants of the study were identified using a snow-ball interview technique (Currie, Seaton & Wesley, 2009; Timur & Getz, 2008). This technique provided the identification of authentic and trustworthy participants due to their knowledge and expertise in different fields related to tourism in the Perth Hills and geology.

3.7 Population and sample

3.7.1 Identifying the Target Population

The population for this study were non-Indigenous stakeholders from government, community, tourism business and tourist categories within the Eastern section of the 'Experience Perth' region depicted in Chapter 1. It was appropriate to involve participants within the Eastern region, as they have a deeper understanding of the range of issues that may surround the geotrail development in this local area. As geotourism is a relatively new

term used within Australia, a specific effort was made to include some stakeholders involved in geotourism within WA.

3.7.2 Identifying the Sample and Sample Size

Due to the size of the target population, and time and monetary limitations, a manageable sample was required from the target population. Having taken into account that some participants would not want to participate in the research, stakeholders involved in tourism planning and development in the Perth Hills area were chosen as the sample. Data was gathered from 14 stakeholders in this study (Figure 11); this number was appropriate due to the exploratory nature of the study. For example, a high degree of saturation was achieved within the government population (Jennings, 2010).
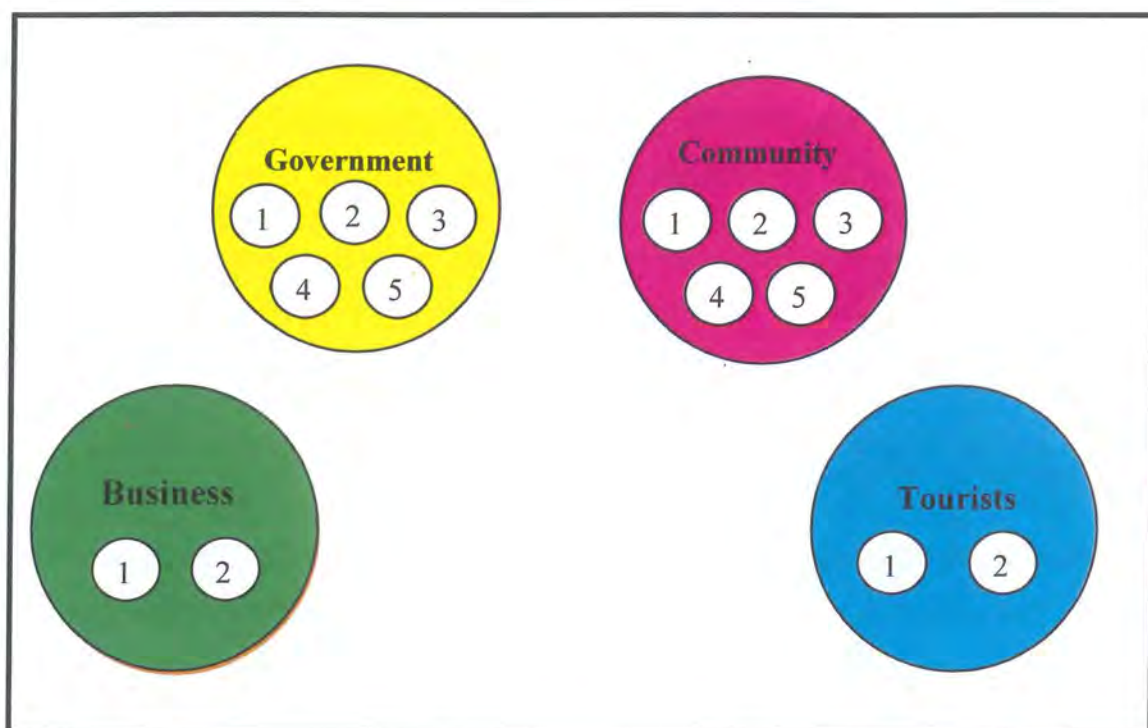
Figure 11: Sample Population

3.7.3 Sampling Method

As this study is exploratory in nature, non-probability sampling methods were used; in particular convenience sampling and snowball sampling. A snowball sampling method has been used in tourism studies to identify key informants for qualitative research (Currie, Seaton & Wesley, 2009; Timur & Getz, 2008; Timur & Getz, 2009), and was used to identify non-Indigenous key stakeholders from government, tourism businesses and community groups in this study; however, convenience sampling was used when participants identified through snowball sampling declined to participate, resulting in the researcher approaching a similar stakeholder. The use of convenience sampling enabled the identification of tourists to the Perth Hills (Altinay & Paraskevas, 2008; Veal, 2006).

3.8 Data Collection Methods

In-depth, semi-structured interviews were chosen as the most appropriate method of data collection, due to the inductive and exploratory nature of the study and the information-rich data that it provides (Jennings, 2010; Veal, 2006). The use of in-depth, semi-structured interviews allows freedom of modification of content according to the flow of conversation, the sequence of questions that are asked, and the content of the questions (Altinay & Paraskevas, 2008; Jennings, 2010).

3.8.1 Implementing the Research Instrument

Data collection was achieved through a series of in-depth, semi-structured interviews conducted within Perth city and the Eastern region during the three months of September - November 2010. Due to the nature of this qualitative method, the researcher was given control of topics covered, the structuring and sequencing of questions, and in some circumstances, the omission and addition of certain questions.

The use of an interview guide (Appendix 2) provided the researcher with a consistent set of questions for all participants, and provided prompts for further discussion on certain

questions (Altinay & Paraskevas, 2008). The interview guide was categorised into four main areas to ensure that the information by interview participants covered a wide range of topics. The four areas were;

- Participant information – The questions in this section was to get the participant talking about their role in the organisation, what it involves and also how long they had been with that organisation. A question was also asked as to whether or not participants lived in the Perth Hills.

- Introduction – Questions within this section were based on participants' perceptions of geotourism, geotourism in the Perth Hills, the proposed geotrail plan, and possible geosites that could be incorporated into the geotrail.

- Site specific – Questions covered in this section were site specific questions based on the three geosites identified. This involved the development of facilities at these geosites, and also the issues that may arise of the inclusion of these sites into the geotrail plan.

- Future opportunities/overall support – Questions within this area were based on participants' perceptions on the success of the geotrail in regards to employment and business opportunities, environmental impacts, marketing opportunities, and community response.

The structure and sequencing of these questions were dependent on the conversational flow (Altinay & Paraskevas, 2008), with certain questions being omitted for certain interview participants. Particular topics of interest that were identified during interviews were also added in following interviews.

3.8.2 Reflection on the Process

3.8.2.1 Pre-data Collection

Prior to the commencement of data collection, the researcher participated in the 'Bush Skills for the Hills' workshop organised by the Eastern Metropolitan Regional Council on 1st May, 2010. This workshop was aptly named 'Rock Group on Tour' and run by geologist, Patrick Maher from CSA Global. During this workshop, three geosites within the Shires of Mundaring and Kalamunda and the City of Swan were visited, with sites being recognised for their Indigenous, early European, and geological significance. Participants on this workshop were not approached to be included within the research, as the researcher felt that this would create bias due to the workshop participants' obvious interest in geotourism.

Potential participants that were identified through contact referral were approached to participate in the study, and upon acceptance were given a 'key stakeholder information booklet' regarding the geotrail plan. This booklet provided participants with background information into the tourism industry in Perth and the Eastern Region, geotourism, the aim of the proposed geotrail, identified geosites, and the route of the geotrail. The information booklet was provided to participants to alleviate any doubt of miscommunication and provide stakeholders with factual information to answer the interview questions based on their perceptions of the geotrail.

3.8.2.2 Data Collection

Data collection started on the 24th September and was completed 24th November, 2010. Interviews were between 20 to 40 minutes duration, and held at a time and place convenient to the participant. Participants were given an information letter and consent form to sign prior to the commencement of the interview, and given the opportunity to clarify any questions they had regarding the geotrail plan.

3.8.2.3 Post-data Collection

Participants were given the opportunity to ask questions after the interview and also if they would like feedback regarding the progress of the study and the findings of the research after the study was completed. Audio data collected during the interview process was transcribed, reviewed, categorised and coded (Government: Gov.1 - 6; Community: Com.1 - 3; Business: Bus.1 - 2; Tourists: Tour.1-2); during the review of data, any themes that were identified were followed up in subsequent interviews. The interview transcripts and audio recorder were held secure in a locked location throughout the coding and analysis stage, as per the requirements of Edith Cowan University.

3.9 Data Analysis

The data collected for this study was primary in nature therefore the researcher used a constant comparative method to compare and code data, identifying themes and patterns that emerged in the interview transcripts that could be included in subsequent interviews (Smith, 2010). Themes that were identified were placed onto a Microsoft Office Excel Spreadsheet for ease of analysis. After the interviews took place, they were immediately transcribed into word documents, with each transcript given a code to identify the stakeholder group and number (e.g. Gov.1-5, Bus.1-2, Com.1-5, Tour.1-2). These transcripts and other confidential information were then securely stored in a locked filing cabinet. Once transcripts were read, priori codes, sub themes and inductive codes were identified using constant comparative analysis, which were then colour coded in the transcripts and grouped together according to relationships. The findings chapter presents the research of the geotrail for Steps 1 to 4 of Gunn's (2002) Site Design Steps, and the interview responses by stakeholders to meet the requirements of Step 5.

3.10 Ethical Standards

Before commencement, the Faculty Ethics Sub-committee of Edith Cowan University approved the research component of the study. As the data collection method in the research involved semi-structured, in-depth interviews of key stakeholders, this method had

to abide by the established guidelines of the National Statement on Ethical Conduct in Human Research.

In accordance with these guidelines, interviews only commenced after participants had read and understood the information letter provided to them and signed the consent form (Appendices 3 & 4). Each participant's identity has been kept confidential through the use of codes throughout all documentation, and transcripts and audio recordings kept in a secure locked location with access only by researcher. The audio-tapes and transcripts will be destroyed on completion of the prescribed period as per the requirements of the university.

3.11 Limitations of the Study

Time and cost restraints were the main limitations within this study, which influenced several aspects of this study. Due to ethics restrictions, only non-Indigenous stakeholders were permitted to be interviewed and included within the research. Research involving Indigenous stakeholders required specific criteria to be met before the Edith Cowan University Ethics Committee approved research, and due to time constraints within the Honours research period, this could not be met. As a cause of this, the following limitations also apply;

- The results of the research do not include the perceptions of Indigenous stakeholders, and the snowball interview technique did not include Indigenous stakeholders.

- Only a small percentage of all stakeholders could be interviewed to be included in the study, and as such, the findings represent the perceptions of stakeholders that were interviewed and not the whole population of stakeholders.

- There were some participants that could not, or did not, participate in the study. Due to the snowball interview technique that was implemented in the study, this was overcome by the referral of another appropriate participant to be included.

CHAPTER FOUR - FINDINGS

4.1 Introduction

This chapter reports the findings of the application of Steps 1 to 5 of Gunn's (2002) Site Design Steps. As discussed in chapter three, these 5 Steps outline the market analysis, program statement, identification of sites, analysis of these sites, and synthesis of stakeholder perceptions of the proposed geotrail. During the synthesis stage (Step 5), interviews were conducted with stakeholders of the proposed geotrail, including members from the government, community, business and tourist groups. The synthesis stage directly seeks the information that was needed to answer the research question for this project; however the previous four steps researched the background information required to develop the proposed geotrail, which was provided to stakeholders to give them a clear understanding of the project.

The Perth Hills are located to the east of Perth City, involving the Shires of Kalamunda and Mundaring. It is known for the Mundaring Weir, the Kalamunda and Mundaring markets, and the many trails located throughout the area, in particular the Bibbulmun Track and the Munda Biddi. Of the three geosites that were identified on the Rock Group Tour and included in this study, one geosite is located within the City of Swan land; therefore statistics involving the City of Swan will be included in the market research. Themes identified through stakeholder interviews were geotourism in the Perth Hills, impacts of the proposed geotrail, geotrail management, tourists, marketing, education, interpretation and geotrail sites.

4.2 Step 1: Market Analysis

Step one in Gunn's (2002) Site Design Steps is focused on the analysis of the market, highlighting the different tourism markets, focusing on the specific characteristics of travellers, providing an overview of already existing tourism products, and identifying new tourism opportunities. This information analyses data gathered from the 'Experience Perth'

region and then narrowing down to the more specific 'City of Swan' and 'Perth Hills' areas within the Eastern region.

4.2.1 Different tourism markets

Western Australia's tourism regions are defined to five major areas; Australia's North West, Australia's Golden Outback, Australia's Coral Coast, Experience Perth, and Australia's South West. Each of these regions holds varying sites, scenery, attractions, and climate conditions to other regions, giving WA a unique blend of destinations.

The 'Experience Perth' tourism region is the area located near the city of Perth, stretching to the far north just past the coastal town of Lancelin, to the southern city of Mandurah and to the East to Northam (refers to Figure 2); the Perth Hills is located within this tourism region. Even though the Perth Hills is within the 'Experience Perth' region, research regarding this area is dramatically skewed due to the visitor numbers to Perth city and is therefore not applicable to the visitor numbers to the Perth Hills.

Research conducted by Patterson Market Research for the Eastern Metropolitan Regional Council in 2007 provides current research statistics regarding visitors in the Shires of Mundaring and Kalamunda (Patterson Market Research, 2007).

4.2.1.1 Visitors to the Perth Hills

The research from Patterson Market Research on visitors to the Perth Hills found the following;

- 38% of visitors travelled in a family group, 29% as a group of friends, 21% as a couple, 11% other, and only 1% with a tour group.
- 51% of visitors were within the ages of 36 and 55, 26% were aged 17 to 35 years, and 22% were 56 and over.
- 94% of visitors were from Perth, with 6% either interstate or overseas visitors.

- 40% of visitors had been to the Hills area six or more times over 2 years, with 12% of these visitors having visited over 12 times. 37% had visited the area 2 to 5 times in 2 years.

- There has been evidence of multiple day visits, but with little overnight stays in the area.

- The main appeal of the Perth Hills was for a 'day out', followed by both 'visiting Kalamunda Markets' and 'Harvest Festival activities'.

- 7 out of 10 visitors stay longer than 3 hours, 1 in 5 visitors stay between 2 to 3 hours, 6% stay overnight, with only 2% staying less than 2 hours.

- The 6 most popular attractions of the Perth Hills area are markets, harvest festival, setting/scenery, ambience/atmosphere, family/friends in the area, and drive/day out.

- 70% of visitors were satisfied with signage, 73% were satisfied with facilities, 75% were satisfied with the standard of food or beverages, 87% were satisfied with the overall value for money, 84% were satisfied with the standard of service provided, and 74% were satisfied with the operating hours.

- 32% of visitors visited the Perth Hills due to word of mouth, 24% had previously experienced or regularly visited the area.

- 14% of visitors said that the Perth Hills would be more attractive with 'better marketing/advertising', 12% said 'more information in/about the area' and 10% said 'places to eat'.

(Patterson Market Research, 2007)

As this information shows there is a high level of repeat visitation to the area, with majority of visitors from Perth. Word-of-mouth was the primary method of advertising for the Perth Hills, with people visiting for a 'day out' and for the Kalamunda Markets. Visitors were overall satisfied with the Perth Hills experience, with notice of improvements on advertising, the amount of information provided to visitors, and providing more restaurants. This research is from 2007, and even though it is still valid, there has been an increase in the amount of restaurants in the area.

4.2.1.1 The City of Swan

The City of Swan is located only 25 minutes from the city of Perth, and is one of the oldest wine growing regions in Western Australia and it is known for the many breweries, wineries and restaurants located within this area.

Tourism Western Australia's published City of Swan's Overnight Visitor Fact Sheet contains the average annual statistics of the years ending in 2007, 2008 and 2009 (Tourism Western Australia, n.d). As these are the averages of the combined three years, this is just a representation and not the true number; however the following statistics (Table 1) were recorded, outlining the characteristics of domestic and international travellers to the City of Swan.

Table 1: Domestic and International markets for City of Swan

(2007, 2008 & 2009 annual average).

	Domestic	**International**
Percentage of market	86%	14%
Visitor nights spent	205,700	285,500
Length of stay	2.7 days	22.5 nights
Gender	54% female 46% male	49% female 51% male
Age	15-24 (18%) 25-44 (33%) 45-64 (37%) 65+ (13%)	15-24 (12%) 25-44 (31%) 45-64 (43%) 65+ (15%)
Travel grouping	Adult couple (39%) Alone (26%) Family group (17%) Friends or relatives (16%) Unidentified party (3%)	Alone (43%) Adult couple (32%) Friends or relatives (13%) Family group (11%) Unidentified party (1%)
Purpose of visit	Holiday or leisure (31,700) VFR (31,300) Business (5,300) Other (7,300)	VFR (6,500) Holiday/pleasure (4,900) Business (400) Other (1,100)

Source: (Tourism Western Australia, n.d).

The findings of these statistics for visitors to the City of Swan are similar to the statistics found in Experience Perth; the majority of visitors are domestic with a smaller percentage of international visitors; the majority of visitors are aged 25 to 64 years; and the main purpose of visiting the City of Swan was to 'visit family and friends' and 'holiday and leisure'.

It should be noted here that the numbers representing international and domestic tourists in this section is out of proportion therefore only represent a small sample size, especially in the international visitors' findings.

4.2.2 Characteristics of visitors

Geotourism is a relatively new form of tourism that can occur in natural (Newsome and Dowling, 2010). Research into Australian nature visitors and geotourists can provide insight into the characteristics of potential visitors to the proposed geotrail in the Perth Hills.

4.2.2.1 Nature Tourists

As geotourism is often a subsector of natural area tourism (Newsome & Dowling, 2010), it is relevant to view the statistics of domestic and international nature tourists to Australia. According to Tourism Research Australia (2010, p. 1) a nature visitor is defined as 'a domestic or international visitor who participated in at least one of the following seven nature activities while travelling in Australia in 2009:

- Visit National parks or State parks
- Visit wildlife parks, zoos or aquariums
- Visit botanical or other public gardens
- Bushwalking or rainforest walks
- Whale or dolphin watching (in the ocean)
- Snorkelling
- Scuba Diving

In Australia, nature tourism is important, as many of Australia's iconic features are natural; i.e. Uluru, the Great Barrier Reef, and the Bungle Bungle range in Purnululu National Park. The following table (Table 2) identifies nature tourists and their characteristics, also outlining the differences and similarities of domestic and international tourist markets.

This table shows that domestic tourists are the biggest market in terms of participants in nature activities; however, 65% of all international visitors are nature tourists that participate in at least one nature activity, with 44% of that group participating in 3 or more activities. This can be due to the fact that international visitors stay for a longer period of time than domestic visitors (approximately 6 times longer than domestic visitors stay).

Table 2: Nature Tourists in Australia 2009

	Domestic	**International**
No. of nature tourists	12.46 million (overnight trips) 12.55 (day trips)	3.3 million
Most popular nature activities	Bushwalking/rainforest walks Visiting National parks or State parks	Visiting National parks or State parks Visiting wildlife parks, zoos or aquariums Visiting botanical or other public gardens
Expenditure	$12.6 billion	$19.5 billion
Purpose of visit	holiday VFR	Holiday (57%) VFR (23%)
State	NT (41%) TAS (31%)	NT (91%) TAS (85%) SA (81%)
Country of origin		United Kingdom (15%) New Zealand (12%) USA (10%)

Source: Tourism Research Australia, 2010

4.2.2.2 Geotourists

It is important for tourism planners to research the characteristics, demographics and motivations of the people who will be interested and participate in tourism activities. The term 'geotourism' is relatively new and there have been a small amount of research conducted on identifying 'geotourists', who they are and what they want out of a geotourism experience.

One of the first studies that were conducted to identify geotourists was performed in 1996 by Page, Keene, Edmonds and Hose (1996). This study consisted of an audit of visitors to the Centre of the Dorset and East Devon Coast. The findings of this audit were as follows;

- Two-thirds were first time arrivals and many were casual arrivals; that is, their visit was unplanned on the day
- About two-thirds arrived in family groups and about one-quarter arrived alone or in couples
- Almost half were aged 30-44 years and almost as many were aged 45-64 years
- One-third had studied geology to some level
- A fifth were hobby geologists

The audit found that there were two main groups identified as the target audience for geotourism; these were families with young children and mature couples.

A study conducted by Kim, Kim, Park and Guo (2008) was based on the characteristics and motivations of geotourists visiting the Hwansun Cave in Shamchuk city, Korea. Questionnaires were used to gather information on 537 people who had visited the caves and the following characteristics were found;

Demographics

- There were more male visitors than female, with 71% being single
- The majority of the visitors were in their twenties, thirties and fifties
- Visitors mainly travelled with family or relatives, and friends
- The majority of the visitors got their information from friends and relatives (29.6%) with the internet and past experience also being high percentages
- 55% of respondents indicated the main purpose of their visit was linked to visiting the caves; 58.9% of respondents were first time visitors and 24.3% were second time visitors

Respondents showed a high level of agreement on the conservation of cave tourism resources, preserving cave tourism resources as a priority, and a need for efforts to conserve cave tourism resources at the government level. The results also indicated relative agreement on the need of levying taxes or funds to conserve cave tourism resources, or

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attachment to cave tourism resources. Respondents preferred 'tours with experts who motivate an interest in cave tourism', 'collection of cave fossils and cave exploration', 'cave-related events', 'educational programs regarding history of the caves and their present state' and 'gift shopping regarding cave tourism resources'.

There were four main groups identified within the research;

Escape-seeking group: This group was the least likely to return to visit cave tours as they were the least satisfied group, they participated on the cave tour to enhance their quality of life, they have low beliefs about cave tourism resources, low satisfaction in the cave tours, low willingness to participate in other cave tours; they were most likely to be male, married, aged in their 40's or 50's, college graduates, high school or below, have a relatively high income, and most likely to be engineers or work in an office.

Knowledge and novelty-seeking group: Visitors within this group are more likely to return to participate on a cave tour, most likely to participate in cave tours for the experiential value, have high beliefs about cave tourism resources, had medium satisfaction with the cave tours, and medium willingness to participate in another cave tour. People within this group would most likely to be male, married, in their twenties, college students, high school or below, earning relatively medium income, and would be professionals.

Novelty-seeking group: This group had significant levels of satisfaction of the cave tours; they place importance on preserving cave tourism resources, have high beliefs about cave tourism resources, and have a medium level of willingness to participate in another cave tour. People within this group are most likely to be female, married, in their twenties and thirties, college graduates, earning relatively medium income, and professionals.

Socialization-seeking group: People within this group are most likely to participate in cave tours for socializing reasons, have a medium interest in cave resource preservation, have low levels of return rate to participate in another cave tour, and have low satisfaction with the cave tour.

4.2.3 Existing tourism products

4.2.3.1 Western Australia's trails

Western Australia has over 700 trails located throughout the State, ranging from bush walks to snorkelling trails. A Federal Government funded project called TopTrailsWA was created to promote trails that present the best attributes of Western Australia, encourage people to participate in these trails, and also promote the experiences that can be had in Western Australia. During October 2009, trails were nominated to be a part of the 50 trails to represent WA, with just over 50 chosen to be included in the TopTrailsWA project (TopTrailsWA, n.d).

4.2.3.2 Perth's Eastern Region trails

This area is classified into three sub-areas; the Swan River, the Perth Hills and the Swan Valley, as seen in Figure 12. These areas range from a 15 minute drive from Perth City to roughly an hour drive to the far reaches of the Swan Valley and Perth Hills.

This area has a variety of trail experiences, including art and heritage trails, cycle trails, walk trails, mountain bike trails and also food and wine trails, whilst based around the beautiful surroundings of the iconic Swan River, the famous Swan Valley vineyards, and the many National Parks within the Perth Hills; there are also ten of Western Australia's 'Top Trails' located in this area. Altogether, there are 41 trails advertised within this area (TopTrailsWA, n.d).
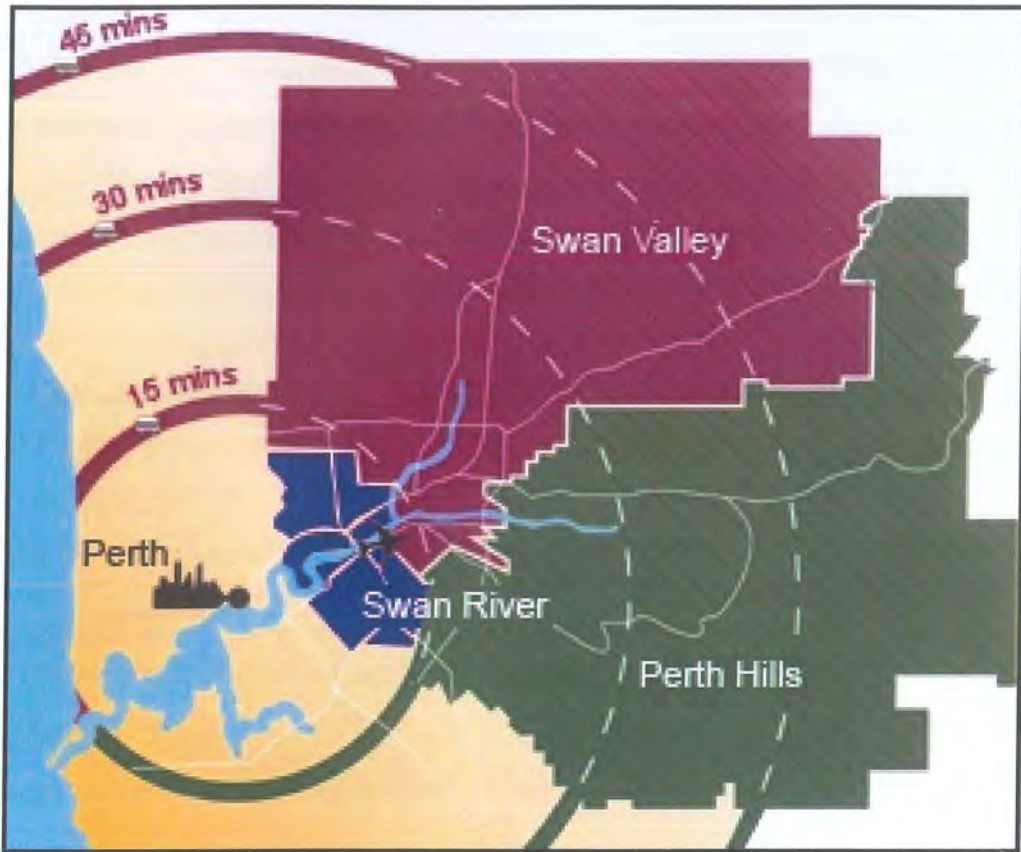
Figure 12: Perth's Eastern Regions (Perthtourism.com.au, n.d.)

4.2.4 Geotourism products

Geotourism is a new term in the tourism industry, but it is by no means a new form of tourism. People want new and exciting experiences, and travelling to geological sites gives people the opportunity to fulfil the deep aspect of our humanity to have a sense of wonder about our planet (Newsome & Dowling, 2010, p. 1). Perth and its surrounding areas have several geological formations that are quite popular amongst visitors and locals. The following sites are the most commonly known ones.

Wave Rock is located near the Wheatbelt town of Hyden, Western Australia. This rock gets its name from the 12 metre wave formation that was formed by the weathering of the 2600 million old granite rock by groundwater when it was covered with sand and soil. The rusty

red ochre and grey vertical stripes that are seen on the rock have been caused by algal growth, and the darker stains are living algae (Copp, 2001).

The **Pinnacles** are a part of Nambung National Park which covers an area of 17,487 hectares. The Pinnacles Desert is all that remains of the sand dune system that formed a million years ago. The Tamala Limestone pillars can reach up to 3.5 metres tall and come in a range of shapes. The limestone were formed when lime and quartz sand was brought ashore by waves and carried inland by the wind, which were then cemented together with calcium carbonate from the lime. The formation of the limestone pillars were due to the leaching of acidic soil from the vegetation that was once on the sand dunes, forming a hard calcrete layer. The roots of the vegetation found openings in the cracks in the calcrete, allowing water to seep in and leach away insoluble quartz sand, leaving the thick limestone that was eroded to form the pillars (Copp, 2001). The Nambung National Park has a Pinnacles Desert Discovery Centre with interpretive displays on the native flora and fauna of the area.

4.2.5 Major tourist attractions in Perth and surrounding areas

The most popular place to visit for intrastate, interstate and international visitors is the City of Perth, with overwhelming results (Table 1). The city not only has the museum of WA, art galleries, multiple shopping and dining experiences, and the nightlife centre of Northbridge, but also has the Swan River and King's Park which are iconic features of Perth.

The Experience Perth Holiday Planner 2010/2011 (Experience Perth, n.d., p. 21) identifies the main attractions of Perth as Adventure World, AQWA, Araluen Botanic Garden, Burswood Park, Captain Cook Cruises, Caversham Wildlife Park, Fremantle Prison, Kings Park, Perth Zoo, Rockingham Wild Encounters, SciTech, The Bell Tower, The Perth Mint, Western Australian Maritime Museum and Whiteman Park.

4.2.6 New market opportunities

There is great opportunity for Perth with the increasing popularity of geotourism. This increase in popularity can be seen with Australia's first Global Geopark Kanawinka Geopark being announced in 2008. The name Kanawinka is used for the geological fault line that is across the region, which was also used as a Parish name in 1911, therefore linking Indigenous, European and geological history together in one name (McKnight, 2008). A geopark is a 'nationally protected area containing a number of geological heritage sites of particular importance, rarity or aesthetic appeal. These Earth heritage sites are part of an integrated concept of protection, education and sustainable development. A geopark achieves its goals through a three-pronged approach: conservation, education, and geotourism' (UNESCO, 2009, para.1), and Kanawinka Geopark has 3 major geological and geographical features which make the area so important; volcanoes, limestone and coastline.

The region around Perth has several geological sites of importance that can link Indigenous, European and geological history together. One of these regions is the Perth Hills which are a part of a the Darling Fault that runs over 1000 kilometres from the area east of Shark Bay in the north to the east of Albany on the south coast. The sites within this area of Indigenous, early European, and geological significance can be linked together as a geotrail to offer residents and visitors to Perth an opportunity to learn and appreciate the history and importance of certain geosites. The introduction of a geotrail could also have the potential to attract both local and international visitors to the Perth Hills area.

4.3 Step 2: Program Definition

This program identified three geosites that incorporate Indigenous, early European and geological history of importance and significance within the Perth Hills. This area includes the City of Swan, the Shire of Mundaring and the Shire of Kalamunda. This area boasts a wide selection of nature based trails and several National Parks, and has opportunity to include geotourism in its tourism mix. The three identified sites will then be linked to form a geotrail which will inform and educate visitors on the importance of each site, the history of the site and the uniqueness of the area.

4.4 Step 3: Site selection

Step 3 of Gunn's (2002) Site Design Steps involves a preliminary study on the appropriateness of three or four sites to be used. The Eastern Metropolitan Regional Council held a series of workshops throughout 2010 called 'Bush Skills for the Hills' in which people could participate in to gather knowledge about the hills in regards to vegetation, wildlife and geology. Patrick Maher, a geologist from CSA Global, was the tour guide for the "Rock Group on Tour" workshop which was held on Saturday 1st May, 2010. This tour visited three sites within the Perth Hills area that were sites that possessed sites of geological importance. These sites were Red Hill Quarry, Boya Mountain Quarry and the Zig Zag.

The **Red Hill Quarry** is located along Toodyay Road, next to the Red Hill Waste Management Facility which is run by the EMRC. This site is on City of Swan's land and is recognised as an important site to Nyungar Elders and Traditional Owners; in particular, the prominent standing stone is recorded as the "owl stone" (*Boyay Gogomat*) which is reported to be a site of high spiritual and cultural significance (Macintyre & Dobson, 2009).

This site also has the presence of white ochre which has been used for Indigenous ceremonies. This site is located on the Aboriginal Inquiry System as a site of importance due to this white ochre (Maher, 2010a); the white ochre is made into a paste and spread in a pattern onto bodies for ceremonial purposes. This particular site was also a Midland Brick Quarry which used clays for industrial purposes.

The **Boya Mountain Quarry** is listed as an important site by the Heritage Council of Western Australia. This quarry is a 'granite and diorite quarry comprising six quarry faces, the remains of two concrete crushing plants and associated concrete engine beds, the remains of a concrete and stone compressor building together with associated concrete engine beds, a short stretch of railway track and the formation for the main spur line which served the quarries' (Heritage Council of Western Australia, 2005, p. 2). This site is important due to;

- The potential to reveal archaeological information about stone crushing technology and quarry operations from the first quarter of the twentieth century, as it was the only quarry established under the Government Trading Concerns Act of 1912

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- The site has retained the physical remains of two separate stone crushing buildings and the remains of the compressor building
- The stones from the quarry were used to build the north mole of the Fremantle Harbour
- This site is associated with the development of the quarrying industry in the Mundaring shire, which started in the 1870s, and
- The site contrasts natural bushland, quarry faces and the remains of the crushing buildings to create a visually powerful and evocative landscape.

(Heritage Council of Western Australia, 2005)

The **Zig Zag** is the trail that was once a railway line that ran through Kalamunda in 1891. Due to the steep 1 in 30 grade of the Darling Range, the railway line had to have switching points (zig zags) where the train could reverse direction. After the railway was closed and the rails were removed, a narrow bitumen road was built which is now a popular spot for people to view the city from the top of the hill (Railtrails Australia, n.d.). The Zig Zag can be driven (one way – top to bottom), walked or cycled.

4.5 Step 4: Site analysis

Step 4 of Gunn's (2002) Site Design Steps includes a detailed analysis to be performed on the sites selected to be involved in the project, including on-site and off-site factors. Molnar and Rutledge (cited in Gunn, 2002, p. 365) identify several factors that have to be considered when completing a site analysis which will be followed in conducting a site analysis of the three sites recognised in Step 3.

4.5.1 Red Hill Quarry

<u>On-site Factors</u>

Constructed elements of the site are very minimal; there is a semi-designated path located throughout the bushland, and a small steel bench. There are no signs detailing the importance of the area or any other form of amenities.

The natural resources include a water body located in the middle of the site, several trees, and scrub land (Figure 13). The soil types within the area include clay and ochre (Figure 14). Ochre (the Greek word for *yellow*) is a pigment made from naturally tinted clay; this can be explained chemically as hydrated siliceous, aluminium or iron oxide and it forms from the weathering of rock (Maher, 2010a). There is no unique vegetation or wildlife that can be seen within the area.

The perpetual characteristics of the site include the aesthetic appeal. This site is situated along Toodyay Road and is easily passed as there is no signage to the picnic site. Due to this, the site does not appear to be used regularly, with some of the bushland stretching over the narrow path that is carved out of the bushland.

Figure 13: Red Hill Quarry (facing north)

Figure 14: Red Hill quarry with white ochre deposits (facing east)

Off-site factors

This site is located next to the Red Hill Waste Management site that is run by the EMRC on behalf of the Town of Bassendean, City of Bayswater, City of Belmont, Shire of Kalamunda, Shire of Mundaring and the City of Swan. This facility is open 362 days of the year and has been operating for the past 22 years. Before it was a landfill site, the area was used as a borrow pit for pisolitic laterite gravel by the Department of Main Roads for road construction (EMRC, n.d.). The close proximity of the Red Hill Waste Centre may create an issue in regards to smell and zoning regulation.

As the site is located along Toodyay Road there is a reasonable amount of traffic along the highway; this may create noise as trucks change gears to go up and down the hill. Overall, this site would be a great place for a small picnic spot. There are not many places along Toodyay road to stop and due to the significance of the site, this particular site has potential to become a new attraction. There is not any signage for the area and no information panels

educating visitors of the importance of the site which would be very beneficial in relaying the message of education and conservation.

4.5.2 Boya Mountain Quarry

On-site factors

Constructed elements include a path leading from the car park to the quarry, an information panel relaying the history of the railway line that ran near the site in the early 1800s, there is a long-drop toilet block and an undercover bench seat located near the quarry, and an interpretive panel of the geology of the quarry faces in the middle of the quarry. There are also pieces of early machinery that was used during quarry blasting embedded in the rock. This site is currently used as a walk and cycle trail and is also a popular place for absailers.

The natural resource of the site is the quarry itself. The quarry boasts many examples of geological phenomena, which the interpretive panel explains so that visitors can understand the formations.

The perpetual characteristics include the aesthetic appeal of the quarry face and its magnitude, giving the quarry an open, semi-circle formation (Figure 15). The design texture of the quarry involves many textures, lines and colours created from the differing shapes, age and composition of the rocks (Figure 16). Overall, this site is an interesting place for geology enthusiasts due to the amazing features the quarry possesses.

Figure 15: Boya Mountain Quarry (facing north)

Figure 16: Boya Mountain Quarry (facing east)

4.5.3 Zig Zag

On-site factors

Constructed elements of the site include a car park and a 3 kilometre road that runs from the top of the Zig Zag to the bottom. The site is a semi-residential area in Kalamunda, however there are two designated look-outs located near the beginning of the trail. The only way to get to this trail is via Lascelles Parade, Kalamunda. However, the trail is only one-way as drivers cannot drive up the Zig Zag but must go up Kalamunda Road or Gooseberry Hill. Cyclists and walkers however can go up the Zig Zag if they so wish but should be wary of drivers.

Natural resources of this site includes natural vegetation and wildlife and most recognisable, the view of Perth City. The topography of this site is due to its location along the Darling Scarp, a part of the extensive Darling Fault. The soil types include crystalline rocks including granite and metamorphic rocks (Gozzard, 2007) with the Archean granites and gneisses of the Yilgarn Craton forming the high ground of the Perth (Maher, 2010a).

Perpetual characteristics include the wide view of the flatlands, including Perth City and occasionally the glimmer of the ocean. Overall impressions of this site are positive, with a great opportunity to increase the number of visitors to this site which is one of the few vantage points to view Perth City (Figure 17).

Figure 17: View of Perth from the Zig Zag (McCooke, n.d)

4.5.4 Geotrail plan

The proposed geotrail route begins at Red Hill Ochre Site along Toodyay Road, and then continues down Stoneville Road through the town of Mundaring (Figure 18). The geotrail continues along Mundaring Weir Road, which reaches a round-a-bout, and by turning right along Railway Parade this will take drivers through the centre of Kalamunda. By turning right at Gooseberry Hill and left at Williams Street, this will eventually lead to the Zig Zag trail, which is a one-way road (from top to bottom). This reaches a T-junction along Ridge Hill road, and by turning right along Ridge Hill Road, right at Scott Street and right at Marriott Road, this will lead to the Boya Mountain Quarry.
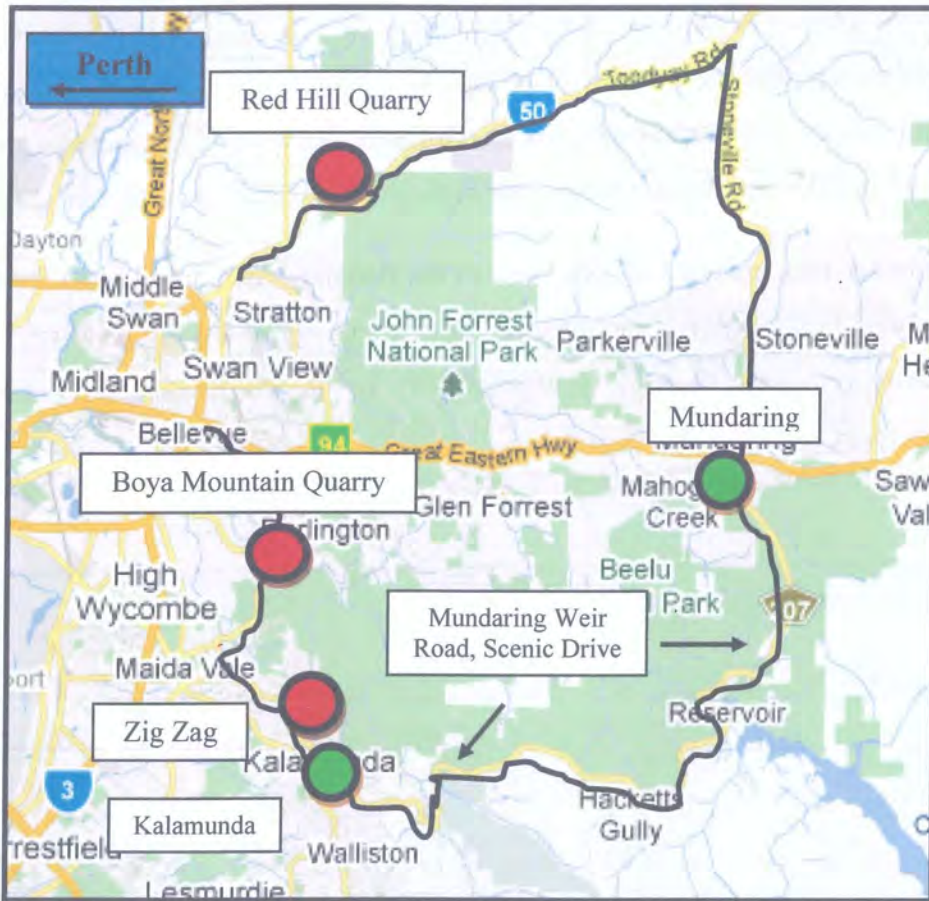
Figure 18: Map of proposed geotrail plan (Google, 2010)

Already identified geosites

Village hubs

This route is easy to follow and incorporates both the Mundaring and Kalamunda towns, the iconic Mundaring Weir, the beautiful scenic drive along Mundaring Weir Road, and also gives visitors the opportunity to see the many activities and attractions the Shires of Mundaring and Kalamunda offer. This geotrail also provides visitors to the City of Swan a gate-way into the rest of the Perth Hills.

4.6 Step 5: Synthesis

Step 5 in Gunn's (2002) Site Design Steps involves public participation and sustainable assessment. At this point in the planning stage, stakeholders identified to be included in the research were interviewed regarding the geotrail and the issues that may be involved if the proposed geotrail was developed. Five government, five community, two business and two tourists were included in the research.

Reponses in the interview are presented under the following main themes; geotourism in the Perth Hills, impacts of the proposed geotrail, tourists, marketing, education, facilities, and identified and potential geotrail sites and their issues. An overview of key findings will be presented and discussed in the following chapter.

4.6.1 Geotourism in the Perth Hills

Geotourism was a term that the majority of stakeholders had heard before, in particular government and community stakeholders, however there were mixed views as to the success of geotourism in the Perth Hills. Stakeholders who viewed the geotrail as an opportunity made comments such as '...*anything that brings people up into the hills is quite fine with us...*' (Com.2), '*anything that could help take people from the city and bring them into the hills deserves investigation and deserves funding...*' (Com.1), and '*we recognized that the Perth Hills was an ideal location for that kind of product (geotourism), so it would appear to me, with my experience up there, that it would be a very good area for it*' (Gov.3). There were stakeholders that viewed the geotrail as an opportunity for creating a '*point of difference*' (Gov.3), especially in regards to the Swan Valley.

However, there were stakeholders that felt that even though the Perth Hills has geosites of importance, these sites were not unique enough to warrant a geotourism identity within the area; *'I think you'd need to have something really unique to make the Perth hills the new geotourism hotspot' (Gov.2)*. Similar to this view, there were stakeholders that perceived the geotrail would provide a different experience and an additional product for tourism in the Perth Hills, however, would not be the main attraction for tourists; *'I think it could be one of; it certainly wouldn't be the only one' (Gov.1)*.

Contrary to these perceptions, there were stakeholders who viewed the geotrail as an opportunity to highlight the unique products the Perth Hills has to offer, providing a point of difference among other Perth destinations; *'Absolutely, because there are very few other places in Western Australia that have what is to be potentially called a geotrail, it would be a unique marketing thing for the hills to have one, and would probably be one of the first in Western Australia to have a geotrail (Com.1); 'I think that it is a unique product and the key thing is for any product is that it is giving a little more diversity for reasons for people to come to the hills' (Gov.3); '...in 20 years time we are going to be the King's Park of Perth because the place is going to grow, and the Perth Hills has to be more of an attraction in the future (Gov.6)*.

Several stakeholders mentioned that the success of the geotrail would depend on its ability to integrate and correlate with other tourism products in the hills, in particular, other trails located throughout the area, and food and beverage outlets; *'...integrating the trails that are already up there into developing more geological information... If you had any way of finding maybe one or two good local stopping points, any good pubs or restaurants along the road then that might encourage people to take it...' (Com.1)*; *'I think it would just add an extra layer...people come up here anyway, but maybe they might stay longer, and do a bit more and explore a bit further' (Gov.6)*; *'It's about integrating geotourism into already existing tourism and just giving it another focus I suppose. It might not draw in thousands of people but it is another thing that is interesting...' (Com.4)*. Several government stakeholders identified the possibility of integrating the trail into the popular walk and cycle trails, the Munda Biddi and Bibbulmun Track, at points of intersection and also the Railway Reserves Heritage Trail that runs alongside the Boya Mountain Quarry site.

4.6.2 Impacts of the proposed geotrail

Following Gunn's (2002) Site Design Steps, stakeholders were prompted to comment on the proposed geotrail's impact on the environmental sustainability of the area, involving economic and social issues, and also natural and cultural concerns.

4.6.2.1 Economic impacts

The economic benefits of the proposed trail included the possible expansion of existing businesses or the development of new ones. There was a divide in stakeholders regarding whether or not the geotrail would provide the area with enough visitors to warrant any new business development or expansion. Stakeholders who did not think that it would create any new businesses did acknowledge that there may be opportunities for more work for already existing business; *'it would create more jobs for the people that already exist rather than them employing someone else to do it' (Gov.2); '...as a tour operator I could possibly put this onto my itinerary as well' (Bus.1); '...that helps continue employment for the current people there and... brings people up and justifies their existence' (Com.2).* A government stakeholder identified the current efforts that are being put in place to create business for the Munda Biddi and Bibbulmun Track, including transfers, bike rentals, tour guides and food drops. However, due to the infrequent and seasonal visitation to the tracks, business options are not feasible as there are no guarantee that they will be frequented at a high enough capacity to remain cost effective.

However, several stakeholders identified potential business opportunities, in particular tour guiding; *'it might help to employ a student to take tours in the summer time...' (Com.1); 'If there was a need of an interpreter or a tour guide, definitely, if it brings more people to the hills, more than what is happening now, then there would be a need for the other facilities to hire people' (Gov.3).* A tourist mentioned that they appreciate the integration of local art and local knowledge into the geotrail, which in turn could create economic benefits for the area. They also mentioned the flow-on effect that can be created through making tourists aware of what the area has to offer, and gave the example of the Little Ceaser's pizza restaurant in Mundaring which is run by Theo Kalogeracos, known for being a finalist in the World's Best Gourmet Pizza competition in Las Vegas in 2008; *'We have come here a*

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couple of times and had Theo's Pizza, so we have now bought a Pizza oven and bought his book and we make pizzas...' (Tour.2).

4.6.2.2 Natural and cultural impacts

The majority of stakeholders interviewed perceived the proposed geotrail as a beneficial way of promoting the history, heritage, and the natural environment of the Perth Hills through educating visitors on the importance of conservation and preservation. As previously identified in the introduction, the ideas of conservation, appreciation and education are among the main principles defined by Dowling and Newsome (2010) in their definition of geotourism.

Most of the stakeholders agreed that the geotrail would make people more aware of their effect on the environment and *'...change the value they place on the environment' (Gov.4)*. One stakeholder summed up the majority, stating *'...the whole concept of educating people and tourists about a place when they come into it is to give them enough knowledge so they can respect the area that they are in and the more they are told about the precious environment and the precious rocks and the soils in a place the more they respect it and the more they'll leave it alone' (Com.1)*. However, one community stakeholder identified potential risks to the natural environment if one of the sites (Red Hill quarry) were to be included in the geotrail. The Red Hill quarry has a body of water located within the site, and even though this creates another issue of visitor safety, it could also be a risk for the natural environment; *'If you draw people's awareness to the fact that these quarries exist, more people will then visit them... (they are) small little ecosystems in their own right which needs to be conserved; but because of the problem of this is a body of water which...people might fall in...and sue the government, that becomes a problem which endangers the whole site, because they might think 'just fill it in' or do other things to it' (Com.2)*.

Stakeholders also commented on the cultural opportunities the geotrail could provide, and experiences to offer visitors to the area; *'...I think there are a lot of cultural opportunities up there in regards to stories that haven't been told but can be really well facilitated through the geological rock formations (Gov.1)*. One tourist (originally from New Zealand)

identified their interest in learning about Indigenous people from different countries; *'people from other places want to know, if they come from another country they want to know what the Indigenous people from that country do or what they did, and where they come from, so that is interesting' (Tour.1).*

4.6.2.3 Social impacts

Responses from stakeholders regarding the proposed geotrails social impact, and tourism in general, on the community were mixed. There were stakeholders that commented on the lack of enthusiasm toward tourism development by the local community of the Perth Hills, and the *'love-hate relationship' (Gov.6)* they have with the tourists. A government stakeholder said of the community and tourism development *'...that's always a challenge, especially in the Perth Hills...where people live there for the peace and quiet and not for development...* (you have to) *... get them to see the benefits in regards to the benefit to their community' (Gov.1)* which was reiterated by an accommodation manager in the area who stated *'I think they see it as...interfering with their quiet life up here... They don't like it; people in tourism do, but the other people want less people up here' (Bus.2).* This business stakeholder also discussed ways of creating community involvement, including introducing events such as music festivals, so that the community can *'be more proactive'* and *'wave the flag of the hills...we are so close to Perth and have so much to offer that we should be proud of where we all live' (Bus. 2).*

Similarly, several other government stakeholders commented on creating an *'awareness program' (Gov.3)* for the community detailing the benefits of tourism to their local businesses so that they would appreciate the value of tourism and not view tourists as *'terrorists' (Gov.3).* A tour operator in the area commented on the difficulties they had during the beginning stages of growing their business, but said *'...as long as it is managed okay, there shouldn't be any reason why people shouldn't embrace it...' (Bus.1).*

Even though several stakeholders commented on the difficulties in regards to the community's agreement of tourism development, there were also stakeholders that identified that community groups interested in environmental conservation would be the driving force behind the geotrail, and would be a positive addition to the geotrail. There are

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community groups that involve themselves with conserving pockets of land throughout the Perth Hills, and a government stakeholder thought that these community groups would be willing to *'work with somebody to ensure other people knew about what the site has to offer' (Gov.2)*. A community stakeholder stated that the success of the geotrail would depend on its backing by the community; *'It's not really something you can go out and dream up yourself and impose it to somebody, it has to come from the community, and if the people in the community are interested in developing it then they would be responsible for the maintenance of the trail, maybe the marketing of it and also be the people that would benefit if there were any jobs that were being created... They're the people who will welcome the visitors' (Com.1)*.

4.6.3 Geotrail Management

Management of the geosites was identified as an important theme, especially among government stakeholders. There were several factors involved, namely issues with multi-agency tourism products, site management, the development of facilities and funding.

4.6.3.1 Multi-agency tourism products in the Perth Hills

Several stakeholders who were involved in the initial interviewing process commented on the politics that would surround the involvement of the Red Hill quarry site, which is located on Toodyay road, in the geotrail. Subsequently, this topic was mentioned in all subsequent interviews. This site is located on the City of Swan's land and therefore causes issues in regard to site management and cooperation between the Shires of Mundaring and Kalamunda and the City of Swan. A government stakeholder stated that the *'City of Swan is not a part of any of the Perth Hills working groups...It's not their prime tourism site; they have Guildford and the Swan Valley. There is only so much tourism resources and it is their decision to focus it on Guildford and the Swan Valley' (Gov.1)*. There were stakeholders who stated that development of the geotrail would need an over-riding committee, such as the EMRC that could make decisions involving this trail, due to the fact

that the trail spanned over three local governments, making it difficult for decisions regarding all councils to be made in a timely fashion and safety standards to be maintained.

Another government stakeholder suggested incorporating more sites and areas within the City of Swan into the geotrail to gain the approval and funding from the City of Swan, in particular the Gidgegannup area; *'...to overcome it, it would be looking at how it could be linked and how it could be positive to the City of Swan. The City of Swan have proven to be big supporters of tourism and tourism projects, so they might be open to some of those things'* (Gov.3).

At the heart of this issue is whether or not the Red Hill site could be included as the "Perth Hills". The site is located along the Darling Fault but is also within the boundaries of the City of Swan; however the City of Swan does not consider themselves the 'Perth Hills' tourism precinct. Almost all of the stakeholders agreed that the Red Hill site could be included in the confines of the 'Perth Hills' regardless of the fact that it is within the City of Swan's land. However, it is not only the City of Swan and the two Perth Hills Shires that have issues regarding communication and cooperation of projects; one government stakeholder jested that *'anything to get Mundaring and Kalamunda to talk to each other and cooperate'* (Gov.6) would be beneficial to the area.

4.6.3.2 Site Management

Issues regarding geo-site boundaries and land ownership of the geosites led into a discussion regarding site management of the geotrail if it was to be developed; who would ultimately be in charge of maintaining the sites and provide the funding for additional facilities? Several stakeholders enforced the idea of implementing an over-riding committee that would control the site, stating; *'if it was to be successful it would need one or two people to take ownership of it, maybe the shires might be interested in putting something together...'* (Com.1).

Almost all of the government stakeholders made comment to the complications of funding, in particular which local government or government body would be resourcing maintenance or development of facilities made to each of the sites; *'...often you put so much*

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money into putting stuff in but then there is no money to maintain those resources afterwards...' (Gov.4); *'I guess if you are going to put it together as a trail...who manages it...would they be willing to pay for any facilities or maintenance...to actually go at the sites' (Gov.2)*; *'In regards to amenities...you have to question who maintains it? That is a big part of developing any trail is who actually maintains it once the trail is there?'* *(Gov.1)*.

4.6.3.3 Funding

The issues of site management and resourcing for maintenance and facility development at the geosites ultimately come down to who funds, or partly funds, the geotrail. There were several stakeholders that mentioned the viability of funding, in particular Lotterywest funding due to the Indigenous content at the Red Hill ochre site, mining companies due to their involvement with geology, education and Earth sciences, and also local businesses that the geotrail route includes; *'...you'd get the possibility of Lotterywest funding for it because of the Aboriginal content for it...they would be quite excited about this trail'* *(Gov.2)*; *'... perhaps a mining company might be interested, or a quarrying company in the area, that might be interested in people knowing more about the landscape that they are working in... If you had any way of finding maybe one or two good local stopping points, any good pubs or restaurant along the road then that might encourage people to take it, and they might be willing to sponsor a trail or something like that' (Com.1)*; *'...the Chamber of Commerce for Mining and Exploration...they've got money to develop stuff and they are always looking for educational things to try and get kids into the mining industry' (Com.3)*.

4.6.4 Tourists

Several stakeholders identified the uniqueness of the proposed geotrail, and commented on the possibility of an increase in tourist numbers because of this. Most stakeholders were in agreement with the government stakeholder that stated that *'any additional product has the potential to attract tourists and it's certainly a unique idea...it would certainly appeal to*

one market' (Gov.1). Two government stakeholders that are also involved with geology stated that *'geologists are prepared to travel long distances to see what we call things interesting sites or rocks...' (Com.4)*, and similar to this *'I guess we have to keep in mind when you develop these things is that it isn't only for the interest of geologists. Geologists would be prepared to climb and scramble over anything, but it's not just for geologists; it's for people that are interested in the outdoors and enjoy being in the natural environment...' (Com.5)*.

The two tourists that were interviewed identified that they would be willing to participate on the geotrail, with one stating *'...there is a few different sites along the trails, I think that is appealing. You aren't just going to have one experience; you're going to have many' (Tour.2)* and the other stating that *'...the old quarries and things like that, that's interesting' (Tour.1)*, but also adding that this type of trail would not appeal to the younger generation, *'unless they were in the building game or a stone mason or something'* or if there was *'quad biking or horse riding in the hills, then maybe' (Tour.1)*.

Several stakeholders identified that the success of the proposed geotrail would depend on the marketing efforts put in place to make people aware of the proposed geotrails existence. A tour operator in the area commented on the lack of awareness of the Perth Hills to the rest of Perth, stating that most of their clients did not realise what the Perth Hills had to offer; *'A lot of them...say they never knew this was on their own door step. All of the wineries and the scenic value of it...they all seem to thoroughly enjoy coming up to the Hills... people don't really know what's up here' (Bus.1)*. This tour operator also noted that the tour company initially ran tours incorporating everything the Perth Hills had to offer, but it was not until the business name changed to include the word 'wine' that there was an increase in enquiries. They also stated that the GFC of 2008 and 2009 created an increase in domestic tourist numbers due to the fact that *'it was cheap, it wasn't costing much petrol money, so people started to come up...people can't afford to go too far, so there are a lot of people going up into the Perth hills...' (Bus.1)*. This stakeholder also said that the advertising of the Harvest Festival held in May every year, and the Kalamunda Markets were *'a huge draw card for people coming up into the Hills now' (Bus.1)*, which has benefited the area with advertising.

A business stakeholder stated that 50% of his guests were from the Perth metropolitan area, 25% were interstate and 25% were from overseas, but the main motivation for his visitors was to '...*come up here to relax*' *(Bus.2)* and also for overnight stays when waiting for connecting flights to other destinations. The manager also stated that the types of activities visitors would participate in are to '...*go hiking...*' and '...*see what is happening around the area...*' *(Bus.2)*.

4.6.5 Marketing

Following on the discussion above by business stakeholders regarding the lack of awareness and advertising of the Perth Hills area, marketing proved to be an important and popular topic of conversation with stakeholders of all categories. Most of the interviewed stakeholders identified the success of the geotrail would depend on the amount of advertising and marketing that was done; '*The key thing with any new product is the marketing strategy; how it is marketed, making sure you're getting the target market, getting the links to other services*' *(Gov.3)*; '*At the end of the day, it is very much how you market it...give it a logo and a really cool stamp...make it really good, then you have a good chance of succeeding... If people don't know about it then they won't visit and they won't spend their money on the trail. Marketing is a very, very important part of it*' *(Com.1)*; '*I think the success of this would rely very much on how it is marketed and that would come down to having a tourism body that could market it. I know the shire of Mundaring and shire of Kalamunda do a lot of joint marketing to be aligned*' *(Gov.4)*; '...*people are always on the look out for things to do...the issue becomes how you advertise it, how you publicise it, if you go to the trouble to put signage up and it sits there because no one knows about it, there needs to be some type of investment in advertising whether this would come from the shire or whoever is responsible really*' *(Com.5)*. These comments are but a few of the types of comments that were given by stakeholders.

A tour operator in the area discussed that the Swan Valley was more popular than the Perth Hills due to the '...*advertising, and the marketing side of it, because it is a relatively new region up here* (the Perth Hills)*, people don't really know what's up here... getting people aware of what's going on up here*' *(Bus.1)*. This stakeholder also commented on the

difficulties for small businesses to afford *'thousands of dollars on advertising' (Bus.1)* so rely on the support and efforts currently being provided by local government and tourism bodies such as Experience Perth and TourismWA. This was reiterated by a tourist who discussed the opportunities that could be had if the local community were educated on sites located nearby them which they could then take their family and friends when they are visiting. The tourist was discussing attractions that they had been taken to, the Mundaring Weir and Swan Valley, and stated *'we wouldn't have known if they* (the family they were staying with) *hadn't taken us there or even told us about it... you have to educate your locals who then interpret to your tourists' (Tour.2)*. Another tourist also commented that visitors to Perth would probably go to Margaret River instead of the Swan Valley if they were not aware that there was a wine region within the Perth metropolitan area.

Even though the majority of stakeholders agreed that marketing the Perth Hills as a destination was important, there were several stakeholders that were wary of over-selling the geotrail, and somewhat 'tricking' tourists into assuming the geotrail was more than what it appears; *'...I would be worried about over-promising and under-delivering if there wasn't good stuff to see. I don't think they* (the geosites) *would be any comparison to the Pinnacles or Wave Rock, I think that as long as it was promoted in a way that you just told it what it was without trying to be another Pinnacles, then there would be great potential in it...' (Gov.2)* and *'I think you'd have to do a lot of work to make rocks interesting and to promote people to go there' (Gov.4)*.

4.6.6 Education

A theme that emerged in several initial interviews was the possibilities of opportunities in regards to education, school groups in particular. Stakeholders saw the potential of marketing the geotrail to school groups due to the academic content of the geosites and the geological evidence displayed at the sites. A government stakeholder related the educational opportunities of the geotrail to the efforts made by the Shark Bay region in WA; *'...maybe you could have a pamphlet that people can take away...if they find stuff they write it down on the pamphlet or for school groups... maybe it's just patterns...that they can see in the face of the quarry, say 'what can you see that looks different from another*

section', and they can see the big dyke (which is) *meaningless to them, but they can see that there is something that is coming through the rock face' (Com.5)*

A community stakeholder also identified the development of another education program, the High School Excellence for Mining and Exploration (HSE4ME). This program was initiated in 2006 by Earth Science Western Australia, which consisted of representatives from the University of Western Australia, CSIRO, Curtin University of Technology, the WA Museum and the Geological Survey of Western Australia (CSIRO, 2006) *'It is an industry organization, they came to us at Governor Stirling* (Senior High School) *to set up a kind of high school institute that would aim kids into the geosciences' (Com.3)*. However, this program never eventuated.

4.6.7 Interpretation

There were many differing ideas regarding the range of facilities that should be provided for visitors and the issues that could arise due to improper development of amenities. Interpretation was identified by majority of stakeholders as a feature paramount to the success of the geotrail. The information that was provided to visitors, to what level and what format were all discussed. Stakeholders that had a geology background found it important that *'...no matter how simple the information you put out there, it has to be correct and phrased nicely' (Com.4)* so that all geotrail participants can understand, not just highly educated geologists. Majority of stakeholders also identified that the production and use of a brochure outlining the geotrail and its sites would be another significant interpretation medium that should be implemented.

The Red Hill quarry and the Zig Zag were deemed as places that should have interpretation developed, especially the Zig Zag which appeared to be the more popular and well known out of the sites. Majority of stakeholders discussed signage and brochures as the most common forms of interpretation and of course, the possibility of a tour and guide. However, one community stakeholder identified innovative methods that were currently being developed within their organisation; *'...have downloadable information that you can add to your iPod so you can hear about things as you go along...'* and *'using Google earth and*

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adding... historical photographs showing what used to be here as opposed to what is there now, as well as the historical information to go with it... So when people go to the internet to download the audio files, you can also use images of these locations and what things look like and information about what type of rocks you'll be looking at' (Com.2).

Another stakeholder also related the importance of creating a brand logo or icon for the geotrail so that *'people can follow and know that they are on this special geotourism trail...' (Com.4).* Similar to this comment, another stakeholder identified a way that the geotrail could develop into a more wholesome tourism product; *'...I think people enjoy...not so much just visiting one site and then going to the next, but that there is a story that it goes through... it gives an incentive to go to the next one, or if they can't do it this weekend, they can come back the next weekend. So there is a link...there is a more of a flow in things, I guess so the trail forms more of an identity and comes together rather than being a collection of separate things' (Com.5).*

4.6.8 Geotrail sites

Stakeholders were asked about the three geosites identified as part of the geotrail; Red Hill Quarry, the Zig Zag and Boya Mountain Quarry. These three sites were discussed in regards to their individual suitability, safeness, and facilities.

4.6.8.1 Red Hill Quarry

The main issue raised by stakeholders was the fact that the Red Hill site was located near the EMRC's Waste Management Facility. The comments made by several stakeholders were in regard to the rubbish, smells, and noise that may be emitted from the waste facility. There were two stakeholders that made comment that the proximity of the Red Hill site to the waste facility was not important and *'that's life. People won't know there is a waste site there until they get there' (Com.4); 'I don't think the Red Hill waste facility is a problem, the Red Hill tip site is quite off the road...' (Com.2).* A business stakeholder also commented that *'the first thing I think of when I hear Red Hill is the dump there, and I*

know that is only a small portion of the whole thing, but that is my personal thing that I always think of...' (Bus.2). This was reiterated by a government stakeholder who stated that tourists would not want to use the site as a picnic site if it was *'not very scenic and if you've got smells of the rubbish tip...' (Gov.2).* However, a government stakeholder saw an opportunity for the site due to its proximity to the waste facility; *'the tip...it's quite successful...you can make a lot of money from the tip, people that are interested in the natural world, might be interested in recycling; it might be an added interest...it doesn't bother me that it is right next door to the tip' (Gov.6).*

Another theme identified in the interviews was related to the water body that is located on the site. Two of the five community stakeholders interviewed identified the potential risks of the small lake to visitors to the area; *'there is a lagoon there with some water in it, which needs to be properly hazard identified if people are to be brought there. There needs to be a life saver nearby or on hand just in case anything happened... (Com.1); '...people would have to be made aware of the fact that it is filled with water, so there is potential risk there. The City of Swan would have to be comfortable with the fact that you're getting people into an area that has the potential to have health and safety risks...personally I think it's really nice and probably in winter time it would be really nice, filled with the croaking of frogs and things; it'd be quite a nice little ecosystem...' (Com.2).*

The water body was not the only safety concern that stakeholders identified. Another issue that was raised by a community stakeholder was in regards to the use of Toodyay road by several mining companies and the EMRC. Toodyay road is not only the location of the Red Hill site within the proposed geotrail route, but also the location of the EMRC's Waste Management Facility, Hanson's quarry, Midland Brick quarry and the proposed Boral gravel quarry; *'...the Hanson's quarry puts out quite a bit of dust and truck traffic, and one of the problems of Toodyay road is that between the Red Hill tip, Midland Brick quarry, Boral proposed gravel quarry and Hanson's existing gravel quarry there will be huge trucks constantly going up and down that hill and it's only a two lane road and a few passing bays. So that would be hazardous...' (Com.3).* This community stakeholder also discussed the community concerns regarding the proposed Resource Recovery Centre the EMRC are planning on developing at the Red Hill site, in particular the incineration plant which can be potentially dangerous due to the toxins it emits.

The Indigenous significance of the site was not discussed in length by any of the stakeholders, but was noted as an interesting feature that would be received with interest by the public; *'Well, I didn't know about the importance of this site to the Nyungars and I find that very interesting' (Com.4); '...I got really excited because...Lotterywest...have been very keen on promoting stuff that has more of an Aboriginal, Indigenous content to it...' (Gov.2); 'I think it's a good idea to bring in the Aboriginal theme...' (Gov.6)*. The Indigenous significance of the site was also given a good response by the two tourists that were interviewed; *'I think people would be interested in the Indigenous significance. If anything with tourism, people are looking for an experience, and if you look at Indigenous tourism, or ecotourism...they are quite successful even though they are so remote' (Tour.2)* and *'people from other places want to know, if they come from another country they want to know what the Indigenous people from that country do or what they did, and where they come from, so that is interesting' (Tour.1)*. Several stakeholders stated the importance of including Indigenous stakeholders within the research to include their perceptions regarding the inclusion of the site, however due to ethics restrictions of the study Indigenous stakeholders were not to be included.

There were several suggestions of facilities and amenities that could be developed within the site from stakeholders. Suggestions such as picnic tables, proper parking areas, maintained walkways, directive and interpretive signage and general clearing done of the walk-way areas were the most common suggestions made to basic facilities to be developed with several stakeholders identifying the need for toilets. However, there were stakeholders that viewed the site as *'near enough to the city' (Com.1)* to not provide toilet facilities.

4.6.8.2 Zig Zag

The Zig Zag was well thought of by the majority of stakeholders and appeared to be the most popular of the three sites on the geotrail. Many thought that the site had great potential for the Perth Hills and an interesting site for visitors to Perth, which such comments as *'...it has huge potential...' (Gov.2); 'I think it's a great drive, I love going down the zig zag and stopping and getting out and looking at the wildflowers out in the spring' (Com.4). 'The view is quite spectacular up there' (Bus.1); 'I think the view at the Zig Zag is fantastic'*

(Bus.2); '...a lot of people pull up to view the sunset and the fantastic views of the city; it really would help encourage tourism up into the Hills and bring people out.' (Com.1). This community stakeholder also commented on the lack of signage to the site, stating *'a lot of people go up there...and can't find it, which is a pity because it is a fantastic area to take people and take visitors' (Com.1).*

A community stakeholder commented on the issue the one-way route of the Zig Zag poses for the proposed geotrail as it forces tourists into driving in a clockwise direction or adding time to the journey if tourists decide to visit the Zig Zag site first. This stakeholder also commented that if participants on the geotrail wanted to visit the Zig Zag first, the directions to loop back into Kalamunda and continue the trail must be clearly explained to them.

There were several safety concerns that were identified by stakeholders as important; speed of traffic going down the Zig Zag, concerns for walkers and cyclists going up the Zig Zag, fire hazards and the multi-purpose use of the Zig Zag. There are several events held at the Zig Zag throughout the year, including the Targa West Rally which goes the opposite way up the Zig Zag; however this event is barricaded off and well signed. Several stakeholders commented on the safety factors regarding cyclists and walkers going up the hill when traffic is going down the hill. A tour operator in the area said *'I turned a corner and there was a cyclist coming the opposite way, so yes, we didn't touch but I had to put the brakes on. Walkers walking up and down are fine. I'm not sure the legal aspect of cyclists coming up...' (Bus.1).* A government stakeholder also had concerns for people that were stopping and walking in spots along the Zig Zag; *'if you are going to be encouraging people to walk the area and cycle the area...you need to be aware of the health and safety risks of having walkers and cyclists on the drive trail' (Gov.1)*; where as another government stakeholder recently visited the site and said it was used as *'a racing track'* and cars were *'coming down pretty quickly' (Gov.2)*; suggestions of speed reducing measures, such as speed humps, were suggested as useful tools to manage this. However, a business stakeholder said the history of the Zig Zag and its origin as a train line would be damaged if it had security measures in place; *'it's not going to look like a real train line to me. I think it is okay how it is' (Bus.1).* A community stakeholder, local to the area, did not see any safety concerns regarding the Zig Zag; *'cyclists and walkers can go up it* (the Zig Zag) *however*

because of the hair-pin bends you can't really get up that much speed. Having gone down it several times I wouldn't think there were any safety concerns' (Com.2).

Stakeholders provided the researcher with various ideas for facilities that could be introduced to the site, with many commenting on the need for development for facilities for visitors to the area; *'I've got guests in now, and they asked what they could do this afternoon, you can't go and sit over there over at the Zig Zag because there is nowhere to sit, nowhere to relax. If you had some chairs and people would be watching sunsets'* *(Bus.2).* Apart from the need of picnic tables, signage was also deemed as appropriate for this site with plaques that identified distinguishing features along the Swan Coastal Plain with the possibility of a fixed metal telescope for visitors to view the city.

4.6.8.3 Boya Mountain Quarry

Boya Mountain Quarry is the most developed of the three geosites with facilities such as environmentally sustainable toilet facilities, picnic tables and an interpretive panel provided for visitors.

Most stakeholders viewed the facilities at the Boya Mountain Quarry as appropriate for the site, with the addition of more interpretive signage at the site and directing people to the site. The fact that Boya Mountain Quarry is a Department of Environment and Conservation's (DEC) site creates an issue in regards to getting DEC approval on any development efforts that were made to the site, resulting in additional approval by decision making agencies. A local government stakeholder said *'DEC is a government body and they are very focused on the environment and conservation and not necessarily tourism...let's just say they don't do anything quickly from my experience...' (Gov.3).* A representative from the state government said that developments made to the site would depend on how often the site would get used; *'the problem is that there is a lot of excitement about new tourism ventures and then they get built and then they get forgotten'* *(Gov.4).*

Another local government stakeholder working on the current Railway Reserves Heritage Trail, which runs past the quarry, stated that the site appeared to be well developed already,

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and that *'perhaps it's actually more about the awareness of it... I have never come across...Boya Mountain Quarry and what is there to see and what it's all about, so there is definitely potential with that spot'* (Gov.2). This stakeholder also suggested the possibility of incorporating the site into the Railway Reserves Heritage Trail maps as a spot of interest.

A community stakeholder had knowledge of the recent history of Boya Mountain Quarry and had discussed the changes that had been made to the site to improve it; *'when I first went up there, there were burnt out cars and lots of things that were a bit disappointing' (Com.1).* This stakeholder also discussed the role the local community group played in rehabilitating the area, in particular cleaning up the area and planting trees. There were several stakeholders that identified safety risks at the quarry such as rock falls and that these risks should be properly sign posted.

A business stakeholder identified this site as an opportunity to hold concerts and be used as an amphitheatre; *'I think it is a great music venue, I think it would be great for things like that. People come up here, people come up into the hills now, but there's not a lot of things for them to do...' (Bus.2).* The use of geological sites as amphitheatres can be seen in examples such as the Red Rocks in Denver, USA, and Chodov Natural Amphitheatre in Prague, Czech Republic.

4.6.8.4 New geosites identified by stakeholders

Several sites were identified by stakeholders in the Perth Hills area; Statham quarry, the Mundaring Weir, Greenmount quarry, Parkerville quarry, Mount Cooke, Lesmurdie Falls, John Forrest National Park, Swan View Tunnel, Pickering Brook/Canning Dam and Lake Leschenaultia. These sites will be briefly described and located on a map of the Perth Hills (Figure 19).

4.6.8.4.1 Statham (1894), Parkerville (1896) and Greenmount (1897) Quarries

These quarries, in particular Statham's quarry, were mentioned several times by stakeholders. The quarries are scattered over the Darling Scarp and were used to quarry granite and diorite in 1894 and still contains evidence of quarrying processes that were used

during this time (Heritage Council of Western Australia, 2006). Some of the quarries have physical remainders of machinery used at the site.

4.6.8.4.2 The Mundaring Weir

The Mundaring Weir has over 557 kilometres of pipeline that runs from the Perth Hills to Kalgoorlie. This weir was built in 1902, in what some people called a 'unique technological triumph' (Water corporation, n.d.). The Mundaring Weir is one of the popular attractions in the Perth Hills however it does not have much geological significance. A government stakeholder quoted a passage from a book on the Mundaring Weir; "*On the Helena I've had several sites evaded and I can safely recommend one. The site is almost an ideal one; the foundations of the dam site are bedrock, the valley very narrow, and the sides' precipitance*" *(Gov.6)*. Even though the site is not strictly geological, there are elements of geotourism that can be interpreted there.

4.6.8.4.3 Mount Cooke

Mount Cooke is located near Jarrahdale in Western Australia and is known for its section of the Bibbulmun Track and for being the highest point of the Darling Scarp. As this site is located out of the Perth Hills region it is not shown on the map below.

4.6.8.4.4 Lesmurdie Falls

Lesmurdie Falls is located within the Lesmurdie Falls National Park and is a 50 metre waterfall along the face of the Darling Scarp.

4.6.8.4.5 John Forrest National Park (Swan View Tunnel)

While stakeholders mentioned John Forrest National Park as a possible geo-site, there was no mention to specific geological sites within the Park. However, a community stakeholder had mentioned the Swan View Tunnel which is within the John Forrest National Park's boundaries. This Tunnel, built in 1884, is the only railway tunnel in WA (Department of Environment and Conservation, n.d) and runs for 340 metres.

4.6.8.4.5 Pickering Brook/Canning Dam

A business stakeholder identified this area as a popular place for visitors looking for a walking activity. The Canning Dam was built in 1924 during the Depression and provides various heritage walks for visitors to experience, including views of the city from the Darling Scarp.

4.6.8.4.6 Lake Leschenaultia

Lake Leschenaultia was originally named Chidlow's Well and was created as a dam to replenish the steam engines travelling to Northam and York (Shire of Mundaring, n.d.).

Figure 19: Possible geosites identified by stakeholders (Google, 2010)

CHAPTER FIVE – DISCUSSION AND RECOMMENDATIONS

The previous chapter categorized the findings of the 14 interviews that were held with varying stakeholders and the main issues and concerns they had regarding the proposed geotrail. This chapter will provide a discussion of the findings, what they mean, and if they are consistent with existing literature regarding tourism development stakeholders. It also reflects how the aim and objectives of the thesis were achieved and how they relate to the reviewed literature. It also suggests further research needed for the geotrail plan and the Perth Hills area.

5.1 Stakeholder groups

Although there were differences between how each stakeholder group perceived the proposed geotrail, overall each stakeholder group supported the geotrail plan and viewed it as an opportunity to increase tourism in the Perth Hills. The two business stakeholders that were interviewed were very supportive of the geotrail plan and the potential it had to provide visitors with an activity to do while visiting the Perth Hills. Both business stakeholders had made comments regarding the lack of attractions in the Perth Hills for visitors to the area and had a lot of enthusiasm for the geotrail plan to become an activity for visitors to partake in, particularly visiting the Zig Zag site which was identified as needing facilities such as picnic tables for people to sit and take in the view.

The two tourists who were interviewed were enthusiastic of the geotrail plan, and recommended that any publication created should also integrate local 'places of interest' to keep visitors informed of things to do and create repeat visitation. This links back to one of the main principles of geotourism which includes local communities being involved in geotourism in their area (Maher, 2010b). Due to the small sample size of the business and tourist stakeholders,

The support by business and tourist stakeholders was reiterated by community stakeholders. However, they had several concerns regarding the sites identified in the geotrail. The five community stakeholders who represented various groups within the Perth

Hills and the wider Perth region had a lot of intimate knowledge of the area and its geology which proved to be very beneficial in regards to issues and concerns that were not mentioned by other stakeholders. Two of the community stakeholders resided in the Perth Hills area which was beneficial when identifying appropriate sites that could be added into the revised geotrail plan. They also highlighted concerns regarding the sites; one of the local community stakeholders brought to the researcher's attention that the site identified as the Boya Mountain Quarry was actually called 'Mountain Quarry', with 'Boya Quarry' located across the road off Hudman road in Glen Forrest, and another local stakeholder identifying hazardous implications of the future Waste Recovery Facility in Red Hill. Without the input of the community stakeholders, these issues would not have been identified. This relates to the literature and the importance of including a range of stakeholders, including the community, within the development process to avoid stakeholder conflicts, reduce long term costs and be politically legitimate (Schianetz et al., 2009; Yuksel, Bramwell & Yuksel, 1999).

While community, business and tourist stakeholders were viewing the geotrail as a 'big picture' idea, government stakeholders looked at the more immediate issues relating to the trail. Government stakeholders represented local government and relevant state government agencies. Their perceptions ranged from interest to scepticism as to the success of the geotrail. Most viewed the geotrail as an interesting idea that could provide an opportunity for increased tourism in the area but identified concerns regarding the management and safety of the sites to visitors. This can relate to Kayat's (2008) findings regarding the level of interest by stakeholders and the power and stake they have on projects. Government stakeholders had concerns regarding the management and safety of visitors, and as they have power in tourism development perhaps the reduced interest shown in the proposed geotrail compared with other stakeholder groups is reflective to the high stakes they have if the geotrail was not successful.

All stakeholders that were interviewed found the geotrail plan to be a unique concept but there were doubts as to how successful the trail would be and if there would be enough visitations to warrant the development of the trail. However, the general consensus of the interviews was that any new product that would create an increase in tourism in the Perth

Hills and provide visitors with more activities to participate in would be supported by all stakeholder groups.

5.2 Geotourism in the Perth Hills

The term 'geotourism' was recognised by all government stakeholders, showing that local and state governments are aware of this growing niche form of tourism. The majority of community stakeholders were also aware of the term as three of these stakeholders were directly linked to geotourism development within WA; however neither tourist nor business stakeholders had heard of the term before. The general perception from the majority of stakeholders was that 'any product is good product' in regards to adding a geotrail to the tourism mix in the Perth Hills. Stakeholders felt that if there was a market for geotourism, and that people would visit the Perth Hills to participate in the trail, then it was worth researching. There were mixed views as to the success of the geotrail, with government stakeholders viewing that the trail was not unique enough to create an identity for the Perth Hills however it would provide visitors to the area with the opportunity to have a unique experience.

Evidenced in several cases, including Ireland which was discussed in section 1.1.3.4, the introduction of geotourism in an area can improve the local economy with the development of new products (Maher, 2010b). In this particular study, there is potential to develop new geotourism products in the Perth Hills area and also include current tourism products into the proposed geotrail. Several stakeholders identified the importance of integrating other products in the Perth Hills in to the proposed geotrail, in particular local food and beverage outlets and well known tracks in the area.

There are several restaurants in the Perth Hills that are well known in Perth, in particular the Loose Box, Little Ceaser's Pizza, the Mahogany Inn, the Mundaring Weir Hotel and also a popular winery called Darlington Estate Winery. These places could be integrated into the geotrail as popular places to visit, providing local businesses with an opportunity to increase their numbers of patrons and providing visitors with an opportunity to experience local food, wine and, at particular places, local music talent. There are also several popular trails located in the area, in particular the Munda Biddi, Bibbulmun Track and the Railway

Reserves Heritage Trail which could be linked to the geotrail, or possibly incorporate geotourism into the already existing tracks.

5.3 Impacts

An important aspect that was considered in the research of the geotrail plan was the impacts the trail may create. Following Gunn's (2002) Site Design Steps, the participation of stakeholders is important to assess the impacts on the natural, socio-cultural and economic issues of the sites and area. This is also identified in the literature as an important tool to foster joint participation by stakeholders (Medeiros de Araujo & Bramwell, 2000).

Stakeholders identified several negative impacts created by the geotrail including the impact increased visitation would have on the natural environment. The principles of geotourism include conservation, appreciation and education, and the majority of the stakeholders viewed that if visitors were properly managed and educated about the importance of the sites, then this would help advocate conservation and preservation in natural areas (Dowling and Newsome, 2010). However there were two community stakeholders that had issues in regards to the Red Hill site where there is a body of water. This is not only a safety concern for visitors but may pose a threat to the site itself if it was to be filled in for convenience.

Stakeholder's perceptions regarding socio-cultural impacts of the geotrail included how the wider community would react to the geotrail and the possible implications that may arise. Three of the community stakeholders that were interviewed were supportive of the geotrail plan but had concerns regarding the use of the Red Hill site for various reasons, such as the heavy haulage traffic along Toodyay road, the health implications at the proposed Resource Recovery Centre, and the body of water that is located along the site. The majority of business and government stakeholders identified the lack of enthusiasm from the community in regards to tourism development but through an awareness program outlining the benefits of tourism, these stakeholders believed the community could become supportive.

The involvement of communities in geotourism is one of the five key principles of geotourism (Newsome & Dowling, 2010) and it is important to provide the community with enough information so that they can see the benefits of increased tourism instead of viewing it as a threat. Stakeholders did not comment on the cultural impacts the geotrail may create; however, a tourist commented on the appeal of the Red Hill site due to the Indigenous significance of the site, and a government stakeholder commented on the funding opportunities that may arise due to the Indigenous content. As Indigenous stakeholders were not included in the project, an evaluation of cultural impact on Indigenous communities could not be researched in depth.

The economic impact of the geotrail focused on the development of new business and the expansion of already existing business that may arise due to the geotrail. A local government stakeholder did not see how the geotrail would create extra employment for people, only creating more work for the people already in those positions, particularly in government roles. However, there were stakeholders who saw an opportunity for a tour guide to interpret the geology of the sites to visitors and also the possible increase in visitors to local food and beverage outlets, galleries and shops.

5.4 Geotrail Management

There are many issues in regards to managing and maintaining a trail such as this; however throughout the findings there have been several main issues that were identified as important.

Several government stakeholders commented on the difficulty in managing a multi-agency tourism product and one that spans over several local government areas. There were some government stakeholders that recommended a committee to manage the trail, for example the Perth Hills Trails Reference Group (PHTRG) which includes representatives from Shire of Mundaring, Shire of Kalamunda, DEC, National Trust, Munda Biddi, Bibbulmun track, Watercorp, EMRC, Department of Sport and Recreation, the Mountain Bike Association, WA Horse Council, Recreation Trail Bike Riders Association WA, the Federation of Australia Bush Walkers, and Track Care WA. This group was formed to ensure the Perth Hills has well maintained trails that represent the heritage and environment. This agrees

with Schianetz *et al.*,(2009) and Yuksel, Bramwell & Yuksel (1999) who state that stakeholder collaboration can be complicated, difficult to achieve and time-consuming. It also reinforces what Yuksel *et al.*, (1999) states with ultimately reducing long term costs, avoiding conflict between stakeholders, and remaining politically legitimate.

The proposed geotrail stretches over the Shires of Kalamunda and Mundaring and the City of Swan, and due to the limited resources of local governments, funding by private business would be beneficial to finance developments on the geotrail. Several stakeholders identified some funding possibilities which included the Chamber of Commerce for Mining and Exploration, local mining or quarrying companies, food and beverage businesses along the geotrail route and also Lotterywest.

5.5 Tourists

The two tourist stakeholders interviewed were enthusiastic about the geotrail, in particular the many sites that could be experienced along the route. Both tourists were middle aged and even though they felt the trail would interest them, they were of the opinion that there would not be the same appeal to younger generations unless they had a specific interest in geology. One tourist identified an opportunity with the younger generation if experiences such as quad biking or four wheel driving where on offer. One of the main characteristics that was identified by Page, Keene, Edmonds and Hose (1996) is that almost half of geotourists were aged between 30-44 years, another half were aged between 45-64 years, and the main two target market groups were mature couples and families with young children. The two tourists that were interviewed for this study were within this age bracket and target market and their perceptions regarding the 'younger generation' and visitors with specific interest in geology was also reflected in the findings, with one-third having studied geology to some level, and a fifth being hobby geologists (Page, Keene, Edmonds & Hose, 1996).

Two community stakeholders who are involved in geotourism development within WA discussed the length and distance geologists would travel to see sites of interest. The distance of the geotrail from Perth city may be a factor that hinders trail participation for

mass tourists. However, the geotrail is still within the urban-rural fringe area identified by Weaver and Lawton (2004) that may attract nature visitors and geology enthusiasts.

There was much discussion on the effect of marketing of the Perth Hills and visitors to the area. A tour operator within the area stated that they had visitors that did not know what experiences the Perth Hills had to offer, and that there was not enough awareness to the rest of Perth regarding the experiences that are available. This stakeholder identified a link between the GFC of 2008/2009 and an increase in domestic visitors, providing the Perth Hills with an opportunity to increase domestic visitors by increasing awareness of the many free experiences this area has to offer, in particular nature based products such as this geotrail. This notion is reinforced by the accommodation manager that stated visitors to the establishment participated in hiking, general sightseeing and the opportunity to relax in the quiet environment. The tour operator also identified a link between an increase in tour participation and the inclusion of the word 'wine' into the tour companies name. This also supports the notion that the Swan Valley has more awareness within Perth due to many wineries and breweries that area has to offer compared to the Perth Hills.

5.6 Marketing

Much discussion was focused on the marketing of the Perth Hills. It appeared that majority of stakeholders identified the success of the geotrail would be heavily reliant on the amount and quality of marketing that will be implemented for the trail. A few ideas that were put forward by stakeholders included creating a logo or stamp that visitors can recognise, linking the geotrail with other services, general signage to make visitors aware of the trail, and having a tourism body, such as the Shires of Mundaring or Kalamunda, to provide marketing to align their products.

As noted previously, business stakeholders identified that the Swan Valley was more popular due to the amount of advertising and marketing that is provided by the City of Swan, as well as being an area with many breweries, wineries and restaurants. The difficulties of affording individual advertising of small businesses are alleviated by the support of tourism bodies and local government areas. This difference between the Swan Valley and the Perth Hills agrees with Hall and Boyd (2005) who identify peripheral areas

like the Perth Hills as having a lack of economic and political control, geographically remote form the mass markets, lack of innovation, weak economic linkages and high in aesthetic amenity values.

The tourists that were interviewed provided an insight into the importance of involving locals as part of the marketing and advertising effort, stating that if they had not known people that lived in the area who relayed to them the sites of interest, they would not have gone to these places. This reiterates back to the principles of geotourism regarding the involvement of locals to provide visitors with a new experience (Maher, 2010b, Newsome & Dowling, 2010). The Perth Hills could increase tourism by involving local people as 'spokespersons'.

The general perception from stakeholders was that the Swan Valley had increased awareness compared to the Perth Hills. However, an increase in the entire Eastern suburbs in general may be beneficial to this area. A tourist commented that they would have gone to Margaret River instead of the Swan Valley if they were not made aware that there was a wine region within the Perth metropolitan area. If other intrastate, interstate or international visitors were not made aware of this, the Swan Valley and the Perth Hills could be losing a percentage of visitations from lack of awareness. This is consistent with the advantages of Gunn's (2002) rural-urban destination zone in which cooperation between the city and communities can provide an increase in attractions and promotional material for the public.

The issue of over-selling or 'tricking' visitors into participating on the geotrail should also be considered in the marketing efforts for the geotrail. Over-marketing the geotrail could create the perception of something entirely different by tourists and would then possibly give visitors a low level of satisfaction if visitors' expectations were too high. This requires all marketing efforts to be precise and factual and provide photos so that visitors know what they will be experiencing.

5.7 Education and Interpretation

According to Newsome and Dowling (2010) one of the five principles of geotourism is to be environmentally educative, requiring a range of interpretation mediums to inform

visitors. Community stakeholders that have a geological background confirmed this by stating that the most important aspect of the any interpretation was that it had to be correct and phrased in a way that everyone can understand even if they do not have a geological background. The most mentioned form of interpretation was a brochure which could be provided to visitors at visitor centres in particular the Mundaring and Kalamunda Visitor Centres.

Interpretive signage was deemed by the stakeholders to be appropriate at the Red Hill Quarry and the Zig Zag, as there is already interpretive panels in place at Boya Mountain Quarry. Innovative methods such as downloadable applications similar to Google Earth were also suggested as a way visitors can become informed of the significance of the geotrail, with a possible interactive component. This interactive component would allow visitors to share photos and videos, and also allow visitors the opportunity to connect to past and future visitors through a web page. This could also provide an opportunity for visitors to share knowledge and thoughts on establishments near the geotrail, such as food and beverage outlets.

Hughes and Ballantyne (2010) highlight the importance of 'connecting' with visitors through appropriate interactive mediums which allows visitors to place the information in their long term memory. A suggestion that could be incorporated into the interpretive signage along the geotrail to help connect with visitors is the development of a 'story' that progresses from site to site. This 'story' would present a timeline in the geological history of the Perth Hills and for each site another significant period would be represented. This 'story' approach has been recently used in the Trail of Time at the Grand Canyon National Park, Arizona (Trail of Time, n.d.). Another suggestion, similar to the 'story' concept, was to create a logo or symbol that visitors could follow, similar to the posts and logo used along the Munda Biddi track to let people know they are going in the right direction.

There are several opportunities for education programs that were suggested by stakeholders due to the academic content of the geotrail. One of these suggestions was the opportunity for school groups to have tours to individual sites with research pamphlets to explain certain geological formations present at the sites. One of these school programs was the HSE4ME program that unfortunately never eventuated; however a program such as this would be very useful to geology institutions and a method to involve mining organisations

in local communities. As there are various mining companies within the Eastern suburbs, there could be an opportunity to form a partnership with an education institution. This could create funding that may provide educative tours for school classes to the three sites along the geotrail and pamphlets that could be targeted specifically at lower, middle and upper school students within the Perth metropolitan region. Joint collaboration with educational bodies and mining companies is recommended in the literature on stakeholder collaboration. It identified that it can build on knowledge and encourages a sense of identity (Schianetz *et al.*, 2009; Walden, 2010) which can then create goals and collective learning in a community (Senge, Kleiner, Roberts, Ross, Roth & Smith, 1999).

5.8 Geotrail Sites

5.8.1 Red Hill

The main concerns stakeholders had regarding the Red Hill quarry were the unfenced water body located within the site, the heavy haulage along Toodyay road, the location next to the Waste Management Facility and the proposed Resource Recovery Centre. Stakeholders had differing views regarding the location of the site alongside the Waste Management Facility. While there were a few stakeholders that thought that some visitors may be put off by its location, most stakeholders did not view the Waste Management Facility as a negative aspect; one stakeholder considered this as a positive as it could promote environmentally educative and sustainable practices, two of geotourism's key principles.

The water body located on the site not only proposes a safety risk to the visitors and the community, but also proposes a risk to the site itself; a community stakeholder identified the risk of the sites integrity if the water body was filled in for the convenience. This also raises issues regarding the responsibility of peoples' safety in public locations and the idea that common sense has to be used when around unfenced bodies of water.

Toodyay road is one of the main roads used by heavy haulage vehicles heading east. These vehicles are from the Waste Management Facility, the Hanson's quarry, Midland Brick and the proposed Boral gravel quarry. The proposed Resource Recovery Centre is also planned

to be located along this road which will increase the heavy haulage traffic within this area. A community stakeholder also discussed the health and safety implications the proposed recovery centre will have in this area, in particular the incineration plant which has the potential to emit toxins. Facilities suggested by stakeholders were maintained walkways, picnic tables, parking areas and directive and interpretive signage, with several stakeholders identifying the need for toilets.

It is also interesting to note that an auditorium has been built at Red Hill near the site identified in the geotrail. The Red Hill Auditorium was launched on 20th January 2011; it was not identified during the research for Steps 1 to 4 and was not mentioned by stakeholders.

5.8.2 Zig Zag

The Zig Zag was the most popular of the three sites with stakeholders due to the view of the Perth city and surrounding metropolitan area. There were several concerns regarding this site, in particular the speed of drivers down the one-way route, the lack of signage directing visitors to the site and the lack of particular amenities for visitors.

A community stakeholder commented on the lack of signage in the area directing visitors to the Zig Zag which may result in a decrease in visitors to the site. Upon researching the several routes to get to the Zig Zag, it did not appear that the Zig Zag had directive signage in or around Kalamunda, however there was a small sign labelled 'Zig Zag' at the beginning of the route. This one-way route of the Zig Zag may become an issue for visitors starting the geotrail at the Zig Zag site, requiring additional signage to direct visitors from the bottom of the route back to the top to continue the geotrail. This one-way route also created concern by stakeholders as to the safety of pedestrians and bike riders when they are walking and riding up the zig zag and vehicles are driving down the zig zag. Another safety issue raised by several stakeholders was in regards to the speed that vehicles travel down the zig zag formation. Suggestions of building speed reducing measures such as speed bumps were made, however one stakeholder made the valid point regarding the

integrity of the site and the historical value it has for Western Australia's railway heritage which may be ruined if too many barricades and speed bumps were introduced.

Facilities suggested by stakeholders were picnic tables, signage and fixed metal telescopic binoculars. These all appear appropriate for this site as there are no facilities at this site at present. Picnic tables would be beneficial for visitors so they could have a picnic or watch the sunset, while the fixed metal telescope could identify various points of interest along the Swan Coastal Plain. Binoculars such as this can be found at Albany and also Augusta along the south coast of WA which provides visitors with scenic views. The implementation of directive signage to the site and interpretive signage at the site would also provide visitors with clear directions and detailed information as to what geological phenomenon they are experiencing.

5.8.3 Boya Mountain Quarry

Boya Mountain Quarry was the most developed of the three sites and stakeholders did not have any suggestions as to additional facilities that should be developed; however any additional facilities would need to be in partnership with DEC. There is a possibility that this site could become a site of interest along the Railway Reserves Heritage Trail as the trail runs directly past Boya Mountain Quarry. A stakeholder also suggested the possibility of holding small events at the site creating an outdoor amphitheatre such as concerts or an outdoor theatre.

A community stakeholder has claimed that there has been a misidentification of the Boya Mountain Quarry with Mountain quarry which is nearby; more research is needed on these sites.

5.9 Geotrail Amendment

One of this project's research objectives was to use the input of stakeholders to improve the design of the geotrail. As was discussed in the previous chapter, the Red Hill site had various safety concerns identified by stakeholders including the safety issues regarding the

proposed Resource Recovery Facility, the water body located onsite, and the traffic along Toodyay road. An amendment to the geotrail plan to exclude this site would not only alleviate safety concerns and ease any conflicts with Indigenous owners that may arise, but also forgo any political issues regarding site management by the City of Swan and the Shires of Mundaring and Kalamunda. As Figure 20 shows, by excluding the Red Hill site, the geotrail could make a smaller loop by incorporating Great Eastern Highway. This would also allow an opportunity to include Darlington Estate Winery and allow the use of the word 'wine' into the description of the geotrail which was identified as a factor that increased visitation by a business stakeholder.

With this amendment to the trail other sites that were identified by stakeholders such as the Swan View tunnel and Parkerville quarry can also be assessed and possibly included as well as aspects of geotourism identified at the Mundaring Weir.

Figure 20: Map of amended geotrail plan (Google, 2010)

Legend

🔴 Already identified geosites

🟢 Village hubs

🔵 Possible future geosites

5.10 Recommendations

The amended potential geotrail now stretches over the Shires of Kalamunda and Mundaring and as it includes Great Eastern Highway, the trail has an opportunity to include other geosites including the Darlington Estate Winery and sites of interest including popular restaurants, hotels and art galleries. With these added sites, the geotrail may appeal to a wider group of visitors. Perceptions of two stakeholders were that younger generations would not be interested in a geotrail without specific active experiences on offer. Activities such as rock climbing currently take place privately at various quarries located throughout the Perth Hills but due to safety risks it would not be recommended to implement commercial rock climbing activities. Future research based on what experiences young visitors want from participating in geotourism could become useful for future geotourism planning and development.

With the exclusion of the Red Hill geosite this will also decrease opportunities of funding that may have been available from Lotterywest and other Indigenous related organisations. However, funding from local mining corporations and geology organisations may create partnerships that could provide an education program for high schools in the Perth metropolitan area.

The use of an over-riding committee such as the Perth Hills Trails Reference Group would be beneficial due to the issues involved with having a trail within two local governments. As this committee is involved with other trails within the Perth Hills it would be assumed that this trail could possibly become part of this group. An awareness program aimed at the Perth Hills community could be beneficial in changing the perceptions of the locals toward visitors to the area. Several stakeholders commented on the community's lack of enthusiasm in regards to tourism development and with an awareness program outlining the benefits of visitors, the community can become a method of advertising in its own right.

Marketing efforts for the geotrail should involve locals as 'spokespersons' for the Perth Hills, as well as innovative interpretation methods. It is important that interpretation is factual and to the point so as visitors are not confused by the overuse of geological terms. Having a unique logo for the geotrail would create a brand that visitors can easily identify and follow from site to site. The possibility of creating a 'story' or timeline with the Zig

Zag, Boya Mountain Quarry and newly identified geosites should be implemented as it has been successful at various National Parks, including the Trail of Time at the Grand Canyon National Park, Arizona. The use of an application similar to Google Earth to connect people with an interest in geology should also be researched.

As this study did not have ethics approval to include Indigenous stakeholders, future research should include Indigenous stakeholders, particularly if geosites of Indigenous significance are included. This would allow the traditional land owners an opportunity to include their perceptions in the development of tourism products.

CHAPTER SIX – CONCLUSION

The aim of this project was to research the perceptions of tourism stakeholders regarding the development of a proposed geotrail in the Perth Hills. Following the first five Steps of Gunn's (2002) Site Design Steps, a geotrail was identified by linking three sites of Indigenous, early European and geological significance. Step 1 involved a market analysis of the tourism industry in Western Australia, Perth's Eastern Region and nature based tourism in Australia, as well as analysing the demographics of geotourists and researching current geotourism products offered in the Perth area. Step 2 provided the trail with a 'program definition' that outlined the scope of the geotrail and what it would hope to achieve. Step 3 involved the identification of Indigenous, early European and geologically significant geosites, with Step 4 involving an in-depth assessment of the on-site and off-site factors of each of the sites and an overall plan of the geotrail route.

Step 5, the Synthesis stage, involved stakeholder participation through in-depth, semi-structured interviews; this step set to answer the main research question 'what are the perceptions of stakeholders regarding the development of a proposed geotrail in the Perth Hills?' The use of this qualitative research method allowed the researcher to gain in-depth knowledge into the range of issues that are involved when planning a geotrail, and the concerns government, business, community and tourist stakeholders have regarding the development of new tourism products.

The research revealed several themes such as safety considerations, protection of the site's integrity, site management responsibilities, community involvement, product integration, marketing, implementation of facilities, and how successful the geotrail would be in regards to increasing tourist numbers in the area. Of the four stakeholder groups, the community, business and tourist groups appeared to be supportive of the plan where as the government stakeholders, although enthusiastic, were realistic as to the feasibility of the geotrail. Due to the input of these stakeholders, especially community stakeholders, recommendations were used in the revised geotrail which eliminated the Red Hill site and created a shorter route; this has now created opportunities to integrate various other attractions located along this route and the possible addition of other identified geosites as were suggested by stakeholders. Also the misidentification of Boya Mountain Quarry,

recognised by only one community stakeholder, reiterates the importance of including a range of stakeholders in tourism planning as was recognised in the literature review.

Research on the subject of geotourism is increasing. This is evidenced by the several books published in 2010 (Dowling & Newsome, 2010; Newsome & Dowling, 2010) and the Second Global Geotourism Conference held at Sarawak, Borneo in Malaysia from 17 – 20 April, 2010. There were also eight new applications for the European Geoparks Network in 2010 (European Geoparks Network, 2010) showing an increase in popularity of the geopark movement throughout the European nations. The term geotourism is not well known in Australia, even though several popular iconic tourist sites are geological in nature such as Uluru, the Great Barrier Reef and the Bungle Bungle range in Purnululu National Park.

This project achieved the first five steps in Gunn's (2002) Site Design Steps model to research, identify and assess the appropriateness of geosites to become part of a geotrail in the Perth Hills. There are nine steps in total of Gunn's model, however due to time and monetary resources the last four steps could not be achieved. This provides opportunity for future research to further assess potential geosites in the Perth Hills area, design and implement facilities and marketing efforts, and evaluate the trails success over time. In completing the project, the researcher would recommend that a group interview be included in the research involving a range of stakeholders; this would promote discussion among stakeholders in regards to their concerns and recommendations. Future research into tourism in the Perth Hills area would also be beneficial as the researcher found it difficult to find statistics and past research in the area, which limited the amount of information that could be used in the market analysis stage (Step 1). This was also apparent when researching tourism in Perth's Eastern region.

This project has identified many opportunities for geotourism in the Perth Hills, with several sites recognised as significant and others that can be assessed and included in a tourism product such as a geotrail, or into already existing trails in the area. The original geotrail route that was identified has been amended to include the recommendations of stakeholders, by excluding the Red Hill quarry and creating a smaller trail. The program definition (Step 2) of the geotrail was to identify three sites of Indigenous, early European and geological significance which was achieved. However, due to the exclusion of Red Hill

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there will need to be further research into other significant Indigenous geological sites that can be incorporated into the new geotrail plan.

The perceptions of stakeholders were very supportive and interested in the concept of the proposed geotrail. With the right management in place and funding through several mining corporations, local businesses and educational organisations, this geotrail can provide visitors to the Perth Hills area with a new and unique tourism product that represents the rich heritage and history of the area.

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APPENDICES

Appendix 1: Tourism Opportunity Spectrum

Source: Dawson, 2008, p. 45-46

Setting characteristics	Ecotourism	Nature-based tourism	Rural tourism	Rura–urban tourism	Urban tourism
Management goals	Preservation and protection of the resource	Conservation and resource management	Resource management and some development	Resource management and economic development	Economic development and enterprise
Accessibility factors (difficulty, access type, means of conveyance)	Very difficult or controlled access mostly by trails or water routes; may be very remote from human habitation	Difficult or controlled access by trails, water routes and secondary roads	Moderately accessible on secondary and primary roads	Accessible on secondary and primary roads; some public transportation	Easy access on highways and roads by vehicles and public transportation
Visual characteristics factors (acceptability of visitor impacts)	No readily apparent changes to the natural environment or very minimal localized user impacts	Primarily a natural-appearing environment and landscape but some human impacts are evident	Mix of natural and managed environment and landscape with evidence of human habitation	Moderately managed environment and landscape with evidence of human habitation	Extensively modified and man-altered landscape and environment for human habitation and enterprise
Visitor environmental impact factors	Very minimal user impacts and some concentrated user impacts (e.g. hiking trails and scenic vistas) but with few users	Minimal user impacts and localized to recreation activity areas and facilities (e.g. boat launch sites, campgrounds) but with low numbers of users	User impacts that are prevalent in small areas due to site development and management plus some concentrations of users (e.g. marinas, motels)	Moderate user impacts due to site development and management plus moderate volume of users (e.g. full service resorts, developed attractions)	High degree of user impacts due to extensive site development and management plus high volume of users (e.g. theme parks, retail store complexes)

Continued

Continued…

Setting characteristics	Ecotourism	Nature-based tourism	Rural tourism	Rural–urban tourism	Urban tourism
On-site management factors (existing infrastructure)	Very limited infrastructure (e.g. hiking trails); most supporting infrastructure is off-site but within the region	Minimal infrastructure to support visitor activities on-site	Some infrastructure and commercial development	Moderate infrastructure and commercial development	Extensive infrastructure and commercial development
Social interaction factors	Infrequent user–user or group–group interactions; managers expect highly ethical behaviour to other users and environment	Some user–user or group–group interactions; managers expect ethical behaviour to other users and environment	Moderate user–user or group–group interactions; managers expect ethical behaviour to other users and environment	Frequent user–user or group–group interactions; managers expect ethical behaviour to other users	Extensive user–user or group–group interactions; managers expect moderately to minimal ethical behaviour to other users
Visitor management factors (acceptable regimentation)	Managed for non-motorized uses and non-consumptive recreational activities	Managed for non-motorized and some motorized uses and non-consumptive and consumptive recreational activities	Managed for motorized and non-motorized uses and non-consumptive and consumptive recreational activities	Managed for motorized and non-motorized uses and more consumptive recreational activities	Managed for motorized and non-motorized uses and more conspicuously consumptive recreational activities

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Interview questions

Participant

1. Can you please tell me about your role in this organisation?

   <u>Prompt</u> -   How long have you been in this position for?

2. Do you live in the Perth Hills?

   <u>Prompt</u> -   If yes, how long have you lived in this area?

Introduction

Geotourism

Have you read the information I sent to you regarding the proposed geotrail plan? Yes/No. If **YES**, continue with questions. If **NO**, provide a verbal summary of the geotrail and its sites.

1. Had you heard of the term 'geotourism' before I made contact with you?

   <u>Prompts</u> -   If yes, where have you heard of it?

   What does it mean to you?

2. Does your organisation think that the proposed geotrail would provide opportunity for the Perth Hills to become a geotourism location?

3. Given the information provided within the information booklet, what is the view of your organisation on the proposed geotrail plan outlined?

4. Can you think of any sites that may be appropriate to be added into the geotrail?

Site Specific

The Red Hill Quarry

5. Are there any concerns regarding the Red Hill Quarry that you think should be addressed if it was to be included into the geotrail?

   Prompts

      a. Environmental – proximity to the Red Hill Waste Facility

      b. Socio-cultural – Indigenous significance

      c. Political

6. Does your organisation think the Red Hill Quarry would be a suitable location to develop facilities for visitors in the area?

   Prompts

      a. If yes, what products? Information displays, picnic tables, cultural centre, tours...

      b. If no, why not?

The Zig Zag

7. Are there any concerns regarding the Zig Zag that you think should be addressed if it was to be included into the geotrail?

   Prompts

      a. Environmental

      b. Socio-cultural

      c. Political

8. Does your organisation think the Zig Zag would be a suitable location to develop facilities for visitors in the area?

   Prompts

      a. If yes, what products? – Information display, picnic tables, toilets, **fixed binoculars** etc.

      b. If no, why not?

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The Boya Mountain Quarry

9. Are there any concerns regarding the Boya Mountain Quarry that you think should be addressed if the site was to be included in the geotrail?

   Prompts

       a. Environmental

       b. Socio-cultural

       c. Political

10. Does your organisation think the Boya Mountain Quarry would be a suitable location to develop facilities for visitors in the area?

    Prompts

        a. If yes, what products? – Information display, picnic tables etc.

        b. If no, why not?

Future opportunities/overall support

11. Does your organisation see any further opportunities for this geotrail plan? How successful do you think it would be?

12. Does your organisation think developing this geotrail within the area could facilitate new business and employment opportunities?

    Prompts

        a. Expansion on existing business

        b. Development of new ones

13. Do you think this geotrail would help with preserving and protecting the environments natural and cultural integrity?

14. If this geotrail is developed in the Perth Hills, does your organisation think this could become a differentiating identity for the Perth Hills?

    Prompts

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a. Focus on the uniqueness of the Hills?

b. Marketing?

c. Increase in tourists?

d. New identity embraced by community?

15. It's important to involve people within community, government, business and tourism groups when planning and developing any tourism product that may affect people. Can you think of three/two people that you would personally feel should be involved with this study given the information and contacts you know?

16. Is there anything you'd like to add?

PARTICIPANT INFORMATION SHEET

Research on tourism stakeholders perceptions on the development of a geotrail in the Perth Hills

Dear _____

You are invited to participate in this project, which is being conducted for a thesis in partial fulfilment of the requirements of a Bachelor of Tourism Management Honours Award by Edith Cowan University, Joondalup.

This research seeks to explore the perceptions of tourism stakeholders on a proposed geotrail within the Perth Hills. This project involves researching a proposed geotrail in the area, presenting this to tourism stakeholders, and interviewing key stakeholders for comments on issues regarding the geotrail; as a representative of your organisation, you are invited to speak on behalf of the organisation.

The interview process will take approximately 20 to 30 minutes, and will involve a series of questions regarding the geotrail. Participants may be asked to recommend two or three contacts that they think should be involved in this project.

Your participation in this research is entirely voluntary and you have the right to withdraw from active participation in this project at anytime. All interviews will be recorded with a digital recorder and will be transcribed into a written format, with participant's names coded to provide confidentiality and held securely in a locked cabinet. The interview process will be collated with responses from other stakeholder groups to be analysed, with results will be published at a later date. Your individual responses will not be reported or divulged in any way and you are free to withdraw your consent at any time. Any information or details given for this study will be kept confidential, will be used for the purposes of this project and may be used in related future projects. If you would like a

summary of the results or have any further questions regarding this project please contact me at the contact details below.

If you wish to withdraw your consent for your data to be used in this research project you should notify me. At the completion of the research all survey materials will be destroyed.

If you have any questions or require further information about the research project, please contact either my supervisor or myself at the following contact information.

Yours sincerely,

Lauren Norrish (Researcher)   **OR**   **Prof. Ross K. Dowling PhD** (Supervisor)

M: ▆▆▆▆▆▆

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CONSENT FORM

An exploratory study on tourism stakeholder perceptions on the development of a geotrail in the Perth Hills

I (the participant) have read and understood **the participant information sheet,** and any questions I have asked have been answered to my satisfaction. As a representative of the organisation I am employed by, I understand that I will be speaking on behalf of the organisation. I understand that the information I provide will be referred to as that provided by the organisation and that my identity will remain anonymous.

I understand that participation in the project will involve the completion of an interview that will last approximately 20 to 30 minutes. I understand that this interview will be digitally recorded, transcribed, and coded to ensure my confidentiality, and that recordings will be erased after the project is completed (December 2010).

I agree to participate in the project, realising that I have the right to withdraw from active participation in this project at anytime and, further, to demand that data arising from my participation is not used in the research project. I understand that the information provided will be kept confidential, will be used for the purposes of this project and may be used in future projects. I agree that research data provided by me or with my permission during the project may be included in presentations at conferences and published in journals on the condition that neither my name nor any other identifying information is used.

I freely agree to participate in the project.

Participant   **Researcher**

....
Name   Name

....
Signature   Signature

....
Date   Date

PARTICIPANT INFORMATION SHEET

Research on tourism stakeholders perceptions on the development of a geotrail in the Perth Hills

I would like to invite you to participate in an interview on the development of a geotrail in the Perth Hills. I am seeking your assistance in highlighting issues and concerns stakeholders may have on this development. This interview should only take 20 minutes of your time.

Participants for this study have been selected at convenience according to those who have visited one of the three sites selected as part of the geotrail. Your participation in this research is entirely voluntary and no names will be recorded at any time. Your responses will be coded and the notes and audio tapes will be stored in a locked filing cabinet. Any information or details given for this study will be kept confidential, will be used for the purposes of this project and may be used in related future projects.

If you wish to withdraw your consent for your data to be used in this research project you should notify me. At the completion of the research all survey materials will be destroyed.

If you have any questions or require further information about the research project, please contact either my supervisor or myself at the following contact information.

Yours faithfully,

Lauren Norrish (Researcher)　　　**OR**　　　**Prof. Ross K. Dowling PhD** (Supervisor)

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CONSENT FORM

An exploratory study on tourism stakeholder perceptions on the development of a geotrail in the Perth Hills

I (the participant) have read and understood **the participant information sheet,** and any questions I have asked have been answered to my satisfaction.

I understand that participation in the project will involve the completion of an interview that will last approximately 20 minutes. I understand that this interview will be digitally recorded, transcribed, and coded to ensure my confidentiality, and that recordings will be erased after the project is completed (December 2010).

I agree to participate in the project, realising that I have the right to withdraw from active participation in this project at anytime and, further, to demand that data arising from my participation is not used in the research project. I understand that the information provided will be kept confidential, will be used for the purposes of this project and may be used in future projects. I agree that research data provided by me or with my permission during the project may be included in presentations at conferences and published in journals on the condition that neither my name nor any other identifying information is used.

I freely agree to participate in the project.

Participant	**Researcher**
....	....
Name	Name
....	....
Signature	Signature
....	....
Date	Date