

RURAL ECONOMY

**Social Impact Assessment of the Proposed
Dodds-RoundHill Coal Gasification Project**

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Project Report



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SOCIAL IMPACT ASSESSMENT OF THE PROPOSED DODDS-ROUNDHILL COAL GASIFICATION PROJECT

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ABSTRACT

This project report was completed by 14 graduate and undergraduate students in a social impact assessment course (AREC 450-550) during the Winter Term, January to April, 2009. The overall goal of this project was to learn specific concepts and methods for social impact assessment by undertaking such an assessment for the proposed Dodds-Roundhill Coal Gasification project (Southeast of Edmonton, Alberta). The social impact assessment is composed of four major components: (1) scoping of relevant social indicators, (2) social impacts within municipalities, (3) social impacts within the farming region, and (4) a comparative case study of social impacts. Together, the four project reports provide insights into the potential social impacts from the proposed coal gasification project in the Dodd-Roundhill region. In each project, students identified opportunities and challenges in conducting research. These insights may be useful in the development of monitoring frameworks and long-term evaluation processes with regard to this project. Also, each project utilized a variety of methods for social impact assessment and the learning from these methods may be useful for assessment practitioners as they work with communities to identify social impacts in other locales.

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EXECUTIVE SUMMARY

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AREC 450-550 Social Impact Assessment
Class Project Report

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April 30, 2009

Background

This project report was completed by 14 graduate and undergraduate students in a social impact assessment course (AREC 450-550) during the Winter Term, January to April, 2009. The overall goal of this project was to learn specific concepts and methods for social impact assessment by undertaking such an assessment for the proposed Dodds-Roundhill Coal Gasification project. This style of teaching is generally known as experiential learning, and this approach is consistent with University of Alberta efforts to place students within community settings, and engage communities around Alberta in research activities of mutual interest.

Sherritt Coal released a public disclosure document for the Dodds-Roundhill project in January 2007, but in 2008 the project was placed on hold and, at the time of this report, there continues to be uncertainty about its future. There was a general sense, however, that a project of this nature (if not this particular project) would be proposed for this coal-rich region at some point in the future. In the 1970s, a coal project was proposed for this region and subsequently cancelled, so this region has a long history of such project proposals. Given this history, a social impact assessment within this context may be beneficial, not only to students as a learning experience, but also to residents of the region as a means of learning more about possible impacts from energy industry mega-projects within agricultural regions.

Project structure

The social impact assessment is composed of four major components: (1) scoping of relevant social indicators, (2) social impacts within the municipalities of Tofield and Ryley, (3) social impacts within the farming region of Beaver County, and (4) a comparative case study of social impacts between the towns of Wabamun and Tofield. Approval from the Research Ethics Board (Faculties of Physical Education and Recreation and Agricultural Life & Environmental Sciences) was granted for this project, and students interviewed a total of 97 individuals during the course of their field work. Although efforts were taken to utilize conventional social science methods, and work within a rigorous research framework, the project has several limitations. First, students engaged in field work for a period of approximately five weeks, and no budget was given for fieldwork. Therefore, time spent in community was limited, and the scope of analysis was therefore constrained by these factors.

Moreover, the primary purpose of the project was to provide students with an experiential learning opportunity. Through this project, students became more familiar with methods in social impact assessment and experimented with diverse approaches. Although the results of this project may be of interest to many readers, in some ways the diversity of methods that are explored in this project may be of particular interest to social impact assessment practitioners in Alberta and elsewhere. Given the limited scope of social impact assessment methods that are utilized currently within the province of Alberta, this

project provides an alternative experience in which to learn and development other ways of engaging with citizens and understanding social impacts from a community perspective.

In the section to follow, key findings are summarized from each of the four project components.

Scoping

In the scoping report, students experimented with four distinct methods: (1) informal interviews, (2) in-depth personal interviews, (3) group interviews, and (4) survey research (including internet-based tools). Given that scoping processes are undertaken in the early stages of an impact assessment, information from the community provides insight into major areas of opportunity and concern regarding the proposed project. In this case, interview participants focused on positive aspects such as economic impacts and material well-being, population change, job opportunities for local residents, and changes to the small-town atmosphere.

High school students who participated in the project were less informed about the proposed project but had questions about land ownership, relocation of farms and families, and the feasibility of returning land to pre-project conditions.

Survey results indicated that individuals perceived negative impacts more frequently than positive impacts. Positive impacts included: job availability, employment rates and economic opportunities. Negative impacts were focused on health issues, crime, social tension and aesthetic values.

In addition to these results, the report goes into some detail on the strengths and weaknesses of each research method. Discussion about the limits of internet-based tools was identified by this group in particular.

Municipalities

In this report on the municipalities of Tofield and Ryley, students utilized interviews with 34 residents and documented results of their interviews through figures (histograms). Research participants were recruited from small business, public institutions, and members of the general public (residents). Questions were asked about specific social impact domains, listed in Table 1 below. These indicators were identified through a review of published literature on social impact assessment and recent research by a graduate student at the University of Guelph.

Table 1: Social impacts selected for study in the municipalities affected by the proposed Dodds-Roundhill Coal Gasification Project.

Category	Impact
Health and social wellbeing	Feelings in relation to the project
Economic impacts and material wellbeing	Property values
	Employment and unemployment
Family and community impacts	Social tension
	Community identification and connection (sense of belonging, attachment to place)
Quality of the living environment	Adequacy of physical infrastructure (roads, water, sewer, housing, etc.)
	Adequacy of social infrastructure (basic social services and facilities, such as schools, police, libraries, childcare, welfare services, etc.)

In general, business people and representatives from public institutions had a good understanding of the proposed project, but residents were less informed. Approximately 57% of Tofield residents and 67% of Ryley residents were able to articulate to researchers a clear and accurate description of the proposal.

All of the research participants indicated that the project would have an impact on their community. Common areas of impact included economic growth, population expansion, employment opportunities and the loss of farmland. Concerns about the project focused on loss of farm land, divisions and conflict within the communities regarding the merits of the proposed project, and environmental concern. In general, however, research participants from the municipalities expressed a general approval for the project, with a caveat that deep divisions have developed within the communities – and these divisions are already having a social impact.

Other research methods were also utilized within the report, including an analysis of direct and indirect jobs from the project. Based on published literature, a multiplier of 1.3 was utilized, resulting in a total employment impact during the operation phase of 442 jobs.

The identification of deep divisions within the community is an important finding from the project, and it reflects a reality that social impacts are not just something that takes place once the construction phase begins, but social impacts are an aspect of host communities even at these earliest stages of public discussion and planning.

Also, the particular method that students utilized in this project combines the collection of interview data (semi-structure interviews) with quantitative analysis techniques. In this case, specific segments of text were coded and reported as thematic information. These thematic elements were then reported in histograms. This approach to data collection and analysis contrasts with the following group that also utilized interview research methods, and these contrasting approaches to research illustrate the diversity of ways in which data (in this case interview data) can be analyzed and represented within a project report.

Beaver County

In this report on social impacts in Beaver County, students utilized a similar list of social impact domains to the one listed above (Table 1) and conducted interviews with 15 people from the region.

Interviews with research participants revealed that residents were less concerned about physical health impacts and much more concerned about the emotional and mental health impacts of people in the area. These current health impacts were associated with current project uncertainty, deep divisions and conflict in the community, and importantly, a deep sense of impacts that are associated with the local farming culture. Participants identified this concern because of the way in which local culture is so strongly dependent on the local environment and the agricultural landscape in particular.

Another interesting finding from this report is the concern that residents expressed about the role of government in siting and approving large projects of this kind. Reflecting on the strong political and economic strength of the energy industry in this province, residents expressed a lack of trust in the current government's ability to meet the needs of their local constituents. These concerns were in contrast to the general sense of satisfaction with the project proponents (Sherritt Coal) and their way of working with the public through groups like RHDAPA in particular.

This discussion about government's role is interesting in part because methods of social impact assessment are often focused on two key actors: industry and community. In this case, government is also an important actor, and one that may require further attention in the context of setting a regulatory context that is understood to be fair and effective.

Another interesting finding from this report is the way in which the proposed project has affected social relations, not only in a negative sense (community conflict) but also in terms of community building and the formation of social capital. The re-emergence and/or creation of groups like RHDAPA and VOCAL (Voice of Community and Land) are evidence of community members working together toward common goals. This work has resulted in a ground-breaking Land Acquisition Policy that has been utilized in other negotiation processes in Alberta.

Comparative Case Study

In this report, students focused on a comparative case study approach to social impact assessment. In this method, three communities were selected for comparison: (1) the study community (Tofield), the comparison community (Wabamun), and the control community (Mannville). These communities were studied in comparative context, utilizing data from the Census of Canada, interviews with residents, and media analysis.

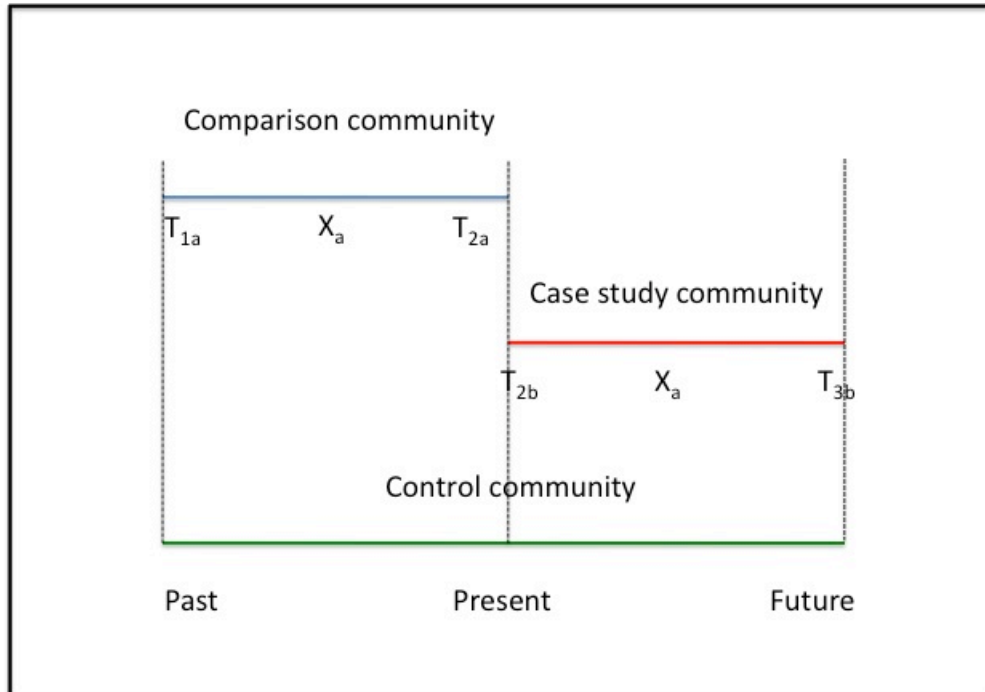


Figure 1. Diagram of the comparative diachronic model

As a starting point, students selected five social impact domains: gender distribution, population, income, community stratification, and subdivision of land. These impact areas served to focus data collection activities.

More than the other three groups, this particular group had difficulty in contacting individuals to interview, particularly in the Wabamun area. After numerous efforts to contact individuals and community organizations by telephone, email, and flyers posted on bulletin boards throughout the community, three individuals were identified who worked for the Whitewood-Highvale coal mine. One was a project engineer, one was a member of the land reclamation department, and one was in charge of the resident complaint department. Although the perspectives of these individuals were informed by their employment situation, their comments did provide some important insights. Based on these interviews, positive impacts from the mine were associated with economic opportunity in the region; employment, attracting new people to the community, support for local business, tax revenue for communities, and reclamation of land to productive status.

On the negative side, research participants identified a variety of concerns: loss of farms and farm families, complaints about noise, blasting of mine sites and potential damage to homes in the area, water movement issues, dust, and heavy use of local roads.

Given the challenges this group faced in contacting local residents for interviews, this groups also focused on secondary sources of information, particularly the local media. Several stories in local papers

identified a variety of environmental impacts from mining and industrial development in the region – in particular, articles in recent years have focused on water quality issues and problems of mercury contamination in the lake.

Another large component of this comparative case study involved an analysis of information from the Census of Canada, on changes in agricultural activity and social conditions in case study communities over longer time periods. Efforts to conduct this analysis were frustrated, however, by several factors including (1) a 50 year gap between pre-mine impact conditions in Wabamun (1950s) and Tofield (today), and (2) a lack of consistent information from one census period to the next. These constraints resulted in limited insights from the quantitative component of this project.

Given the challenges in conducting this comparative case study, the report makes a series of important observations about how to improve this method of social impact assessment for future research. First, a more recent comparison community, in the last 10 to 20 years would provide more opportunity for comparison of data from the Census of Canada. Second, where socio-economic impact assessments have been completed, baseline information will be available for comparative purposes. This was not the case in Wabamun. Third, more than one comparison community may be appropriate. For instance, it may be possible to explore impacts from Wabuman and Forestburg to learn about potential impacts in Tofield.

These four project reports provide insights in the potential social impacts from the proposed coal gasification project in the Dodd-Roundhill region. In each project, students identified opportunities and challenges in conducting this research. These insights may be useful in the development of monitoring frameworks and long-term evaluation processes with regard to this project. Also, each project utilized a variety of methods for social impact assessment and the learning from these methods may be useful for assessment practitioners as they work with communities to identify social impacts in other locales.

PART I: SCOPING

Social Impact Assessment of the proposed Dodds-Roundhill Coal Gasification Project
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1. INTRODUCTION

1.1 Social Impact Assessment

According to Becker and Vanclay (2003), a social impact assessment is the process of assessing or estimating in advance the social consequences that are likely to follow from specific policy actions or project developments, particularly in the context of appropriate national, state or provincial environmental policy legislation. Therefore, the main objective of an SIA is to ensure that the developments or planned interventions that do occur maximize the benefits and minimize the costs of those developments, especially those costs borne by the community. Any development project has some initial or long term effects for the surrounding community directly or indirectly either positive or negative. A thorough and extensive SIA report helps the community to minimize the negative effects for the community as well as helps to maximize the positive benefits from the particular project.

The objective of a Social Impact Assessment (SIA) is to ensure that a proposed development is well planned, and will provide benefits as well as minimizing costs to the impacted communities. According to Becker and Vanclay (2003), these costs, or externalities, are not taken into account by decision makers, government regulatory authorities or project implementers because costs are not easily identifiable, quantifiable or measurable. SIAs, although difficult to perform, attempt to identify the positive or negative impacts in advance. This effectively helps to evaluate the project more accurately.

Becker and Vanclay (2003) note that social impacts are the end result of human actions that alter the ways that people live, work, play, communicate, relate to one another, etc. In addition to this, social impacts alter the standard of living and basic needs of populations. A social impacts assessment includes cultural impacts as well. This involves changes to the norms, values, and beliefs that guide and rationalize our concept of self and society. In general, we can say that a social impact assessment is the process of identifying the social changes and focusing on the impacts on particular communities that are likely to occur as a result of a particular development or planning scheme which is located inside or surrounding a community.

The use of participatory methods to gather data for an SIA involves an implicit assumption that local knowledge is valuable to the process (Becker and Vanclay 2003). The use of local knowledge requires an understanding of how local people perceive effects – not just how various technical experts understand them. For an ex-ante approach, local knowledge is necessary for a practical understanding of the new circumstances incurred by the project implementation. Local people have the firsthand experience and necessary knowledge needed to address the impacts of the proposal. This kind of experience cannot be found from outsiders unless they have encountered something similar when living or working elsewhere or unless the proposal that is being assessed is for some modification which are already exists in the community. Moreover, local people will know much about the existing patterns of activities and interest in their community and will be in a position to think about potential impacts on these patterns if provided with relevant information about the proposal.

There must be greater recognition by practitioners as well as operators and administrators that SIA is an ongoing process which occurs throughout the life cycle of a particular project or facility. Management of the operation and mitigation of its off-site effects will remain effective only if information is obtained systematically from local residents and used as an integral part of the ongoing assessment and evaluation. There will always be particular local circumstances which combine to influence the scale and distribution of effects and social impacts around any project site or program location.

This report focuses on scoping social impacts of the proposed Dodds-Roundhill coal gasification project. Before collecting data on social impacts of the project, there are some activities in the SIA process that are required to understand the key issues with regard to benefits and costs and focus the assessment on a smaller suite of social indicators. This early stage of the process is known as scoping, and it takes place at the early stages of social impact assessment. In this model we use participatory techniques to identify a parsimonious set of social impacts for further assessment.

1.2 SIA of the Dodds-Roundhill Coal Gasification Project

Sherritt has proposed to develop Canada's first commercial coal gasification facility, the Dodds-Roundhill Coal Gasification Project. This project will include a Surface Coal Mine and a Coal Gasification complex. The mine is planned to cover 300 km² and is set to run for about 40 years. Sherritt expects to keep a permanent work force of 300 to 400 employees and to have a footprint of about 1.5 to 2.5 square kilometers per year. Regulatory and economic certainty for carbon dioxide used in enhanced oil recovery and underground sequestration is required for this project to proceed. Hydrogen is a product that is in high demand in Alberta and a product that Sherritt has been marketing to customers. Sherritt, however, also believes there are strong long-term markets for other products from the plant including ultra-clean diesel, synthetic natural gas and gasoline. Sherritt originally planned to file their application with the Alberta government in the summer of 2008. However, due to the uncertainty surrounding the end products of the coal gasification, they now plan to file the environmental impact assessment report and application in 2009. If approved, Sherritt is planning to start construction in 2011. This project will require some infrastructure in addition to the mine and the gasification complex. This will include a raw water pipeline and an associated water intake, one or more dedicated product pipelines to deliver the syngas, hydrogen or synthetic natural gas to the market place, and a pipeline to carry CO₂ either to market, possibly for enhanced oil recovery, or to underground storage.

1.3 Scoping

This report is focused on the scoping aspect of SIA. Scoping is described by Taylor, Goodrich, Fitzgerald and McClintock (2003) as the process of identifying key issues and stakeholders for use in SIA development. Furthermore, it is integral to determine the key variables that are to be illustrated in the next step of the assessment, profiling/baseline data collection, through the initial scoping phase (Taylor et al. 2003). In order to effectively address the potential social impacts of the Dodds-Roundhill Coal Gasification project, an in-depth scoping procedure is vital prior to completion of the SIA.

1.4 Study Area

Sherritt Coal has chosen East Central Alberta for the proposed project site, in close vicinity to the communities of Tofield, Ryley and Roundhill. These communities are largely agricultural in nature, as many of the Beaver County residents reside in rural regions. This region is located approximately 45 minutes east of Edmonton, Alberta.

1.5 Report Direction

As with any project, the Dodds-Roundhill Coal Gasification project offers its own unique challenges and opportunities to the community. Not all social impacts are expected and therefore not all social indicators are relevant. This report will apply a participatory methodology in order to assess the relevant social impacts that are the most likely to occur. In addition, this paper will make recommendations on the general framework and specific directions that any comprehensive SIA should follow.

Our methods of data collection include the four various components listed below.

- An online survey with Likert scale questions and free response questions
- A discussion with a group of four high school students from the local Ryley school
- In-depth phone interviews with residents and businesses from the local community
- Informal conversations with residents at the local Farmers' Market.

This comprehensive report, as prepared for our AREC 450/550 final class project, is designed to investigate the possible social impacts that may occur in the communities of Tofield, Ryley, Roundhill and surrounding regions as a result of the Dodds-Roundhill Coal Gasification Project. Initially, we will discuss the methods that were used and the results that were found. Following these sections this group

will discuss the appropriateness and validity of our methods as well as some areas in need of improvement. This report will list all of the relevant social impacts that were predicted from our results as well as discuss how an SIA should be developed to explore these potential impacts. The scoping aspect of social impact assessment is very important to the process of impact assessment. The work done in narrowing down and highlighting the potential impacts of this project can potentially save time, money, and energy in later research efforts.

2. METHODS

2.1 Informal Conversations

One of the methods used to obtain primary data was personal interviews. On Friday April 3, 2009 we arranged a visit to the local Farmers' Market in the town of Tofield. The intention of this visit was to conduct face to face interviews with local residents. The purpose of these interviews was to collect and understand any potential social impacts that the residents in the area of the proposed Dodds-Roundhill Coal Gasification project may experience. Upon arrival our presence and our intent were announced. We were given a table where we could set up a station for the purpose of conducting interviews. These interviews were very unstructured and unrestricted. Group members went around from table to table asking permission to conduct interviews. At the same time one or two group members waited at the station table as residents came and spoke to us. All information was taken down in point form and in pen on loose-leaf paper that was attached to a clipboard. A total of seven interviews were conducted with local residents.

Many residents who were interested in speaking to our group came to the table when we were not busy. Most of the data was obtained in this fashion. Respondents were told that we were students with the University of Alberta. Many respondents were asked if they were familiar with the project. All residents that gave interviews indicated that they had some level of knowledge about the project. Some respondents asked questions pertaining to the project. Any data that was available to us was shared with them. Group members were careful to include qualifiers on the level of uncertainty to any information that was given in regards to the project. Respondents often asked questions pertaining to our personal opinions. Any personal opinions were withheld in order to keep the data unbiased. Interviewers sometimes gave subtle indications of an opinion by nodding their heads, offering similar stories to the ones that were given, and by agreeing with residents when they mentioned an aspect of the project or social impacts that was consistent with our information. Although this could be seen as bias, group members displayed these subtleties consistently with all respondents. The purpose of this was to gain trust, to show empathy, and to allow the conversation to progress so that our group could gain as much data as possible.

This type of data collection was integral to our project. We used the informal interview method for a number of reasons. First, the Farmers' Market venue allowed us to meet a large number of people in a short amount of time. This was important because our group, as well as the other three groups, were under time and resource constraints. Second, the unstructured and unrestricted method allowed for respondents to offer as little or as much information as they were comfortable with. Finally, the informal interviews gave a different perspective and novel data that would not have been obtained in the other methods that were used.

Respondents were asked personal information only as it pertained to information and opinions that were already given to us. Questions about personal information were kept to a minimum. Information about identity was kept anonymous in our notes unless otherwise requested by respondents. Information on identity was only recorded when it pertained to opinions and information that was given. For example, information or opinions about farmers would be given more weight if the information or opinions were given by a farmer in the area. Also, information that was given to our group in interviews

was not verified. The information was only used to see what social indicators and areas of social concern were important to residents.

2.2 Interviewing

Interviewing was the second of four methods of data collection used in this scoping process. While the survey primarily yielded quantitative data that can be represented well in graphs and charts, our group discussion, informal conversations, and interviews garnered rich data from personal experience. This qualitative data is useful for understanding the scope of the perceived effects of the project, but notably difficult to quantify.

Quantitative research differs from qualitative research in that the former involves the manipulation of a few variables, while the latter “is inductive, and a multiplicity of variables and their relationships are considered not in isolation but as being interrelated in the life context” (Yow 2005:5). We were very concerned about becoming aware of these interrelationships, as typical SIAs tend to atomize effects without considering them as a whole system that works together. Interviews in particular “enable the researcher to give the subject leeway to answer as he or she chooses, to attribute meanings to the experiences under discussion, and to interject topics” (Yow 2005:5). By giving interview participants the opportunity to lead the conversation, guided only by our open-ended questions, the interviews developed into rich sources of information that included data that we as researchers had not even considered.

Yow insists that all interview projects should begin with the researchers “becoming conscious of assumptions, formulating questions, even defining tentative hypotheses, and critically examining all of these” (2005:68). Although we strove to remain as unbiased as possible, we remained conscious that all research, including all methods across all disciplines, can never be entirely objective (Yow 2005:6). Instead of ignoring our own biases, we acknowledged our own assumptions regarding the project and our task, and how those assumptions might affect our work. The four of us all enrolled in the AREC 450/550 class at the University of Alberta because of a shared concern for the wellbeing of human beings affected by industrial development projects. We care about the health of humans, plants, animals, and the earth they inhabit. Several of us grew up on farms or in small towns, or have close relatives who have been involved in agriculture and owned family farms for several generations. We also understand the importance of a healthy economy, and the need for steady and sustained financial income to support the wellbeing of individuals and communities. Upon recognizing our own beliefs, we sought to formulate questions that were as succinct as possible without leading interview participants to answer in a certain direction.

We framed our questions within our broader research purpose, which we agreed was to scope the Dodds-Roundhill Coal Gasification project in order to understand various impacts from community members’ perspectives. Our interview guide began with several biographical questions, which would help us position the participant within his or her community, as well as help establish comfort and rapport. While not all of the questions were asked of each participant, the following questions were available and were asked if the researcher felt each question was important and/or necessary:

Biographical Information

Where were you born?

What is your date of birth?

Where do you live?

How long have you lived in the area?

Have you lived anywhere else?

What is your occupation?

What languages do you speak?

Are you married?

Do you have any children?

What leisure activities do you enjoy? What is your cultural background?

What is your religious affiliation?

Are you involved with any associations (VOCAL, RH-DAPA)?

Following these biographical questions was a short series of open-ended questions related to the proposed Dodds-Roundhill Coal Gasification Project:

- I. How might the Dodds-Roundhill Project affect you and your family?
- II. How might the Dodds-Roundhill Project affect the members of your community?
- III. Are there any questions or concerns that you have about the proposed Dodds-Roundhill Project? If so, what are they?
- IV. Are you looking forward to any aspects or results of the Dodds-Roundhill Coal Gasification Project? If so, what are they?
- V. Are you aware that Calgary power put this project forth in the 1970s? Did you live in the area when Calgary Power wanted to use this region?

We concluded the interview guide with two very important questions suggested by Yow (2005:69):

- VI. If you were writing this study, what other questions would you ask?
- VII. Is there anyone else that you think that I should contact?

After developing our interview guide, we determined how and with whom we would conduct the interviews. In-person interviews would have been preferred, but time, distance, and finances put restraints on us as student researchers, and we decided to conduct the interviews over the phone. Referring to the contact list we created early in our research, we decided to focus on small business owners or managers in Tofield and Ryley. This was for two reasons: first, we had been informed that the official SIA done by the project proponent had only consulted businesses with 20 or more employees; and second, we wanted to narrow the use of this method down to a group of people who shared a common interest (ie. the economy of the small towns) and who we had not heard from in the presentations given to our class (which had included representatives from Tofield Town Council, RH-DAPA, VOCAL, Sherritt, and Alberta Environment).

Prior to conducting these interviews, we presumed that the interview participants would have some knowledge on Sherritt's proposed project, and that they would all identify both positive and negative potential effects for themselves and their communities. We hypothesized that most participants would reference the potential economic benefits related to the project, but lament the loss of community identity.

We conducted four telephone interviews between Wednesday, March 25, 2009 and Wednesday, April 8, 2009. The calls were made from the researcher's residence to interview participant's place of work. Three of these interview participants are business owners or managers in Tofield, while the fourth is a pastor in Ryley. We decided to contact the pastor because we thought he might have insights into the concerns of his congregation, based on the nature of his occupation. Each interview lasted approximately 30 minutes.

2.3 Group Discussion

Our project group had initially determined that gathering information from as many population subsets as possible would increase the breadth of perspectives in our scoping report. One specific target was the youth residing in the project region. By interviewing the youth population in either of Tofield,

Ryley, Roundhill or the surrounding rural regions, we hoped to gain insight into how youth in the region interact with their respective communities and the landscape. Also, another hope was that we might be able to collect data regarding the future population of the community; youth would be very likely to experience effects from the project over a 20-year timeline. Prior to scheduling the group dialogue, we had not identified that a youth population would be the only group discussion that was held, however time constraints resulted in the occurrence of only one group dialogue.

Initially, we had pinpointed several potential groups from which we might gather data from in a discussion setting. Scoping social impacts of interest to residents of the local study area is often focused on high-ranking officials, community leaders, or spokespeople for opposing views of the issue. By approaching the exercise from the assumption that each and every individual of the community might have a viewpoint, it was believed that we might be able to draw out potential impacts that would otherwise not be addressed. Also, holding a group discussion forum setting could allow individuals to draw on each other's ideas and thus increase the breadth of potential impacts as well. We identified the Good News Community Church youth group in Ryley, both of Tofield and Ryley Schools, Little Monsters Playgroup (Tofield), Tofield School of Dance, Tofield Curling Club, Ryley Sunshine Club and the Evangelical Lutheran Womens' Group at Ryley's Bethel Lutheran Church as possible groups to participate in a discussion. Contacting many of these groups was challenging, partially because the majority of these recreational activities were held outside of regular working hours and partially because the existence of some groups appears to be based entirely from word-of-mouth communication and thus, no contact information is publically available (ie. Little Monsters Playgroup). As our scheduled study area visits were during the day, we immediately eliminated the Good News Community Church youth group, Tofield School of Dance, Tofield Curling Club, and the Evangelical Lutheran Womens' Group from our list, as information listed on the Tofield Town website indicated that these groups only met during the evening.

To contact groups that would be meeting during our scheduled study area visits, we called or emailed the contacts displayed on our contact list and attempted to arrange a meeting. We did not contact every group. Either our phone message was not returned, the email was not responded to, or fitting the possible discussion into our schedule would be unfeasible so we did not contact the group at all. One of our project team members had a personal contact at Ryley School and was able to successfully schedule a visit through the principal. The principal distributed our information to the school staff in hopes of matching us with a possible class, and the teacher of the Science 30 class was willing and interested to allow us to facilitate group dialogue about the Dodds-Roundhill Coal Gasification Project during his regular class time. Our visit was scheduled for 10:30AM on Wednesday, March 25, 2009.

Prior to attending the class, we constructed a general guideline for how we would facilitate the discussion. As our determined direction in scoping was to allow for concerns to come from the students themselves rather than being steered towards concerns from our questions, we decided that the fewer guideline questions we constructed beforehand, the less we would affect the natural flow of the conversation. Our framework of the discussion was as follows:

- Introduction
 - Introducing ourselves (background, purpose) to the class
 - Ask the students to introduce themselves in an attempt to reduce formality and create a comfortable and open environment
- Ask students about their current knowledge of the project
 - Give general project information (very similar to the project introduction paragraph information)
- Ask "What do you think about the proposed Dodds-Roundhill Coal Gasification Project?"
- Allow all other questions to be generated from discussion as steered by the class

It was very important for us to create a comfortable atmosphere for the students, as we believed that this would encourage a more open discussion. Another consideration was that youth may not have a large amount of knowledge about the project, and discussing the project in a group setting would be best

to allow for a learning opportunity and more back-and-forth dialogue about the potential positive and negative effects of the project.

Prior to the event date, a permission slip was delivered electronically to the Science 30 teacher to ensure that parental permission was granted for students that were under the age of 18. The teacher distributed these forms to the students and requested that they were returned prior to our class discussion meeting. Students that had not returned the forms were not able to participate in the conversation. This slip also indicated that participation was completely voluntary.

On the day of the discussion, we brought a digital voice recorder, note taking materials and an information handout for each student, which included a map of the project as well as the information paragraph that was established for the survey. To facilitate the conversation, we followed our developed schedule. Several other questions ensued as a result of the discussion-generated question scheme. At the end of the conversation, we asked all attendees (students and teacher) to voluntarily complete the survey we had created, and encouraged students to visit the website and affiliated online survey.

2.4 Survey

Upon recognizing the difficulty in reaching a broad audience through phone interviews and group discussions alone, a new method of gathering social data was required to effectively scope the project. As a group, it was decided that a survey would be a useful way to gather responses from various community members. An initial brainstorming session within our team brought suggestions of potential concerns about the project to light, such as job creation and loss of farming lifestyle. However, we immediately recognized that the questions asked would alter how respondents considered the project and may skew how data regarding their individual viewpoints was collected. Because of the possible issue-narrowing concerns with a survey, we decided to include multiple broad categories and to avoid specific questions. Rather than steering respondents to specific concerns, social impacts derived by Schooten *et al.* (2003) were utilized in a rating-fashion within the survey. The seven social impact groupings described by Schooten *et al.* (2003:85-88) are:

- I. Health and social wellbeing,
- II. Quality of the living environment (liveability),
- III. Economic impacts and material wellbeing,
- IV. Cultural impacts,
- V. Family and community impacts,
- VI. Institutional, legal, political and equity impacts, and
- VII. Gender relations.

Each category includes several social impacts, which Schooten *et al.* (2003) describes as impacts that are felt or experienced that occur directly from social change processes involved with the potential project. Social change processes, such as unemployment rate and privatization, are independent of the local social environment and are directly associated with the project (Schooten *et al.*, 2003). Our survey was intended to address social impacts rather than social processes.

Although the list of social impact categories is extensive, we felt it important to include at least one potential impact from each set in the survey. The entire list of social impacts was scrutinized, and the most prominent potential impacts were included. Examples of impacts that appeared least applicable are gendered division of reproductive labour, loss of local language or dialect, and burden of national debt. Also, due to space constraints, impacts that were somewhat redundant or addressed multiple times in various ways were excluded in all but one instance, such as functioning of government agencies and integrity of government agencies. Our general objective was to minimize the number of responses that an individual would have to make (in an effort to reduce the length of the survey) but to keep the integrity of Schooten *et al.*'s (2003) list intact. We assumed that if a topic were addressed even briefly, the respondent might consider another associated impact that may be more pertinent to him/her and indicate the impact accordingly later on in the survey. The 24 impacts that were included in the survey are listed in Table 1.

Table 1: Social impacts included in Dodds-Roundhill Coal Gasification Project scoping survey.

Category	Social impacts (Schooten et al., 2003)	Social impacts Survey questions
Health and wellbeing	Mental health, actual physical health and fertility, perceived health	My health (mental and/or physical)
	Nutrition	My eating habits
	Perceived health	General health within the community
Quality of living environment	Leisure and recreation opportunities and facilities	My access to recreation and leisure activities in my community
	Environmental amenity value/aesthetic quality	The aesthetic and/or sentimental value of my community
	Personal safety and hazard exposure (actual and perceived), crime and violence (actual and perceived)	The level of crime and/or violence in my community
	Physical quality of housing (actual and perceived), Availability of housing facilities, Property values *[Economic]	The price or quality of housing in my community
Economic wellbeing	Workload, Standard of living	The amount of work needed to maintain my current lifestyle
	Employment, Economic prosperity and resilience	The number of people who are employed within my community
	Economic dependency	The amount of control I have over my economic activities (i.e. purchasing, employment)
	Income	My personal or business debt
	Income	My personal income level
	Economic prosperity and resilience	The diversity of economic opportunities in my community
Family and community impacts	Community identification and connection	How much I feel like I belong in the community
	Social tension and violence	The amount of social tension in my community
Family and community	Social networks	Social networks I have with members of my community

Category	Social impacts (Schooten et al., 2003)	Social impacts Survey questions
impacts	Social differentiation and inequality	Equality between social groups in my community
Cultural impacts	Cultural integrity, Natural and cultural heritage	Local cultural traditions in my community
	Experience of being culturally marginalized	How some cultural or ethnic groups are treated
Institutional, legal and political	Functioning of government agencies	How well municipal government agencies function
Gender relations	Gendered division of production-oriented labour	The number of jobs available for men
	Gendered division of production-oriented labour	The number of jobs available for women
	Gender-based control over, and access to, resources	My ability to have access to and control over resources
	Gendered division of household labour	Roles (division of labour) of men and women in the home

In developing the social impact delivery method, we determined that the most functional method of response would be a Likert scale for each impact, whereby respondents could indicate positive or negative changes that may be felt within the community. Each impact was listed with five potential Likert scale rankings, scored from 1-5: strong negative change (1), moderate negative change (2), no change (3), moderate positive change (4), and strong positive change (5). These rankings were listed horizontally, with strong negative change furthest to the left and strong positive change to the right. Participants were asked, “As a result of the Dodds-Roundhill Coal Gasification Project, there may be a change in...” prior to the set of impact scale questions and were asked to choose one of the various scale responses for each impact.

As including only selected social impacts could not possibly cover every concern from every local study area resident, we integrated four open-ended questions towards the end of the survey (after the Likert questions). These questions were:

- I. How might the Dodds-Roundhill Project affect you and your family?
- II. How might the Dodds-Roundhill Project affect the members of your community?
- III. Are there any questions or concerns that you have about the proposed Dodds-Roundhill Project? If so, what are they?
- IV. Are you looking forward to any aspects or results of the Dodds-Roundhill Coal Gasification Project? If so, what are they?

Finally, three demographic questions were included to give context to the survey data. We asked each participant’s age, location of residence, and group affiliation. All survey questions were voluntary,

and participants were welcome to ‘pass’ on any question that they were uncomfortable responding to, including demographics.

Generally, this survey was designed to be a cost-effective, non-intensive and accessible method of gathering data. In an effort to reach the largest audience possible, the survey questions were transferred to a public online survey creator, SurveyMonkey (at www.surveymonkey.com) as well as printed in hardcopy. As the URLs for online surveys created on SurveyMonkey are long and complicated, a website was developed to post the survey link using Weebly.com. The full information paragraph about the project itself was posted on the webpage upon entry, as well as links to both the Sherritt Coal Dodds-Roundhill project site and the Pembina Institute’s report on the Dodds-Roundhill project. Once a potential participant clicked on the survey link, he/she was directed to the first page of the online survey, which included brief information on the Social Impact Assessment class project, contact information for Dr. John Parkins, and assurance of anonymity and voluntary response. Hardcopy surveys were nearly identical to the online version in content, including survey-specific class information and project information paragraph. The only two changes were minor wording changes regarding the class information (section was briefer online) and the existence of links to affiliated sites (for obvious non-compatibility reasons on hardcopy). These surveys were distributed during the group discussion and during the Farmers’ Market visit, both inside the hall and to nearby willing businesses.

In order to invite people to complete our online survey, we needed to develop an effective method of advertising. We did this in two ways: first, we ran an ad for one week in the Tofield Mercury, the community’s weekly newspaper. Second, we created a poster to be hung in highly visible locations around Tofield and Ryley. The color poster briefly explained, “Researchers at the University of Alberta are conducting a Social Impact Assessment of the proposed coal mining development projects in your community. We want your opinions. Please share your insights on the potential benefits and costs of the project in the coal mining development public survey at <http://uofa.weebly.com/>. Thank you.” At the bottom of the poster, we wrote the address of the website vertically repeatedly, so that interested community members could tear off a piece of the paper and take it home, where they could complete the survey in privacy and at their own convenience. We placed these posters in high traffic locations in Tofield and Ryley, including Tofield’s Public Library, IGA, Tempo gas station, Community Board, and Busy-B’s Bargains, as well as Ryley’s Post Office, Village Office, and Grocery Store.

3. RESULTS

3.1 Informal Conversations

Information and opinions that were received in this method of data collection were varied and numerous. Only information and opinions that pertained to social and economic parameters were used in analysis. The nature of the informal conversation method did not allow for the taking of many direct quotes. Most of the responses that were recorded were paraphrases using the same key words that the respondents used. When transcribing the data from notebook to spreadsheet, any data that was ambiguous or incomplete was omitted. Responses that were received from the informal conversation method are listed in Table 2. Statements about economic subject matter were included because of the close relation between social and economic indicators.

The exact age of the respondents was not determined but all were over the age of eighteen. The gender of respondents was split fairly evenly with three males and four females answering questions. Respondents included; a business owner, several farmers, a community organizer, and other residents of the project area.

Table 2: Summary of Responses from Informal Conversations.

Statements about social/economic subject matter	Statements about non-social subject matter
<p>- More than we could ask for, I'm involved in a packaged lunch program that will benefit greatly from this project. More workers will bring in more business.</p> <p>- Farmers rent the land anyways so who really cares</p> <p>- There's nothing in the ground anymore in the cemetery. People there have been dead for 50 or 75 years</p> <p>-I asked a contractor for Sherritt, "where am I supposed to live?" I was told, "That's not my problem." To me that's Sherritt saying that.</p> <p>-Norwegian and Mennonite settlers have been there since the 1800's</p> <p>-Land owners have to be compensated</p> <p>-I wish they'd go around old farmsteads the way they went around churches, cemeteries and other things.</p> <p>-Some are very happy that they are getting a good price for the land, they can always go off and buy the land when it's finished with.</p> <p>-The area affects at least five school zones. In Ryley, Holden, Tofield</p> <p>-Townspople aren't a good perspective of anything.</p> <p>-New people won't come to Ryley, they'll go to Camrose, Edmonton</p> <p>-Sherritt has a history of doing this</p> <p>-Landowners were paid \$1000 per unit area of land to do testing. Landowners weren't told what was being done. The local paper interpreted the consent to test on land as overall support of the project.</p> <p>-Where will I move? I need to live within the school zone bus area if my children are going to continue to go to their current school.</p> <p>-The Forestburg project didn't get the influx of people that they were supposed to after the project was underway.</p> <p>-Farmers who want to stay in the area and farm, buy out the land of farmers that retire and sell their property</p>	<p>-Community will be changed but the land won't be. They'll just reclaim the land, I've seen it done before</p> <p>-God put the coal there.</p> <p>-When the soil is stirred up the minerals are brought to the top</p> <p>-Some think there'll be a big hole, there won't be</p> <p>-Can't reclaim it, can't replace trees, sloughs, lands</p> <p>-Sherritt will bury their own waste so you won't be able to dig very deep in the reclaimed soil</p>

3.2 Interviewing

We attempted to contact sixteen individuals in Tofield and Ryley for telephone interviews. However, only four of these were available and willing to participate in our interviews. Several of the people contacted declined an interview, saying that they didn't know enough about the project to comment, that they wouldn't be affected at all, or that their opinions wouldn't matter anyway.

As mentioned in the "Methods" section, we interviewed three business owners from Tofield, as well as one pastor from Ryley. All four participants had lived in their respective towns for less than 10 years, and none were considered to be "directly and adversely affected" by the project proponent. Each of these 30-minute interviews yielded qualitative data and quotations that are useful to help us understand the perceived effects individuals will feel if this proposed coal gasification project goes ahead. Two individuals requested that they remain anonymous, largely because of the social and political tension that currently exists in the communities over the proposed project. Pastor Mark Bueckert, of Good News Community Church in Ryley, and Twyla Horne, manager of the Tofield Child Care Society, both agreed to acknowledged for their participation in these interviews.

Three out of four of the interview participants initially stated that the impacts they would feel if the project went ahead would be minimal. However, as the interview progressed, each interview participant outlined a number of concerns, as well as hopes and positive responses they had with regard to the project.

The concerns of interview participants tended to focus on population increase, job availability for locals, and a change in the small community atmosphere. One individual suggested the communities surrounding the proposed project are unprepared to deal with an economic boom, including the rise in crime and drug use that tends to go along with rapid growth in small towns. The same individual also expressed concern that non-locals will be given jobs, while locals will be left without. He suggested that an Impact Benefit Agreement should require that a certain percentage of workers be locals. In the past, Ryley had been promised a lot of new jobs for locals when the hazardous waste facility *Clean Harbours* opened nearby. However, residents complain that these promised jobs never became available to locals. Another individual stated a belief that new non-local workers will choose to live in a nearby urban centre and commute, rather than integrate themselves and their families into the Tofield and Ryley communities. In this scenario, the interview participant hypothesized that volunteerism for community-based activities, such as coaching minor hockey or mowing baseball diamonds, was likely to drop if long-time residents were forced out of the community and new workers remained reluctant to identify as community members. Twyla Horne voiced the concerns of the Tofield Child Care Society, saying that if more young families move into the area, there will be a higher need for childcare facilities. While this may seem to be an economic benefit for the small business, the current facilities are already pushed to their limits and cannot accommodate any more clients. In addition to this, they do not have any alternate building in which to expand. Finally, interview participants expressed concern over the well-being of their friends and community. Merlin Stauffer, Tofield resident of 57 years, summed up these concerns succinctly by saying, "You can reclaim land, but you can't reclaim community."

Not all comments were concerns or fears about the project. In fact, all four interview participants had hopes and positive responses toward the proposal. These were most frequently tied to economic impacts and material wellbeing, as well as family and community impacts. Pastor Bueckert stated his hope that an influx of new young families would mean an increase in positive new relationships within the community, as well as economic growth and the development of family-oriented facilities. Another individual indicated that the project could help to bring stabilization to the community. One business owner commented that if more people move in, local producers might not have to travel as far to sell produce, and might actually be able to create a market for themselves in Tofield and Ryley. This individual hoped that the young couples who might move into the area would have enough disposable income from working on the project to purchase fresh, locally grown produce at a fair price. Another interview participant recognized that economic growth in the community would lead to competition between more businesses, which would offer lower prices to consumers. One person stated the belief that

the farmland in the area is not good quality and not worth saving, and would be put to better economic use with a large-scale industrial project.

Finally, some of the comments seemed to indicate reluctant submission to the project. One individual said, “We’re going to need the energy. If not here, then where? As long as everyone’s trying to be responsible, and Sherritt seems to be at least trying. If we say no here, then where do they go?” Another recognized the impacts on relationships in the community, saying, “there’s always going to be a few people upset when something like this gets built.”

3.3 Group Discussion

Four students and one teacher participated in the classroom discussion, as led by three of the project team members. The dialogue ran for approximately 1 hour, and all participants made a contribution to the discussion. As initially hoped, the discussion setting allowed for a running dialogue and the students brought up several issues that our university class group had not considered. In general, three major categories of concern emerged from the Ryley School classroom discussion: community composition, community perception and physical environmental/individual concerns (Figure 1).

A variety of non-project related similarities and differences between students helped to create background for the each of their responses. None of the students live in the proposed project area, however the closest resides just North of Ryley. In the future, two students may take over family farms, however all four students are planning to move away from the region to attend post secondary institutions within one year of graduating. When we asked the students how Ryley is perceived or defined, “small,” “everyone knows everyone” and “farming community” were three initial reactions. A characterization from all responses over the course of the dialogue leads to Ryley being defined as “a small, peaceful, relaxed farming community where everyone knows everyone.” The students who were surveyed snowmobile, ride horses, and play sports (which involves a lot of travel to other communities) during their leisure time.

In regards to the project, the students were somewhat aware of some details, however did not feel very informed. Also, the group had concerns and questions regarding land ownership, relocation for those bought out by Sherritt, and the feasibility of returning to a section of land post-development. When asked about her feelings on the project, one girl stated that “some people are upset about it and some are excited...it is split, a lot of people don’t really know what it is. It opens a lot of opportunities for jobs.” Another individual suggested that there would be an increase in the population, and that people from the city might take notice of the town of Ryley. An associated concern is the housing market, and more specifically, that the cost and availability of housing could be challenged with a population increase.

Highway use was another point of anxiety for the students brought up during this discussion. The potential increase in use of Highways 21 and 14 and possible loss of Highway 834 were particular issues for this group, who commented that the highways are already damaged, that passing is difficult on Highway 21, and that there would be more large trucks on the roads. From Ryley, Highway 834 is the main route to Camrose where many students work, plan to go to school (University of Alberta Augustana campus), and make frequent trips.

The natural environment and environmental health impacts were also brought up during the discussion, specifically soil quality, air particulate matter, groundwater systems and the integrity of Beaver Lake. One individual indicated that her family grazes their cattle herd on natural prairie grass fields that have existed on the land for decades. She is concerned about her family’s ability to continue that practice if the area were reclaimed. Another concern was about how cemeteries would be affected by the project; a specific comment was in regards to people that have previously picked their burials plots. The group was generally uncomfortable with the idea of cemeteries being relocated.

When asked about their general feelings of coal development around the Ryley area, many individuals commented and the discussion ensued for several minutes. One student suggested that the perception of coal is dirty, and the way that others might see Alberta as a province may change. Another stated that in the grand scheme of things, having another source of energy might not have a huge impact;

however as the proposal is so close to Ryley, local people take notice. Other concerns were regarding power line and pipeline construction and movement.

Generally, the students were wary about the potential change of the small community feel that each is accustomed to. Atmosphere, community respect, appeal and peace are all community aspects that were discussed by the students. One individual stated:

- “People who live here now moved here because of what it is right now, and not because of what it’s becoming or what it is going to be. It will draw different crowds. And it will be a different type of crowd.”

Another student noted that the general peacefulness of the area, along with the absence of infrastructure was what makes Ryley a valuable community. Her peer commented that:

- “You can hear trains and vehicles already, so with a lot more trucks going by it would be less peaceful. That adds to the beauty...it’s just peaceful.”

Many of the student’s concerns were based on community perception when it came to coal project development as a holistic concept, as well as physical environment or individual concerns (for example, use of highways to get to work). Other concerns were based on the composition of the community, such as population increases and current residents that may be forced from their residences (Figure 1).

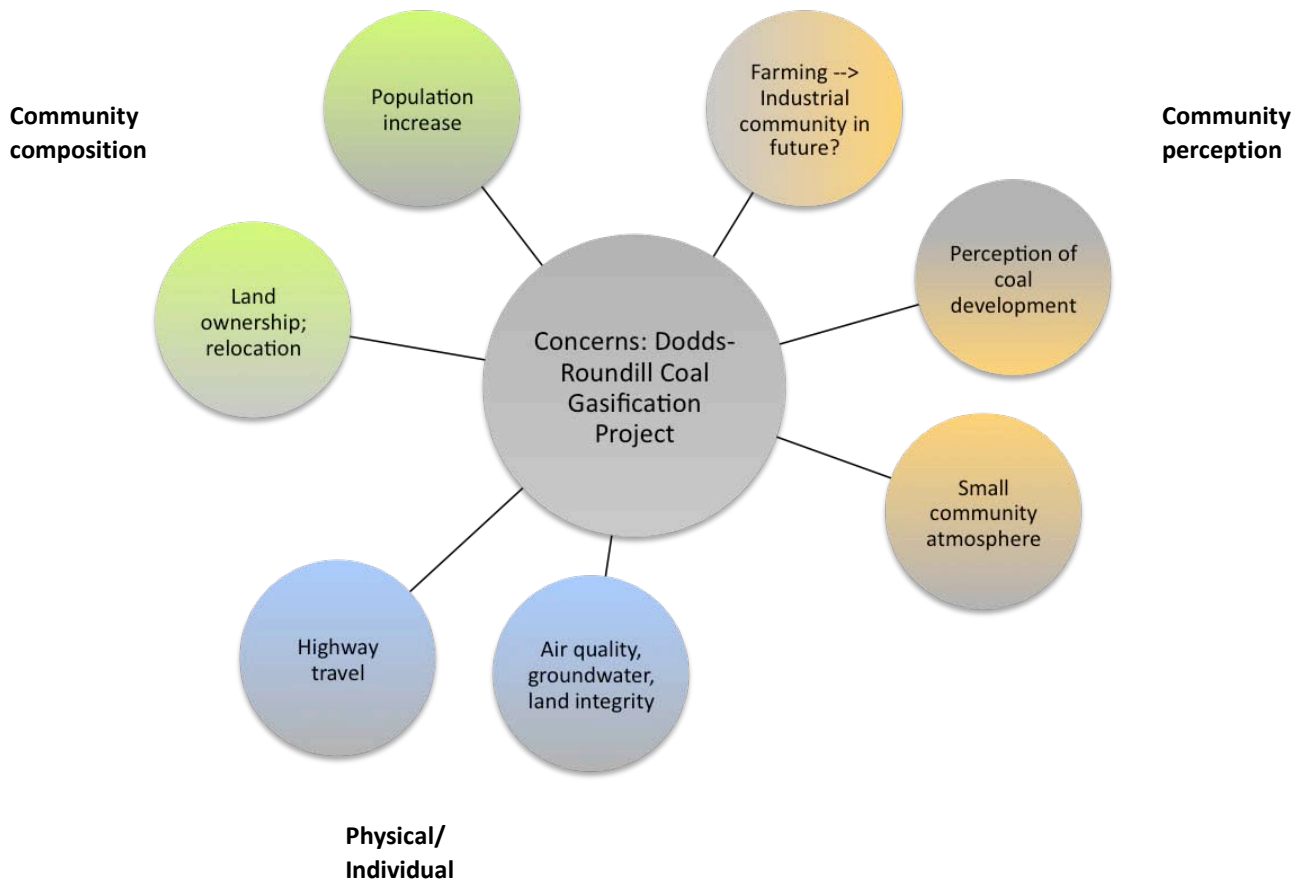


Figure 1: Dodds-Roundhill Coal Gasification Project group discussion themes.

3.4 Survey

In total, 30 individuals completed the Dodds-Roundhill coal gasification project survey. 16 individuals responded online, 9 responded either at the Farmers’ Market or while they were working at a nearby business on the day of the market, and 5 responded at the group discussion at Ryley School. The

online survey was available for 11 days from March 25th to April 4th. All survey results will be presented in the aggregate, and there will not be any distinction between the various response methods.

Overall, 52% of respondents were male, and 48% were female. The average age of survey respondent was 47 years, with 48% of respondents falling between 46 and 65 years old (Figure 2). In terms of residence, 14% of respondents indicated that they lived in the project area, while more than 47% indicated that they resided in the surrounding rural region (Figure 5). Example answers designated as the surrounding rural region are Beaver County, surrounding Tofield on acreage, Holden area and Tofield rural.

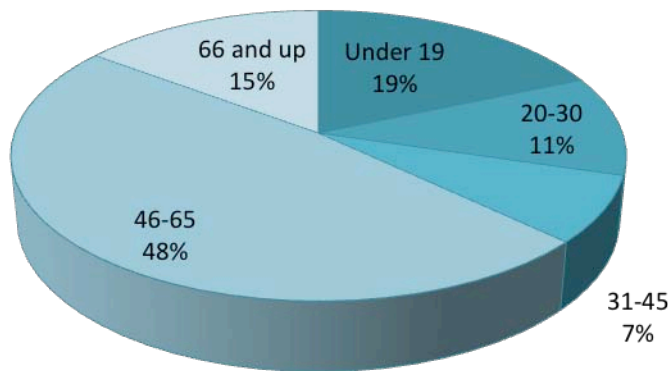


Figure 2: Age distribution of Dodds-Roundhill Coal Gasification project survey respondents.

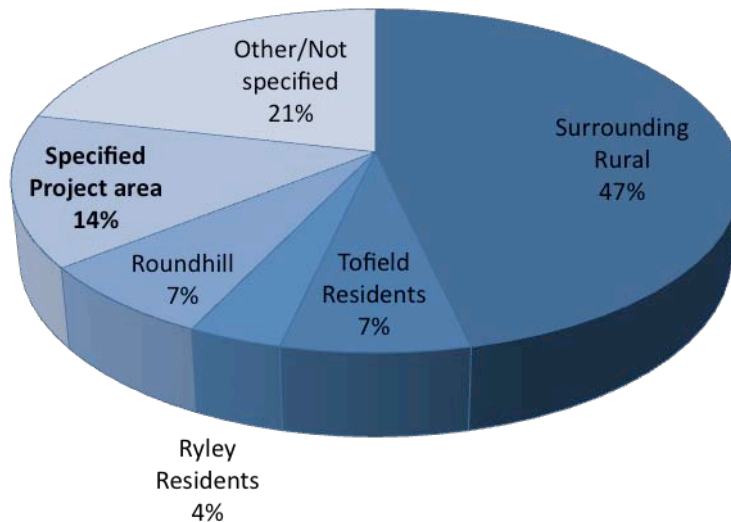


Figure 3: Stated residence breakdown of Dodds-Roundhill Coal Gasification project survey respondents.

The final demographic question, group affiliation, was intended to identify VOCAL and RH-DAPA members whose views are strong and well formulated in other forums. As we strived to gain many different insights, it was important to recognize where people were coming from and to ensure that a broad representation of the population was achieved. Out of the 30 responses, 5 respondents (17%) indicated that they were involved with either RH-DAPA or RH-DAPA and VOCAL, while no individuals identified only with VOCAL.

To synthesize the Likert scale data, a simple mathematic averaging method was utilized. Each ranking had been assigned a number (1-5) and thus every response to each social impact question could be converted into a numerical value as well. The mean was derived for all responses for each social impact question (eg. my health (mental and/or physical)). The overall mean of the entire question set was determined by averaging the question means. Questions that had means lower than the overall mean were perceived as more negative potential changes, while those with means greater than the overall sample mean were thought to be more positive potential changes.

The overall mean was 2.46, which suggests that individuals perceived negative impacts more frequently than positive impacts. In order to eliminate any potential bias, the five most positive social and five most negative impacts will be discussed in this section. In general, most of the positive social impacts were based on economic factors such as job availability, employment rates and economic opportunities (Figure 4). Division of labour was indicated to be unchanged in most cases (65%), however the mean score was larger than most other social indicators. The social impact ‘number of jobs available for men’ was scored the highest overall, with a mean value of 3.82 (approximately equal to moderate positive change). Important to note is that the highest positive social impacts still have several respondents indicate that they believed there would be a negative change, as indicated by the green bars on Figure 4.

The most negatively affected social impacts, as indicated by the survey, focused on community social impacts such as health, crime, social tension and aesthetic value (Figure 5). Mean values for these impacts ranged from 1.62 to 1.97, which correspond to a negative change (between strong (1) and moderate (2)). Approximately 36% of respondents indicated that there would be no change in the amount of social tension in the community with development of the project, however 41% believed that there would be a strong negative change. The indicators that had the greatest negative response (either strong or negative) were level of crime in the community (83%) and the aesthetic or sentimental value of the community (86%). An interesting finding is that 80% of respondents indicated that there might be a negative change in community health.

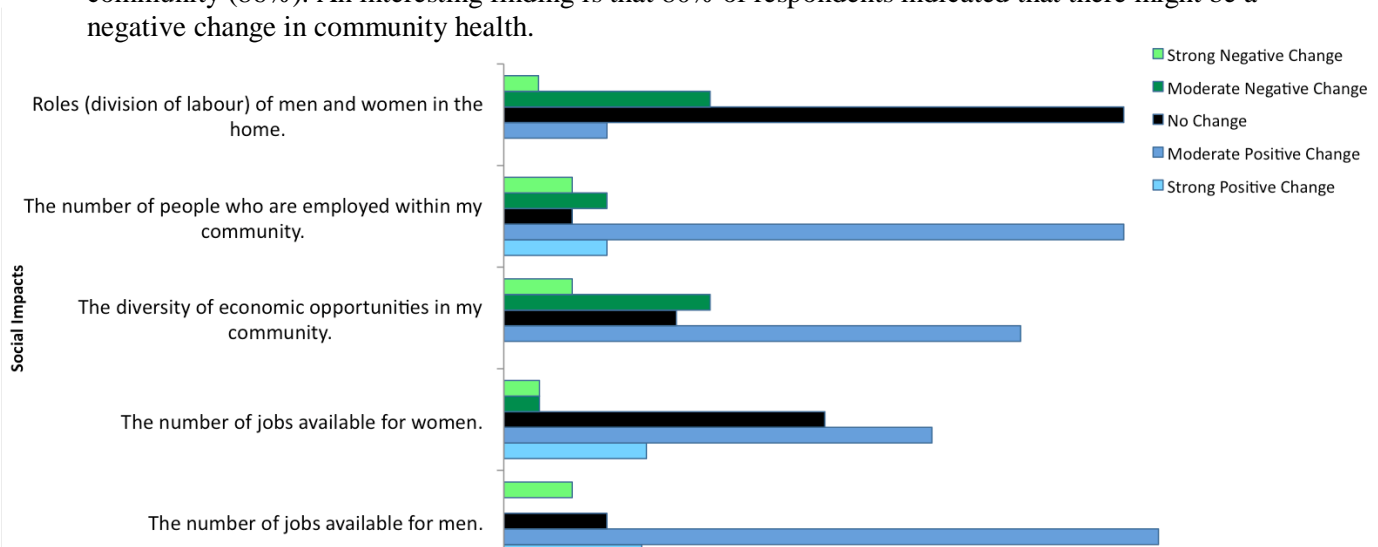


Figure 4: Five most positive social impacts from Dodds-Roundhill coal gasification project survey responses. The various bars (green indicates negative change and blue indicates positive change) indicate the percentage of respondents that felt each social impact would be positively or negatively changed by existence of the proposed project.

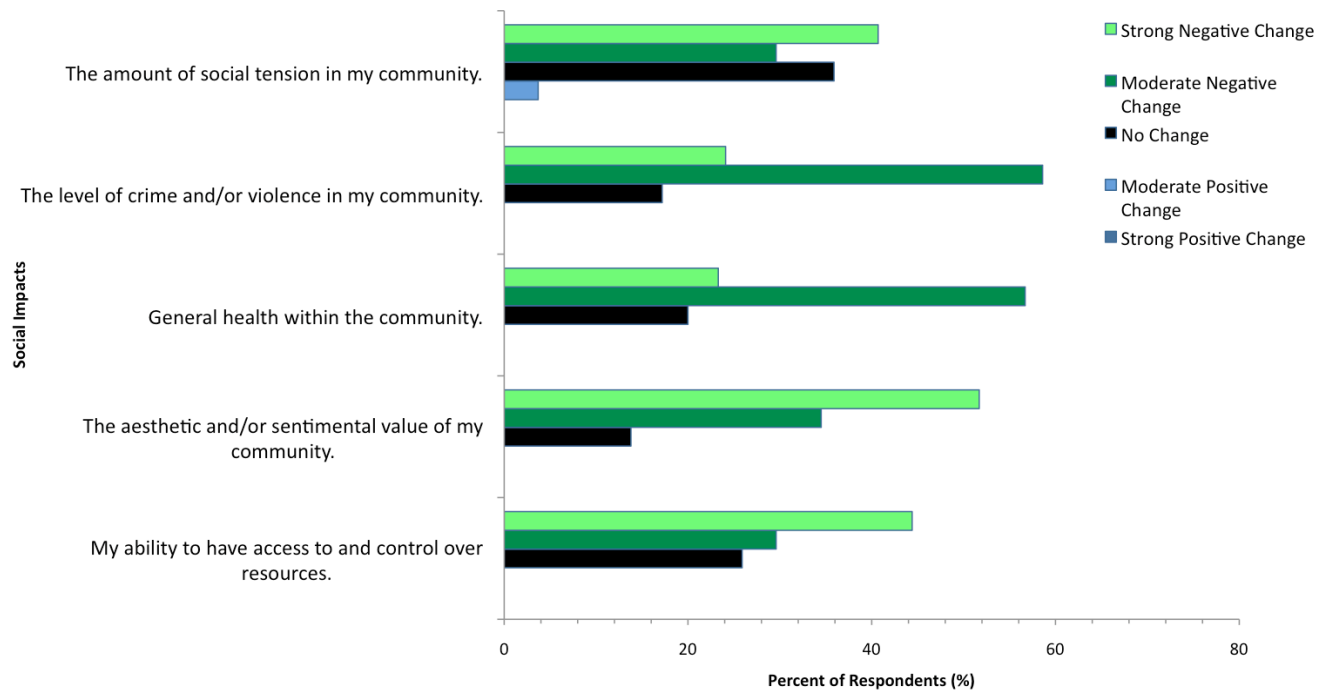


Figure 5: Five most negative social impacts from Dodds-Roundhill coal gasification project survey responses, read as figure 4.

Respondents were more specific about potential social impacts with their responses for the open-ended questions located at the end of the survey. When asked how the Dodds-Roundhill Coal Gasification Project may affect the individual and his/her family, we received a wide variety of responses, a sample of which is listed below.

- “Disrupt and wipe out relationships. Lose neighbours and friends.”
- “My family doesn't mind change. The project won't have a great affect on my family.”
- “NOT ONE IOTA.”
- “Sherritt will not buy my land because it is outside the project boundary but I will be able to see and hear the work at some point because I live so close.”
- “Because my home and business are situated in the mine area, we will be forced to move. Even if we are paid for own home and land this doesn't mean we can find another place to live that is still in close proximity to where our children live. Also most of our customers are local. If we have to move we lose our customer base. Its not easy to move into a new area and gain people's confidence especially when they are used to dealing with their own local contractors.”
- “Routes to places are cut off, negative impact - community atmosphere that we enjoy could be in jeopardy.”

When asked how the project may affect the community, many respondents indicated that there would be changes in the general community atmosphere. A listing of some responses is indicated below.

- “It will change the community totally. While it will provide more jobs there currently is not a shortage of work in the community.”

- “I believe those who stay and work for the project will develop a different value system which will alienate those who don't and many will move away effectively ending the community as it is today.”
- “Since many of us will have to move the community as it now exists will be gone. The Town of Tofield will radically change if that many workers move in and its infrastructure will not be able to handle the increase in residents. I also see an increase in crime as a very probable impact as a new group of people move into the town. Town businesses will probably experience a lot of competition as new businesses also move in.”
- “...It will be virtually impossible for the area to "re-populate" to any degree even after the mine moves on...”
- “The feel of the community especially for those older members may be disrupted. Whether positive or negative, time will tell.”

We also asked about concerns that the residents might have in regards to the project.

- “What accountability will Sherritt have towards people in the community and the environment. Will one large project lead to others that will turn my pristine piece of rural Alberta into a second industrial heartland or Ft. McMurray”
- “I fear the excavation may interfere with my water well and I have no confidence in the proposed water replacement plan.”
- “My concerns are the bird migration paths for the snow geese, etc.”
- “I am strongly concerned about loss of agricultural and natural/wildlife areas, inordinate and excessive water consumption and wastage; and the time period from first access to land to reclamation and return to agricultural/nature use.”

The final question, which asked what the respondents might be looking forward to if the project did develop, was met with mixed response. 60% of respondents indicated that they were not looking forward to anything. Some of the sample responses are listed below.

- “I get to retire and sell my large acreage to a coal miner.”
- “Modernization of the area.”
- “Price of homes will go up.”
- “Bringing employment to a community is always a good thing.”
- “Yes. Abandonment of the project.”
- “None what so ever. My plans for farming and expansion have been put on hold because of the uncertainty generated by this project.”
- “No. If I wanted a moonscape outside my picture window or an industrial skyline I would move to where I had one.”

4. METHODOLOGY REVIEW

4.1 Informal Conversations

All data collection methods have advantages and disadvantages. Like other methods, personal interviews had unique problems and equally unique virtues. One of the problems that we faced in this method was that of recording information. Writing down respondents' comments took too much time and often took away from the flow of the conversation between group members and respondents. This problem was alleviated when we had one group member talking and another recording. Another problem was the brief nature of the encounters. Longer interviews may have been able to get at information that short conversations could not. A disadvantage of our informal conversations was that most of the respondents were unaware that we would be present at the Farmers' Market. This meant that answers

were not well thought out, which may have affected our results for the worse. The public nature of the Farmers' Market was another disadvantage of this method. Potential respondents may have refrained from approaching or talking to us because of consideration of what other residents may have perceived. Respondents who did talk with us may have felt stressed or uneasy giving us information in such a public setting.

This method was admittedly flawed because of the potential peer pressure of interviewing within a public setting, however there were a number of advantages to this method which led us to choose it for this project. Due to time and budget constraints in this class project we were unable to do many of the things that we would have otherwise done. This method of obtaining data was extremely efficient for the amount of data that was received. Not only did we get all of the interview data in one afternoon but we were able to complete a large portion of our surveys while we were there. A second advantage of this method exists in the open-ended and conversational format. Respondents were able to offer any amount of information that they chose. A virtue of the Farmers' Market venue was the type of people with which we were able to interact. . People that would not have been reachable through other methods were available at the market. Finally, the convenience for research participants was a great advantage. The people we talked to did not have to go anywhere, schedule an interview, or take much time to give us their opinions. In this way the informal conversation methodology was quite convenient.

4.2 Interviewing

Structured and semi-structured interviews are highly effective ways to collect local knowledge (Baines, McClintock, Taylor, and Buckenham 2003). Each of the interviews conducted in this research project yielded rich qualitative data and insightful quotes from the participants. Individuals were able to express their opinions freely without being forced to choose from a predetermined set of responses.

However, this method has its drawbacks. Conducting long-distance telephone interviews or travelling to communities to do interviews in person can be very costly and time consuming. Due to financial and time restraints, we were only able to complete four interviews, which is not enough to accurately represent the range of community perspectives about this project proposal. If our entire group had been able to commit to setting up and conducting interviews full-time for several weeks, we may have been able to complete a larger number of interviews. Furthermore, the people who agreed to be interviewed may have been more articulate, outspoken, or opinionated than those who declined to be interviewed. This "selectivity of narrators" means that inarticulate or shy people, or those who believe they do not know enough about the project or have nothing valuable to say, are not represented by this method.

4.3 Group Discussion

Conducting a group discussion proved to be a valuable method of gathering data. We were able to address concerns that may have not otherwise been brought to light and were able to provide information to local residents that they may not otherwise discover. A group discussion is a learning experience for the group members as well as the researchers. As various questions are asked about the subject, others in the group that may not be aware of aspects can increase their knowledge on the subject. However, there are drawbacks to the group discussion method of data collection.

First of all, determining which groups to target, or how to compose the group, is very important. The comfort level of the individuals with each other may play a large impact on the truthfulness and openness of the discussion, as will having many strong voices among the assembly. By having only a few individuals leading the discussion's direction, others that are less vocal are not able to put their views forward. Furthermore, individuals that feel as though they are not well versed in the subject matter may become reclusive and become alienated from the discussion.

4.4 Survey

Surveys are typically a non-intrusive method of collecting data. By simply asking a particular sample to respond on their own time and pace, potential respondents are able to ponder their answers prior to answering questions. Furthermore, individuals may be more likely to respond truthfully when

they are aware that the data will be anonymous. In the case of the online survey, as researchers we were able to focus on other parts of the study while we were gathering data from survey respondents.

However, surveys can restrict and change how individuals may respond to a question, depending on how the questions are constructed. For example, our choice of social impact Likert scale questions may have altered how respondents answered the open-ended portion. When completing a survey, an individual can answer questions without being engaged; essentially, people are free to simply “check the boxes” without bothering to read the questions. As researchers, this data is still tallied and interpreted although it may be a completely inaccurate depiction of the individual’s beliefs. Respondents themselves are not monitored either, so individuals with very strong views could have potentially skewed the survey results by coercing several of their like-minded peers to complete the survey as well. In the context of this project, the survey results did not appear to be skewed by any one group. Generally, this method was useful in gathering a variety of responses, however failed to be a widely received as we had initially hoped.

5. AREAS FOR IMPROVEMENT

In the process of our study, we used our combined knowledge, experiences, and resources to the best of our abilities. Despite this, we made some mistakes and discovered our own limitations, and in doing so, have recognized some areas for improvement that will be useful for ourselves as well as for other future researchers.

5.1 Interviews

When conducting interviews, we suggest that researchers do not interview directly from cold calls. Instead, we recommend that an initial phone call be made to establish contact, to inform the potential interview participant of the research project and the general line of questioning, and to set up a later time and date to conduct the interview. This allows potential interview participants to take some time to carefully consider what they would like to say, and to discuss their concerns with friends and neighbours to see if they have common understandings they would like to note in the interview.

5.2 Survey

With regard to our survey, we found that we received far fewer online submissions than we expected. We understand that this is likely due to two factors: first, many people living in this rural area do not have access to internet, and those that do only have access to slower dial-up connections; second, many residents in our project boundary belong to generations that are not particularly comfortable with using computers, e-mail, or the internet. In the future, we would ensure that the poster we created to advertise our online survey also had telephone numbers of one of our group members, so that interested residents without access to or familiarity with the internet could contact us and express their opinions. Finally, we recognized that it might be helpful to create hard copies of our survey using a large font, so people can read the questions more easily.

5.3 Informal Conversations

Our informal conversations at the Farmers’ Market may have attracted more participants if we had let people know when and where we would be in the community several days or weeks before we planned to be there. This would have been an ideal way to connect with those residents who could not complete our survey over the internet; unfortunately, we had not had the foresight to advertise the purpose and time of our presence beforehand.

5.4 General/Other

We found that when we were listening to people speak in our phone interviews, group discussion, and informal conversations at the Farmers’ Market, it was useful to have one researcher focus on engaging in the conversation, while another concentrated on recording notes in a notepad or on a laptop computer.

Finally, our ideal research arrangement would have allowed us a longer physical presence in the community, as well as more time to plan and conduct our research. We imagine that this would give local residents time to get to know the purpose of our inquiries, to determine what kind of information they feel comfortable sharing with us, and to actually share that information in a way that was most appropriate for

each of them. We also hope that an extended amount of time would enable us to reach more participants using the variety of methods outlined above.

6. DISCUSSION OF INDICATORS

One of the purposes of scoping in a social impact assessment is to determine the relevant social indicators that are in need of exploration. Not all projects are alike and not all projects will have the same relevant social indicators. There are a variety of social indicators that came up as our research progressed. The aim of this section is to identify through our research the social impact and associated social indicators that are relevant and in need of further review in this SIA. Social impact categories were chosen from Schooten et al. (2003).

The seven categories, as previously mentioned in section 2.4, were used as a basis of determining the questions for the online survey. Schooten et al. (2003) include a number of specific impacts for each impact category. This section will include a breakdown of all impact categories and include all relevant social impacts that will need to be explored further in an SIA. The relevant social impacts were determined through the various data collection methods that we had used. As previously discussed, the four methods utilized for data collection were informal conversations, interviews, a group discussion, and a survey. Social impacts from the list by Schooten *et al.* (2003) were deemed relevant if their subject matter was of interest to our respondents, as demonstrated by the results; social impacts were only deemed relevant if they were an area of concern to study area residents. Our final list was compiled using the information and opinions that were received (Table 3). The participatory methodology that was used was meant to highlight areas of possible social impacts. These potential impacts were not determined through ‘hard’ data collection, records review, comparative studies, or statistical analysis, and no baseline data was generated within the specific report.

Table 3: Relevant social impacts to the Dodds-Roundhill Coal Gasification Project (Schooten et al. 2003)

Social Impact Categories	Relevant Social Impacts
Health and Social Wellbeing	Perceived health Mental health Aspirations for the future Autonomy Feelings in relation to the project
Quality of the living environment	Actual quality of living environment Perceived quality of living environment Leisure and recreation opportunities and facilities Environmental amenity value/aesthetic quality Availability of housing facilities Perceived physical quality of housing Social quality of housing Adequacy of physical infrastructure Adequacy of and access to social infrastructure Actual personal safety and hazard exposure Perceived personal safety and hazard exposure Actual crime and violence Perceived crime and violence

Economic impacts and material wellbeing	Amount of work necessary in order to live reasonably Standard of living Economic prosperity and resilience Income Property values Employment Economic dependency
Cultural impacts	Violation of sacred sites, breaking taboos, and other cultural morals Cultural integrity
Family and community impacts	Social networks Community identification and connection Actual community cohesion Perceived community cohesion Social tension and violence
Institutional, legal, political and equity impacts	Participation in decision making Impact equity
Gender relations	Personal autonomy of women Gender-based control over, and access to, resources

6.1 Health and Social Wellbeing

Actual health was generally not a major concern of respondents. There were some questions pertaining to what the environmental effects would be. Concerns were raised about possible health effects that might result from these environmental effects. However, most of the concerns had to do with the mental health spectrum. ‘Aspirations for the future’ was an area of concern for most respondents. These people were very concerned about how their plans may change as a result of the project. There was a great deal of stress that was expressed in feelings toward the project as well. Concerns were raised about changes in the level of personal autonomy as a result of the project. Respondents who mentioned this were concerned that the project would cause them to lose some power or control over their personal life choices.

6.2 Quality of the Living Environment

If the Dodds-Roundhill Coal Gasification project were to proceed there would be a large change in most aspects of the local living environment. These changes were mentioned very often by most respondents. Changes were expected in both positive and negative directions. Respondents were concerned about housing prices, access to recreation, changes in local infrastructure, loss of aesthetic value, etc. Some respondents believed that the changes would increase property values, improved local infrastructure, and add value to the community. Other respondents believed that crime and violence

would increase, housing availability would drop, and that residents would be exposed to more hazards. Some respondents subscribed to a combination of these opinions. In any case, these areas of potential social impacts will need to be explored further.

6.3 Economic Impacts and Material Wellbeing

Many of the predicted benefits of an industrial project such as this one are economic in nature. This is a trend that we also observed from our respondents. Most mentioning of economic and material impacts were positive. In general, respondents felt that their economic wellbeing would either improve substantially or remain stable. Respondents who were in favour of the proposed project felt that their economic opportunities would improve as a result of the project.

6.4 Cultural Impacts

There were not many concerns raised about cultural impacts of the project. One of the concerns was that the cultural identity of the area would be changed by the project. A number of other concerns were raised about the location of the project in relation to cemeteries and churches. Respondents with these concerns were mostly bothered that the project would exist where cemeteries are currently situated.

6.5 Family and Community Impacts

Concerns that were raised in this category centered around the connections and networks between people in the community. The level of tension in the community has already been raised as a result of the project proposal. Respondents were concerned that the tension would continue to grow. Respondents were equally concerned that these tensions and other factors would alter the existing social networks that exist in the community. Some respondents said that they would not identify with their community and its residents as much as they currently do if the project was implemented. Community cohesion was a concern that was raised by many respondents. People with this concern thought that the community has already been split down the middle on this issue and that the split would continue and worsen if the project continued.

6.6 Institutional, Legal, Political and Equity Impacts

One of the things that was noticed by group members was that there would likely be a disparity in the equity of impacts for this project. These concerns were mirrored by our respondents who often felt that the impacts affected rural residents more harshly than town residents. The fact that there were often two very extreme sides to the argument suggests that there will be an issue with the equity of impacts. In addition to this some respondents felt that their ability to affect decisions in their community would be affected negatively if the project were to proceed.

6.7 Gender Relations

There were very few areas of concern in this category. Respondents did not generally make gender distinctions when discussing the potential impacts of the project. However, the survey results show that respondents think men would benefit in increased job numbers more than women would.

7. SIA FRAMEWORK AND DIRECTIONS

7.1 General Framework

Participatory research that has been undertaken has led us to some key social indicators and potential social impacts. Now this information will be used to outline the path that should be taken in a social impact assessment of the Dodds-Roundhill Coal Gasification Project. A social impact assessment

needs to include effective ways of measuring the potential impacts that have been highlighted in scoping. An effective approach will include participatory methods as well as technical methods of gathering data. Research will be done before project approval and, pending that approval, during initial construction as well as during regular operation. Baseline conditions will need to be determined in order to have a basis for later comparison. Once potential impacts have been clearly identified and quantified, there will need to be follow-up research done in order to determine whether predicted impacts have occurred and whether unseen or unpredicted impacts have occurred as well.

Comparative research will be done on similar case studies. As mentioned in the comparative research group report, a comparison of numerous case studies will offer the best picture of the future of the Dodds-Roundhill area. The Wabamun mine area has some important information to offer which will help researchers better understand the Dodds-Roundhill project. Likewise, the Cheviot coal mine offers a different perspective and new information that can be used in comparison. The Paintearth coal mine near Forestburg is a relatively new development. This mine is a Sherritt International project which means that it can offer some insights into the way that Sherritt builds and runs their projects. These projects will require a data comparison analysis using Statistics Canada data. All data that can be compared between Dodds-Roundhill and other projects will be used for indicators in all of the determined social impact areas. For example, an in-depth analysis might look at the changes in property values or employment before and after the existence of these projects. In areas with incomplete data or areas with no Statistics Canada data, researchers will need to conduct a combination of records review and interviews to determine if there have been significant social impacts. This will require a researcher to stay in the project area for two weeks. This is required in order to allow researchers to schedule and hold interviews, review local documents, and research archived newspapers. This comparative study will help researchers to determine what social impacts may occur in the Dodds-Roundhill Coal Gasification project.

7.2 Specific Directions

Health and Social Wellbeing

Much of the data in this area can be collected through Statistics Canada existing data. For example, there are a number of indicators of health that can be measured, specifically mental health. Some of these indicators may include; suicide rate, persons with high blood pressure, body mass index, life expectancy, etc. A list of these indicators should be compiled to reflect the relevant areas of social impacts in Table (Table 3). Furthermore, a short survey should be compiled that includes questions about aspirations for the future, autonomy, and feelings in relation to the project. These questions should be similar to our survey in quantitative value in order to be valuable for later analysis. This way we can measure the levels of these impacts and then compare how they have changed once the project has progressed. To distribute this survey a series of phone calls should be made to reflect a representative sample of the residents. People who agree to receive and complete the survey should receive the survey in the mail with a return postage stamp for ease of response.

Quality of the Living Environment

This section of the SIA should include two research methods. The first method should be a detailed report done by researchers to document the available recreation opportunities, vacancy rate, quality and extent of local infrastructure, and local crime and violence rates. The second section should be a survey that asks questions pertaining to an individual's views of; the environmental amenity value/aesthetic quality, social quality of housing, access to social infrastructure, perceived personal safety, and perceived level of crime and violence. This survey can be distributed along with the survey on Health and Social Wellbeing.

Economic Impacts and Material Wellbeing

Economic and material measures are very quantitative in nature. The best method of obtaining this type of information is through Statistics Canada and other statistics sources. Information will be collected on; employment/unemployment, consumer price index, housing starts, housing prices, proportion of the economy represented by different sectors, etc. As with all of the suggested SIA methodology, any quantitative data that cannot be retrieved through Statistics Canada may be retrieved through a survey that is sent out to residents.

Cultural Impacts

As was mentioned earlier, cultural impacts will not be a major focus of an SIA on this project area. However, it is still an area in need of review. A researcher should stay in the project area for two weeks where they will schedule and conduct interviews with local residents. This person would also participate in community functions and document any cultural activities in and around the local community. The point of this exercise is to gain an understanding of the community and cultural identity. This will be valuable in determining potential impacts and in predicting how the proposed project might affect the culture of the community and its residents.

Family and Community Impacts

This category of social impacts is closely related to the potential cultural impacts in the sense that they are both mainly qualitative measures. A researcher should conduct interviews with residents with questions about; social tension, social networks, community cohesion, and community identification. Not only will the interviews give a direct insight into the potential family and community impacts but the act of speaking with residents will give the researcher insight into the subtle tensions and networks that exist in the local area.

Institutional, Legal, Political and Equity Impacts

A task force should be created in order to research and make recommendations. These recommendations should be in reference to the disparity in equity of impacts experienced by residents in the project area and surrounding areas. Recommendations should offer solutions or remedies to alleviate social tensions, and balance out the inequities in social and economic impacts. In addition to this, a survey question should be distributed with the others that asks about the respondent's perceived ability to participate in decision making processes.

Gender Relations

Statistical data should be used in order to determine employment and economic access differences between men and women in the area. These indicators should include things like; employment rate by gender, average income by gender, etc. This will be used, as with the other categories of impacts, to compare to future data to determine whether impacts have occurred in these areas.

8. CONCLUSION

Scoping for the proposed Dodds-Roundhill Coal Gasification Project is a large, but very necessary task to undertake. There are several concerns that were brought up by multiple individuals, and also a wide variety of issues that were only brought up in one or two instances. As researchers, it is unfeasible to effectively address each and every concern; however, it is important that all prominent social impacts of the project are considered prior to going forward with the project. A comprehensive list of social impacts relevant for the proposed project in the context of the local study area is addressed in Table 3. Social impacts are not as easily measured or quantified, however the effects on community and

individual livelihood, wellbeing, and the overall social environment are essential to Environmental Impact Assessment.

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PART II: MUNICIPALITIES

Social Impact Assessment of the proposed Dodds-Roundhill Coal Gasification Project
AREC 450-550 Social Impact Assessment
Class Project Report

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1. INTRODUCTION

1.1 Background

Since 2005, Sherritt International has been working on a proposal for a Dodds-Roundhill Coal Gasification project. The project would consist of “a surface coal mine, a coal preparation plant, a coal gasification plant, and [...] space for a number of ancillary facilities including coal storage facilities, an oxygen plant, a waste water treatment plant, a water pipeline into the site and product pipelines out from the site” (Sherritt International, 2007, p.6). The proposed mine and plant would occupy 312 square kilometers in the Central Parkland Region, located approximately 80 km southeast of Edmonton, just south of the town of Tofield and village of Ryley and north of the hamlet of Round Hill (see Figure 1). Sherritt (2007) reports that approximately 99% of the land within the proposed area is privately owned and primarily used for agriculture (p.7). Sherritt is proposing a phased approach, initially consisting of a single gasification unit and a mine large enough to support two gasification units. A second gasification unit would be considered for development once the first is operational. Sherritt (2007) estimates that the site has enough coal resources to fuel two gasification units for approximately 40 years (p.6).

Residents of the area have mixed responses about the proposed project. The Tofield town council and Ryley council have expressed support for the project, hoping that it will draw investment into the municipalities. Local opposition to the project has mainly been organized by two community groups: the Round Hill Dodds Agricultural Protective Association (RHDAPA) and the Voice Of Community And Land Society (VOCAL). RHDAPA has achieved official intervenor status in the regulatory process for any future Energy Resources Conservation Board (ERCB) hearings (RHDAPA, 2007). The proponent also faces other pressures. Due to the

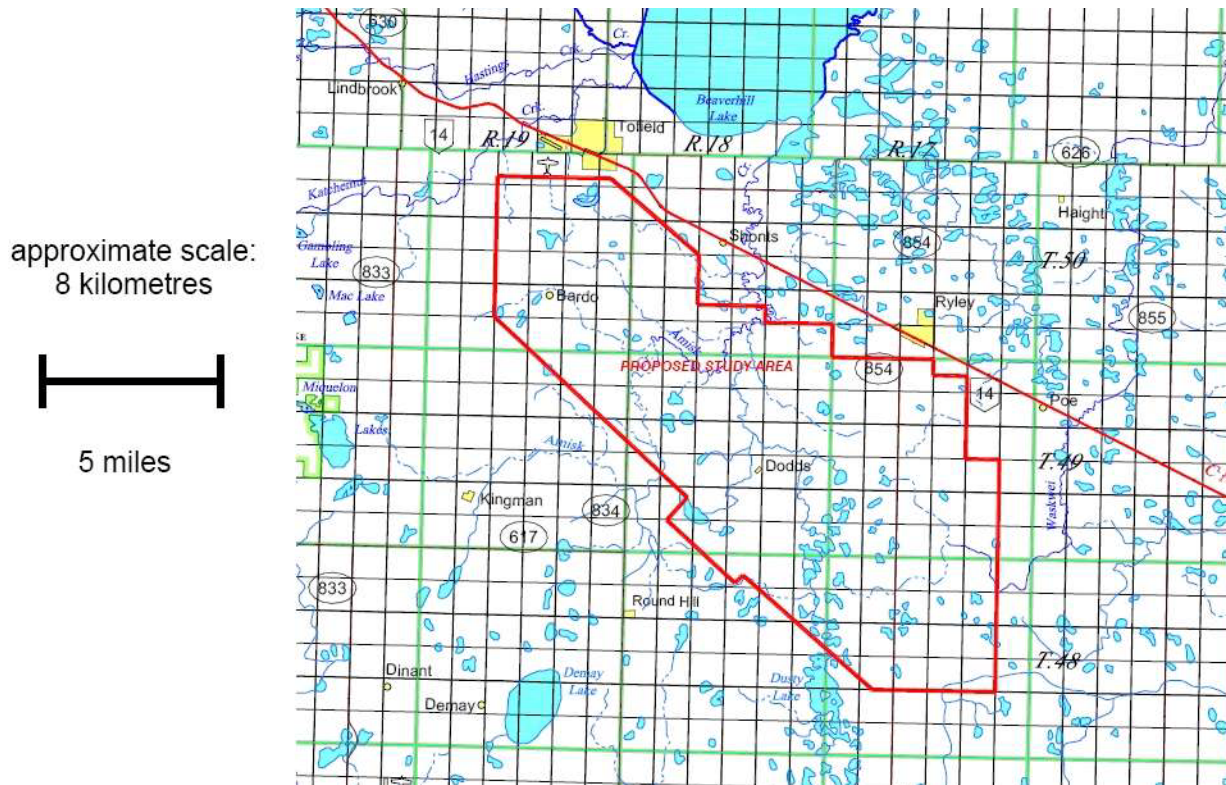


Figure 1: Mine boundary and proposed study area. Development boundary occupies 312 km² (31,337 hectares). Source: Sherritt International, 2007, p.6.

recent economic downturn, Sherritt is less certain about the viability of the project. Originally, the coal gasification facility was to produce synthetic gas, which can be used for fuel, a petrochemical feedstock or processed into hydrogen. The market for these products, notably the latter two, has decreased in Alberta (Ludwig, 2009) thus leaving Sherritt in a tentative position to go forward. To date, Sherritt has completed a baseline environmental assessment but has yet to submit an official Environmental Impact Assessment (EIA) to the ERCB and Alberta Environment.

1.2 Conceptual Framework

As a component of the EIA, the Social Impact Assessment (SIA) — sometimes called the Socio-Economic Impact Assessment (SEIA) — aims to ensure that development projects maximize the benefits and minimize the costs of the development, especially those costs borne by the community (Vanclay, 2003). Too often, the costs are not adequately taken into account by decision makers, regulatory bodies (ERCB) and developers (Sherritt), partly because they are not easily identifiable, quantifiable, and measurable. Baines et al. (2003) suggest that EIAs tend to ignore the social environment and have very general descriptions of effects (p.36), often presenting little more than demographic or economic predictions. Sherritt is required to complete a SIA for its project application. Sloodweg et al. (2003) argue that a proper SIA can ameliorate a project and lead to “cost savings because of reduced negative impacts and better acceptance of the project objectives” (p.56). The need for a SIA for this project was identified by a Master’s student from the University of Guelph. From her draft assessment, Heiberg (2007) identified “the values that are important for the participants within their community” (p.3) using a “modified ‘Interactive Community Forum’ as outlined by Becker et al. (2003)” (p.3).

1.3 Social Impact Assessment Indicators

For this study, we use some of the general social impact indicators identified by van Schooten et al. (2003) as well as information from Heiberg’s assessment. After identifying impacts from van Schooten et al. that we considered to be of particular interest to the municipalities and the community as a whole, we referenced Heiberg’s work to determine the indicators that the community felt were most important. The seven social impacts that are studied in this paper are shown in Table 1.

Table 1: Social impacts selected for study in the municipalities affected by the proposed Dodds-Roundhill Coal Gasification Project.

Category	Impact
Health and social wellbeing	Feelings in relation to the project
Economic impacts and material wellbeing	Property values
	Employment and unemployment
Family and community impacts	Social tension
	Community identification and connection (sense of belonging, attachment to place)
Quality of the living environment	Adequacy of physical infrastructure (roads, water, sewer, housing, etc.)
	Adequacy of social infrastructure (basic social services and facilities, such as schools, police, libraries, childcare, welfare services, etc.)

Source: van Slooten et al. (2003)

These indicators provide valuable information concerning the potential social impact performance of the individuals in the municipalities. Each indicator can be affected by the proposed Sherritt project. For some indicators, secondary data is readily available and from a reliable source. Furthermore, the data collected for these indicators is sufficiently consistent to allow benchmarking over time and permit valuable comparative analyses between different projects. It was also taken into consideration that these indicators will affect small businesses, public institutions, and local residents alike.

2. METHODOLOGY

2.1 Data

The data used in this study is based on the survey data and secondary sources, such as Statistics Canada, official web sites of the town of Tofield and the village of Ryley, literature review, and other secondary sources that gave the information about the community. The project focuses on two municipalities: Tofield and Ryley. The research considers these two towns and disqualifies the town of Roundhill because Roundhill's town population is very small and there is not enough information (Census data) available that could be used in this study.

Empirically, it is not possible to collect data from all the individuals of Tofield and Ryley; therefore, a population sample had to be chosen (Royce et al., 2005). A population sample is a portion of the population that represents similar characteristics of the population under consideration and the selection of participants is free from biases imposed by the interviewer. In order to draw the population sample, non-probability sampling design was chosen over probability sampling design. The non-probability sampling design allowed using haphazard-convenience method, which allowed selecting a group of individuals that was readily available. Following the haphazard-convenience method, two surveying techniques were implemented: telephone interviews and face-to-face interviews (Graham, 1983).

The advantages of using telephone interviews are that they are time- and cost-effective. This method, however, has many disadvantages in terms of low response rate, difficulties in asking lengthy complex questions, and difficulties in establishing trust for interviewer (Graham, 1983). The advantage of the face-to-face interview method is that participants can respond to the survey even if they have problems with reading or writing. In addition participants are: (a) more motivated to respond to the face-to-face interview method; (b) able to answer the questions in their work environment; and (c) able to ask the researcher their questions or concerns. The only

disadvantage of this method is the increased time required to conduct the interview and the costs associated with meeting for face-to-face interview (Graham, 1983).

2.2 Participation

Participation in the telephone and face-to-face interview was voluntary. The respondent could withdraw or decline to answer a question at any time without consequence. Participants were assured that their responses would be kept in the strictest confidence and would remain anonymous. The use of a recording device was also used with expressed permission from the interviewee.

2.3 Sampling

In order to achieve a representative population sample, two sampling methods were used. On March 31, 2009 telephone interviews were conducted but yielded a low response rate. Out of thirty telephone calls, only four interviews were completed, resulting in a return rate of only 2%. For the telephone interviews, businesses with a phone number displayed on the “Tofield Business Directory” (online) were selected from the following categories: construction- trades, construction-contractors and building. The second survey method, face-to-face interviews, took place one week after the telephone interviews. All individuals from the town of Tofield and Ryley taking part in the face-to-face interviews were recruited by the surveyors based on interviewers’ availability and convenience. Each individual was interviewed at a mutually-agreed time. In the case of small businesses and public institutions, interviewees were available workers (including managers and employees) and were asked to take part in an interview. Additionally, small businesses and public institutions were chosen by the surveyors based on their potential responsibilities and impacts in relation to the proposed Coal Gasification project. Each business interviewed was asked to determine whether the business fit the selection criteria (see below). Residents were randomly selected by the interviewers in a geographic area around the town of Tofield and Ryley, mostly on the street and in shopping centers.

Each questionnaire took approximately 20 minutes to complete. All face-to-face interviews were completed and collected during a day trip to the towns. The additional devices such as audio recorder were used in order to review the answered question. Interviewers briefly explained the purpose and nature of the study to the potential adult respondent, and sought permission for inclusion of their views in the survey.

2.4 Sample

The sample was divided into three groups: small businesses, public institutions, and residents. Based on the opinion of the researchers, the variety of groups within the community could give a better understanding of the potential social impacts that may occur during the project for each indicator.

A small business is defined as a small to medium sized enterprise. A small/medium enterprise is defined as any business which employed no more than 50 people. Of the businesses interviewed, all of them met the selection criteria.

In this study, a public institution is defined as an organization whose [programs](#) and [activities](#) are operated by publicly elected or appointed officials, and which is supported primarily by public funding such as: police (RCMP), Beaver County and town hall representatives. This is distinct from a resident, which we defined as a person that is living in the geographic area within the town of Tofield or Ryley for a period of more than a year and at least twenty years of age.

The sample contains thirty-four individuals interviewed. The average length of residency in Tofield or Ryley of our sample was 21 years. The sample consists of twenty-two participants from Tofield and twelve from Ryley. Within the sample, seventeen of the participants represent small businesses, four participants represent public institutions, and thirteen participants represent residents (see Figure 2).

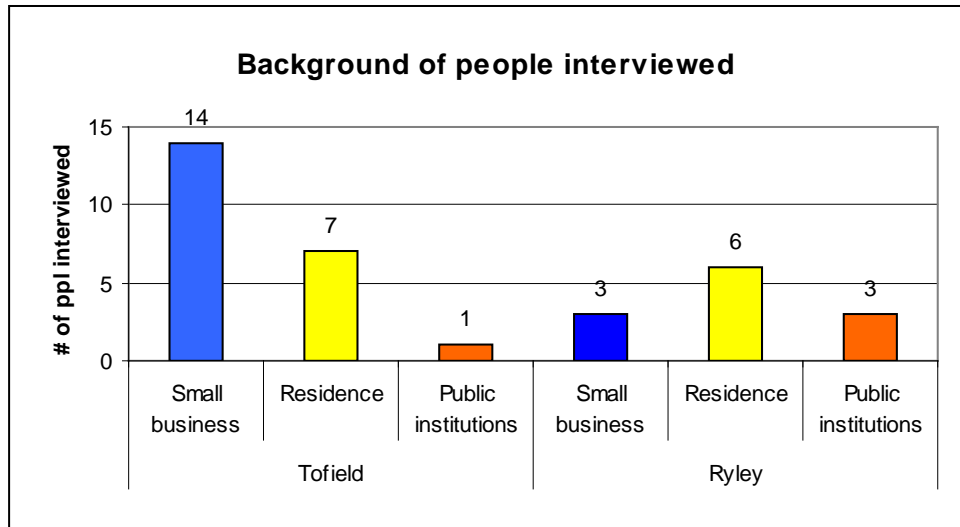


Figure 2: Background of people interviewed in Tofield and Ryley in 2009.

2.5 Limitations

While preparing the research, some limitations ought to be considered. Secondary data was not available for town of Roundhill. More specifically, the statistical data for the town of Roundhill is not collected by Statistic Canada. Also, a considerable amount of data was processed and analyzed with some level of subjectivity. The survey itself could have a bias since interviewers did not have extensive training in interview methods. Family and community impacts were not considered in the survey because it would have made the indicators more difficult to measure.

2.6 The Survey

The survey was developed around the Theory of Planned Behavior (Clayton, 2002). This model requires a formative research stage in which the target population's beliefs about the specified project are determined using open-ended questions (i.e. questions without a choice of pre-made answer). Open ended questions: (a) permit answers that are not anticipated; (b) describe the views of respondents; (c) allow responses in respondent's words; and (d) allow a much longer list of possible answers. There are also some disadvantages: (a) sometimes respondents are not able to give a response; (b) respondents may forget some of their responses; or (c) answers may be vague and difficult for researchers to interpret.

The interview schedule incorporates 18 questions covering issues related to social impact assessment theory (see Appendix A). The survey was divided into three sections: participant information, general questions, and specific social impact questions. The questionnaire began by asking respondents to describe the length of their residency within each town. This type of question allows the surveyor to establish a qualification of the resident's knowledge of the

potential social impacts of the project, and build rapport before moving to other questions. Other questions indicate the components of the social and economic indicators respectively.

2.7 Analysis

The responses to the open-ended questions were entered, edited, coded, and cleaned. The content analysis was conducted to indicate groups and individuals. Microsoft Excel 2003 version for Windows was used to analyze the quantitative data. Frequency data was produced for all quantitative questions and statistical analysis was conducted to determine those factors that were important in differentiating respondents in terms of potential social impacts. For example, the answers to the questions, “Have you been involved in any capacity? (Attend public consultation, member of community group, etc)” or, “Do you see a need for new investment in Tofield/Ryley to create more local jobs?” were re-coded into 1 = “yes”, 2 = “no”, 0 = “neutral” answers.

3. RESULTS

3.1 General Understanding

Every respondent affiliated with a public institution was able to provide an accurate description or perspective of the proposed mine and coal gasification project, when asked to rate their understanding of the project. All of the survey participants from businesses in Ryley and 86% of the business participants from Tofield had a clear, well-informed understanding of the project. Residents in both of the municipalities however were noticeably less informed with regard to project details than either the businesses or public institutions. Only 57% of Tofield residents and 67% of Ryley residents were able to articulate to researchers a clear and accurate description of the proposal (Figure 3). Of the total respondents, 29.4% claimed to have been involved in some aspect of public participation relating to the project. Involvement included attendance at an open house hosted by Sherritt International and public gatherings hosted by community groups like VOCAL.

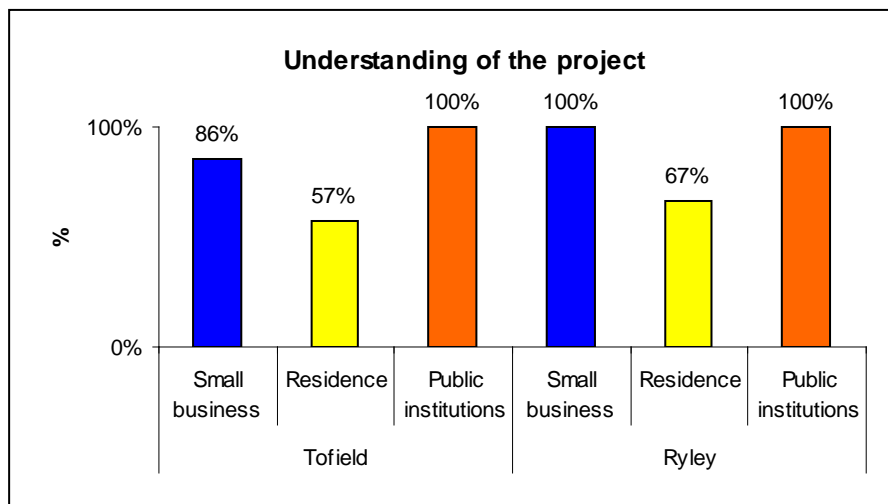


Figure 3. Percentage of survey respondents as a proportion of their respective municipal sample with an accurate, well informed understanding of the proposed Dodds-Roundhill Coal Gasification Project.

3.2 Feelings in Relation to the Project

100% of survey participants believed the proposed project will have some impact on their community. The impacts most often identified by respondents fell into the categories of economic growth (28%), population expansion (22%), employment opportunities (19%) and the loss of farmland (14%). Fluctuations in tax levels (7%), division with the community (6%) and various environment impacts (4%) were also reported (Figure 4).

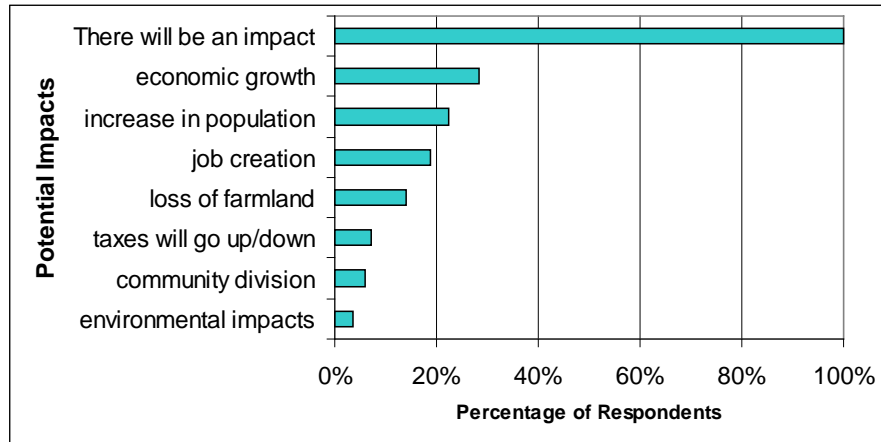


Figure 4. Potential impacts of the proposed Dodds-Roundhill Coal Gasification Project on the communities of Tofield and Ryley as identified by a percentage of the total survey participants.

Survey participants were prompted to expand upon their answers to the aforementioned impacts of the project on their community by providing what they consider to be both the potential positive and negative impacts. 100% of respondents attributed some type of positive impact to the proposed development. Overall economic growth (23%), the creation of jobs (20%), an increase in the population (20%) and an increase in their own personal income (20%) were the most often reported potential benefits. A larger tax base (7%), a fair buyout price for residents in the project area (6%), the expansion of residential infrastructure (4%), and the establishment and/or expansion of local services and facilities (2%) were also identified as potentially beneficial aspects of the proposal (Figure 5).

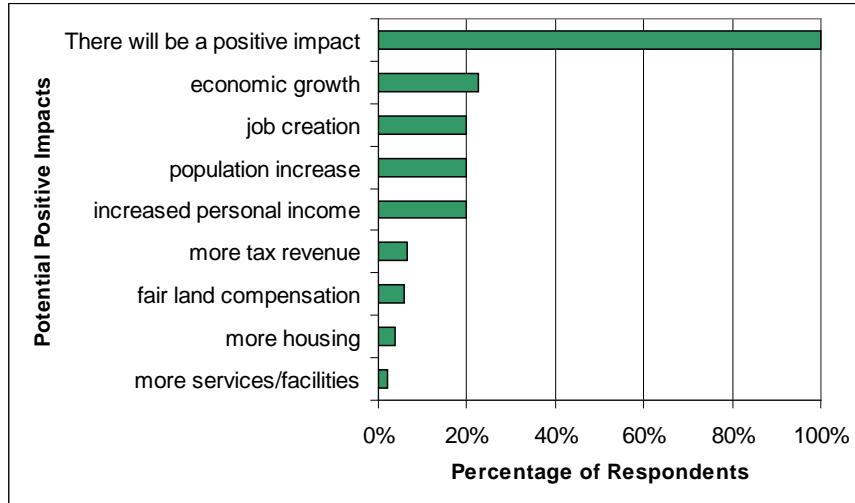


Figure 5. Potential positive impacts of the proposed Dodds-Roundhill Coal Gasification Project on the communities of Tofield and Ryley as identified by a percentage of the total survey participants.

15% of survey participants were unable to provide interviewers with an example of potential negative impacts of the proposed project. Of those who did give voice to the negative aspects of the project, the most common criticism (47%) was that residents in the project area, particularly farmers, would be required to vacate their land. The division of the community on the basis of ‘for’ and ‘against’ the project (20%) and concerns about environmental exploitation and contamination (18%) were relatively prominent, followed by worry over a higher crime rate (9%) and reduced quality of life (7%) (Figure 6).

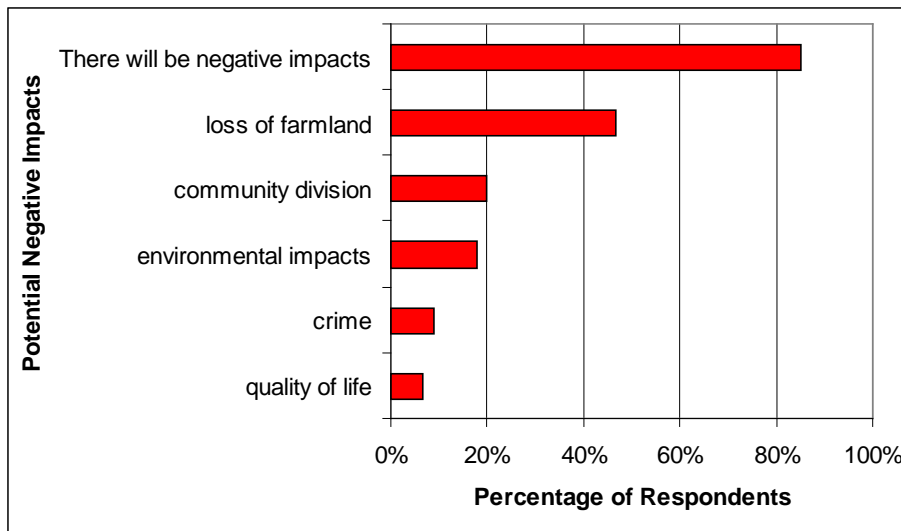


Figure 6. Potential negative impacts of the proposed Dodds-Roundhill Coal Gasification Project on the communities of Tofield and Ryley as identified by a percentage of the total survey participants.

3.3 Employment and Property Values

When asked to identify the current economic sectors within their respective municipalities, 95% of survey participants from Tofield identified areas of light industry/trade, small business, construction and/or agriculture as important factors within the town. 50% of respondents from Ryley identified neighbouring landfill sites (i.e. Clean Harbours), the Beaver County Head Office, agriculture and small business as the primary economic activity in their village. With the notable exception of the exclusion of health care related services, the sectors identified by each community generally match the industrial/employable factors present as reported in the 2006 Statistics Canada Community Profile for the respective municipalities. This translates to a 73% awareness rate of economic activity within each community by survey participants.

A large majority, 79% of the total sample, expressed a need for new investment in their respective communities with a specific emphasis on the need for local job creation. Participant perception of the current employment trends reveal a general lack of concern towards unemployment levels with only 29% of respondents acknowledging a small rate of unemployment. Most of the respondents (91%) recognize moderate levels of local employment, but generally believe that the majority of residents commute to the surrounding areas (i.e. Edmonton, Sherwood Park, Camrose) for work. 9% of respondents view Tofield and Ryley as bedroom communities, meaning that residents primarily travel out of town for work due to the absence of local employment opportunities. Participant expectations in regards to the impact of the proposed project on employment are generally positive. 76% of respondents believe that the project will directly result in jobs that can be filled by local residents. 32% of respondents believe that the project will indirectly create jobs in areas that service project needs or as a result of a population expansion in the region. However, 6% of respondents expressed the opinion that the project would not impact local employment, which was often accompanied by the belief that the jobs created would be filled by new people migrating into the region rather than current locals.

74% of survey participants expressed a belief that the proposed project would drive up their property values, mostly due to of the migration of people into the community and a responding increase in the demand for residential dwellings. 21% of respondents believe that their property value would decrease if the project were to go ahead, which was explained by the nuisance factors and environmental concerns that can co-evolve with large scale resource development projects. Specific concerns included: the quality and availability of water because of project demands for the resource, noise and pollution generated by the mining process, and a reduction in the aesthetic value of the landscape.

3.4 Community Identification and Social Tension

Expectations of the project impacts on respondents own personal experience within the communities was varied. The majority of participants expect to benefit in a positive manner from the project in ways which include increasing personal income (41%), having more employment opportunities (24%), accessing a wider range of facilities and services (15%), and/or experiencing a reduction in their personal taxes (3%). Fewer participants attribute negative experiences to their personal situation, but expressions of concern included a loss of identity (12%), reduced property value (9%) and an impacted quality in their social life (6%). Particularly noteworthy is the 35% of respondents that did not believe the proposed project would affect them personally in any manner (Figure 7).

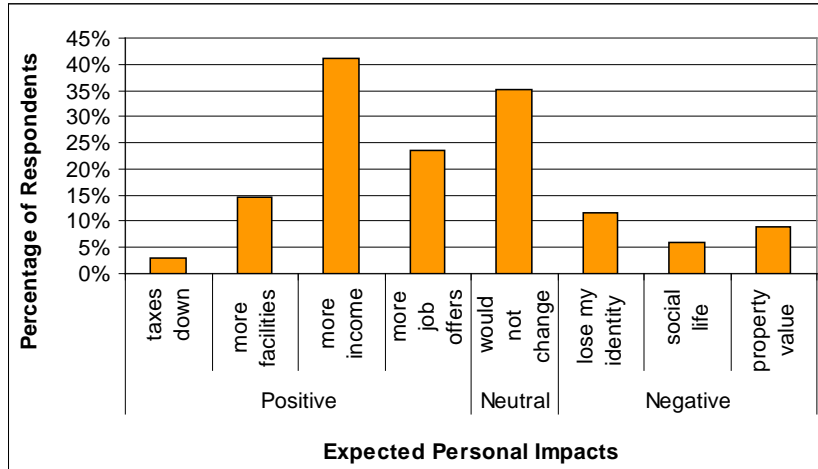


Figure 7. Expected personal impacts of the proposed Dodds-Roundhill Coal Gasification Project on the individual survey participants as identified by a percentage of the total survey respondents.

As survey participants were contacted in an urban setting they were asked to express their feelings in relation to the rural residents, specifically farmers, whom would be required to vacate their property at some point in the life of the project. 59% of the sample population expressed no sense of connection to the farmers, while 35% admitted to feelings of worry and/or empathy for those who do not wish to relinquish their place on the land for any period of time. Some of the respondents did not claim a sense of connection but did express an understanding of the impacted landowner’s position on the project. 9% of participants expressed a neutral attitude, neither with nor against landowners, in response to this line of inquire. Sample responses from all opinion groups include:

- “Nobody should have the right to remove you from your land.”
- “It is horrible to think what is going to happen to the farmers.”
- “Farmers are in a difficult situation – some want to sell, some don’t”
- “Money will fix heritage.”
- “The soil isn’t great for farming anyway.”

From the diversity of responses a division in the community along the lines of project support and opposition was evident. 85% of total respondents felt that the proposed project has at present and will continue to cause tension within Tofield and Ryley. The groups most often identified as being in conflict were “for and against”, “farmers and business minded folks”, and/or “farmers ready to retire and those still wanting to farm.” 12% of respondents were not aware of elevated tensions as a result of the project, and 3% were unsure. Most of those who did not feel tension around the project proposal were from the village of Ryley and were speaking as members of that community, but did express awareness of increased conflict within the town of Tofield.

3.5 Adequacy of Physical and Social Infrastructure

Evaluation of the perceived readiness of the community infrastructure to support the development of the project resulted in an approximate split of opinion within the sample population. 44% of participants believe adequate physical infrastructure (i.e. housing, roadways, presence of retail services, etc.) is in place if municipal development were to be maintained

alongside project development. 53% of respondents believe the current state of the physical infrastructure to be inadequate, both with and without the proposed project. Of those who expressed an opinion of inadequacy 32% see a need for more housing in terms of both renters and family units and 6% expressed a need for more hotels or motels. 18% believe improvements to the roadways such as paving and twinning of Highway 14 are necessary, and 15% believe a larger hospital is required in order to accommodate an expanding population (Figure 8).

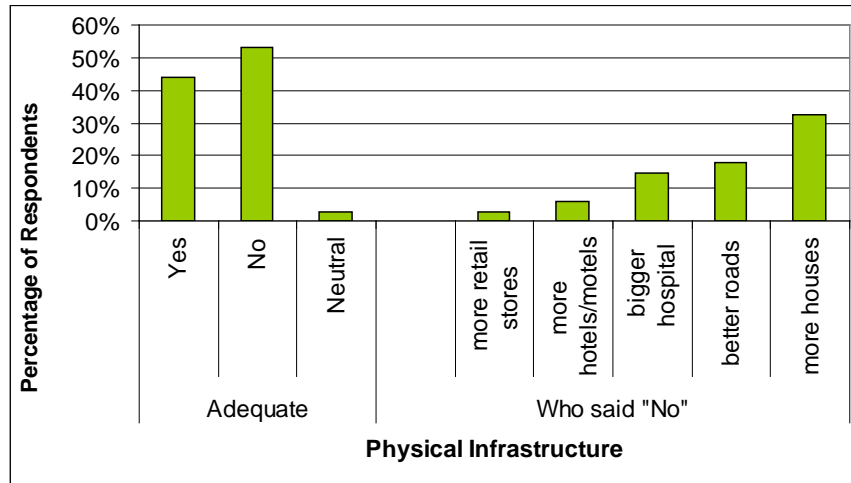


Figure 8. Perceived adequacy of the physical infrastructure in place to accommodate the demands of the proposed Dodds-Roundhill Coal Gasification Project on the communities of Tofield and Ryley as identified by a percentage of the total survey respondents.

47% of participants believe adequate social infrastructure (i.e. social services and facilities, educational institutions, recreational facilities etc.) exists in the region if municipal development were to be maintained alongside project development. 53% of respondents believe the current state of the social infrastructure to be inadequate in meeting the increased demand they attribute to the effects of the proposed project. The expansion of or addition to the existing recreational facilities (i.e. arenas and curling rinks) (21%), schools (18%) and childcare options (6%) were issues raised by those participants that felt the community’s social infrastructure would be lacking. 12% also believe that a greater law enforcement presence would be and/or is currently required in response to population growth in the region (Figure 9).

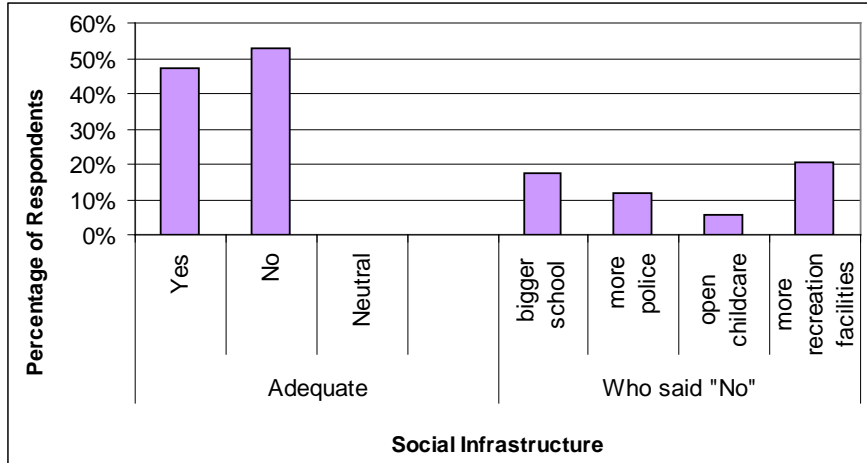


Figure 9. Perceived adequacy of the social infrastructure in place to accommodate the demands of the proposed Dodds-Roundhill Coal Gasification Project on the communities of Tofield and Ryley as identified by a percentage of the total survey respondents.

3.6 Predictive Analysis

Economic multipliers are a frequently used tool in the generalized calculation of the effects of development that include and extend beyond the direct impacts attributed to the original project. Lewis et al. (1979) described a variety of multipliers which can provide a quick estimate of the total impact of change within a specific region or economic sector. An aggregate employment multiplier for example can be applied to the current situation with the proposed Dodds-Roundhill Coal Gasification Project. A review of the accuracy of employment multipliers in relation to the construction of major power plants from Freudenburg (1986) provides a multiplier value of 1.2 during the construction phase and 1.3 during the operation phase. Sherritt has released approximate, preliminary employment numbers of 3,300 jobs over the 3 year construction period and 340 full-time positions for the 40 years of projected operation (Ludwig, 2009). Applying the employment multipliers to these projections:

Construction Phase:

$$\begin{aligned}
 & 3,300 \text{ direct jobs} + (0.2 \text{ indirect jobs} \times 3,300 \text{ direct jobs}) \\
 & = 3,300 \times 1.2 \\
 & = 3,960 \text{ total jobs}
 \end{aligned}$$

Operation Phase:

$$\begin{aligned}
 & 340 \text{ direct jobs} + (0.3 \text{ indirect jobs} \times 340 \text{ direct jobs}) \\
 & = 340 \times 1.3 \\
 & = 442 \text{ total jobs}
 \end{aligned}$$

The communities can therefore expect a total increase of 3,960 jobs in the area during the initial years of construction and 442 permanent, full-time jobs over the life of the project as a result of the proposed development in the region. However, community concerns regarding the filling of these jobs by local residents versus migrants into the area is not addressed by the employment multiplier.

From survey responses it is clear that a large portion of the workforce (estimates ranged from 65%-80%) in Tofield and Ryley commute to surrounding communities for employment. This assessment appears to be a fair depiction of the communities after considering the number and size of businesses in each community, and the employment and commuting patterns reported by Statistics Canada 2006 Community Profiles. Of the 485 persons employed in the labour force (15+ years-of-age) residing in Tofield with a usual place of work outside of the home, 230 people are employed within the town, 40 people work elsewhere within Beaver County, and 210 people work in a different county altogether. Of the 135 persons employed in the labour force (15+ years-of-age) residing in Ryley with a usual place of work outside of the home, 30 people are employed within the village, 35 people work elsewhere within Beaver County, 60 people work in a different county, and 10 people work out of province. To summarize, 250 Tofield residents or 34.2% of the employed labour force, and 105 residents of Ryley or 65.6% of the employed labour force commute to their jobs.

Greenwood and Hunt (1984) have shown that, on average, for every two new jobs created one of those jobs will be filled by a person migrating into that region. This hypothesis however, is likely on the conservative side if consideration is given to the specific skill sets required for employment in mining operations. Alternatively, the strong presence of industrial, trade and manufacturing skill sets currently available in the area may see more local employment than would normally be expected (Statistics Canada 2006 Community Profiles). As it applies to the Dodds-Roundhill proposal this theory would equate to, at most, 1,980 jobs during construction and 221 jobs over mine operation that would be available to local residents. This could potentially alleviate the need for some job seekers, especially those in Ryley, to travel outside of the Beaver County, if not the towns themselves in order to secure employment. Commuting patterns however are also dependent upon the in-migration of workers and whether they will choose to reside in the communities themselves or in the surround areas.

While economic multipliers can provide a quick estimate of total, direct and indirect, project impacts they prone to error and misinformation because of the unique specifications of each area and proposal. Multipliers overlaid onto an area for which they were not specifically developed may make inappropriate assumptions regarding geography, population and/or economy size (Lewis et al. 1979). These limitations should be kept in mind as they apply strongly to the conclusion drawn above in regards to the predicted employment impacts of the proposed Dodds-Roundhill Coal Gasification Project on the communities of Tofield and Ryley.

4. CONCLUSION

Analysis of community response in regards to questions derived from social indicators revealed distinctive patterns in opinion throughout the municipalities of Tofield and Ryley. In general residents were less well informed, in regards to the details of the proposed Dodds-Roundhill Coal Gasification Project, than were either representatives of businesses or public institutions. Overall, the expectation of the municipalities is one where approval of the proposed project would be beneficial for their community. However, research revealed underlying divisions both between the municipalities and within each community despite a general attitude of acceptance. Project approval was often voiced in terms of economic benefits, while concerns regarding impacts on social quality of life were often less emphasized. Specifically, local job creation and the economic growth associated with a larger population are the most anticipated aspects of the project. Analysis of projected employment opportunities suggests fewer locals may find jobs directly or indirectly with the project than expected. In contrast, concern for the farmers' situations, environmental issues, infrastructure adequacy and crime levels were raised but generally had less impact on personal feelings towards the project.

From these results there is evidence of a need for the provision of a more comprehensive project plan from the proponent, Sherritt International, to reduce some of the uncertainty faced by

individuals within the communities. Additionally, the municipalities would both benefit from greater dialogue about their long-term vision for their communities and whether this project can help them achieve that vision or not. More opportunities to collectively discuss, develop and implement sustainable social, economic and environmental goals would encourage more resident involvement.

Further study would provide a better understanding of the social impacts given an extended time frame and larger sample size. The conclusions reached in this study are restricted by the scope of the indicators, limited sample size, and limited opportunity for detailed analysis of both the questions and the survey responses. As well, the predictive analysis provides a guideline for expectations but is limited in usefulness by the overlay of general multipliers onto the current situation.

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6. APPENDIX A: SIA Municipalities Interview Schedule

Participant Information

Length of residence in Tofield/Ryley/Roundhill: _____

Current occupation: _____

General Questions

Can you describe your understanding of the proposed Coal Gasification project in 2 or 3 sentences?

Have you been involved in any capacity? (Attend public consultation, member of community group, etc)

Socio-Economic Indicator Questions

A. Health & Social Wellbeing

Feelings in relation to the project

A.1 What are your perceptions of the proposed project in this community? How might this project impact the community?

A.2 Could the project be changed or improved in some way?

A.3 What will be the positive and negative impacts of this project if it is approved? Think of various groups within the region, such as youth, town residents, farmers, small business owners, etc.

B. Economic Impacts & Material Wellbeing

(Un)employment,
Property values

B.1 What are the main economic sectors in Tofield/Ryley/Roundhill currently?

B.2 Can you describe the current employment and unemployment in Tofield/Ryley/Roundhill? (Do many people work in town or do they work elsewhere?)

B.3 Do you see a need for new investment in Tofield/Ryley/Roundhill to create more local jobs?

B.4 How will the proposed Coal Gasification project affect employment in Tofield/Ryley/Roundhill? (Think of direct jobs created by the project as well as indirect jobs.)

B.5 Do you think the Coal Gasification project would improve or reduce property value in Tofield/Ryley/Roundhill?

C. Family & Community Impacts

Community identification & connection (sense of belonging, attachment to place),
Social tension

C1. How would the proposed project affect you? How would they affect the county as a whole?

C.2 Do you feel connected to the rural residents, specifically the farmers, around Tofield/Ryley/Roundhill? What effects do you think the project will have on their situations?

C.3 Has this project proposal caused any tension in the town of Tofield/Ryley/Roundhill? In other words, are there any conflicts or divisions that stem from the proposed project?

D. Quality of the Living Environment

Adequacy of physical infrastructure,
Adequacy of and access to social infrastructure

D.1 Do you think Tofield/Ryley/Roundhill has the physical infrastructure to deal with the proposed project? (Roads, water, sewer, housing, etc)

D.2 Do you think Tofield/Ryley/Roundhill has the social infrastructure to deal with the proposed project? (Basic social services and facilities, such as schools, police, libraries, childcare, welfare services, etc)

PART III: BEAVER COUNTY

Social Impact Assessment of the proposed Dodds-Roundhill Coal Gasification Project
AREC 450-550 Social Impact Assessment
Class Project Report

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April 30, 2009

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1. INTRODUCTION

Sherritt International Corporation is proposing the Dodds-Roundhill Coal Gasification Project, a facility that will process coal to produce syngas. The proposed project is located in Beaver and Camrose counties, approximately 80 kilometres southeast of Edmonton, Alberta. The project would require sufficient land to support the construction and operation of a surface coalmine, a coal preparation plant and the coal gasification plant. A number of supporting facilities would be required as well, including coal storage facilities, an oxygen plant, a waste water treatment plant, a water pipeline into the site and product pipelines out from the site. The proposed mine boundary encompasses an area of approximately 312 square kilometres (31,337 hectares). The duration of the project is proposed to be approximately 40 years.

This proposed project presents the possibility of considerable change for the people that live in Beaver and Camrose counties. The purpose of this study was to assess the potential impacts that the project is likely to have in these rural communities.

2. BACKGROUND- TRENDS AND CONDITIONS

The project crosses the county boundary line encompassing parts of Beaver and Camrose counties (Figure 1). Most of the project lies within the Beaver County, with a small part located in the county of Camrose. Given the time constraint of our study we focused only on Beaver County. This section of the report provides insight into socio-economic circumstances in Beaver County, based on a review of secondary background data. The data was obtained from Statistics Canada (Appendix B), Census of Agriculture (Appendix C), the terms of reference as established by Alberta Environment, and the environmental impact assessment by Sherritt.

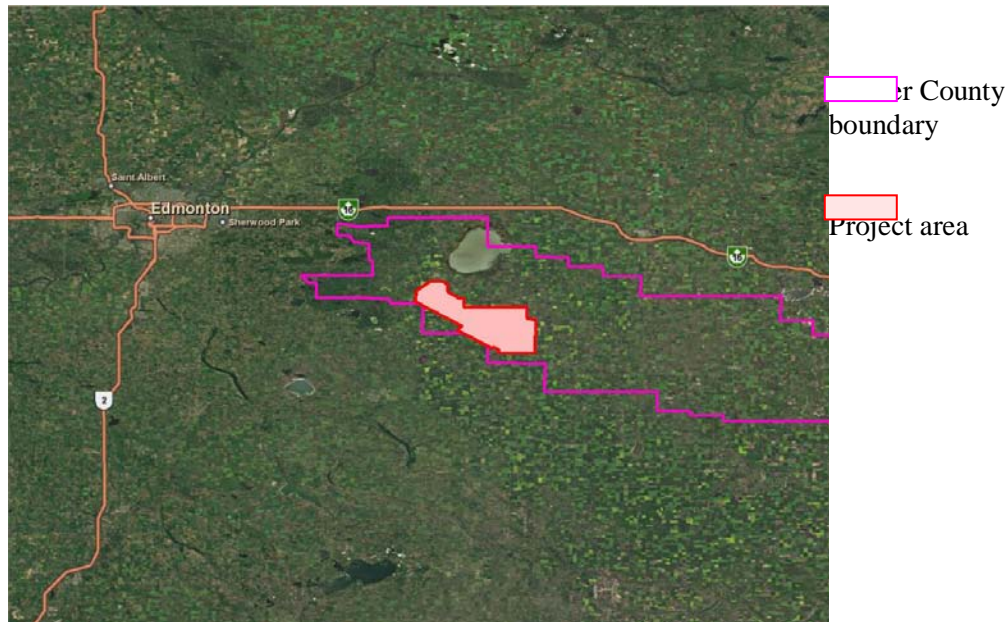


Figure 1. Map of the Beaver County and the Dodds-Roundhill Coal Gasification project area

Beaver County is a rural community; the rural/urban ratio is 33%. 1010 people (22.8%) are either unemployed or not in the labour force. They can potentially benefit from new jobs created directly or indirectly by the Dodds-Roundhill project. The total number of farms in

Beaver County is 795. Approximately 200 farm families will be affected directly by the proposed project.

A review of the socio-economic statistical data available from the 2006 census of agriculture does not indicate that the residents of Beaver County experience a unique quality of life compared to nearby rural counties, urban municipalities and the remainder of the province. Statistics Canada reports the median income levels of Beaver County residents were \$51,449 after taxes in 2006, somewhat reduced compared to the residents of nearby Camrose County (\$54,869) and the city of Edmonton (\$60,035) (Statistics Canada, 2007).

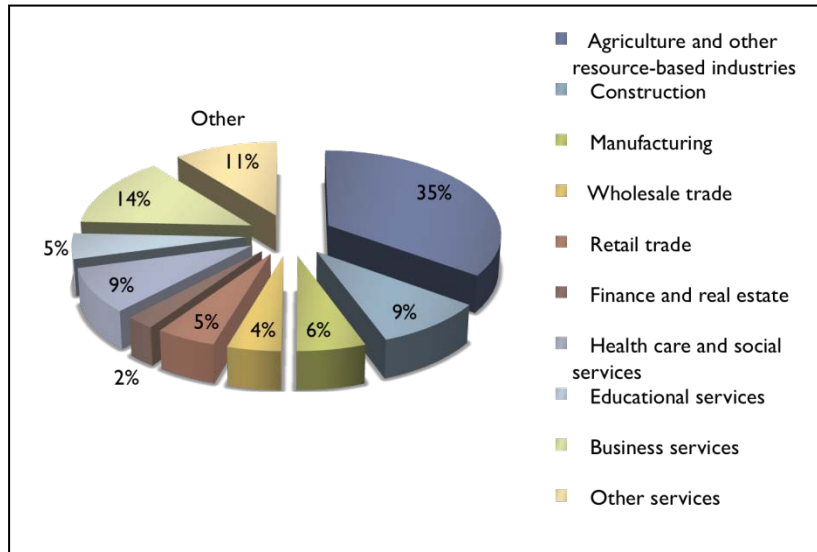


Figure 2. Industry in the Beaver County, AB.
Source: Statistics Canada. 2007. “2006 Census of Agriculture.”

In reviewing the 2006 Census of Agriculture, 65% of Beaver County residents have completed at least their high school diploma, and 42% have aspired to a higher level of education. 67% of Camrose County’s population has attained at least a high school diploma, and 40% have education beyond this level. Edmonton and the province of Alberta have education rates higher than these rural areas; 78% of Edmonton residents and 77% of Alberta residents have their high school diploma, and 53% and 50% have a higher education, respectively.

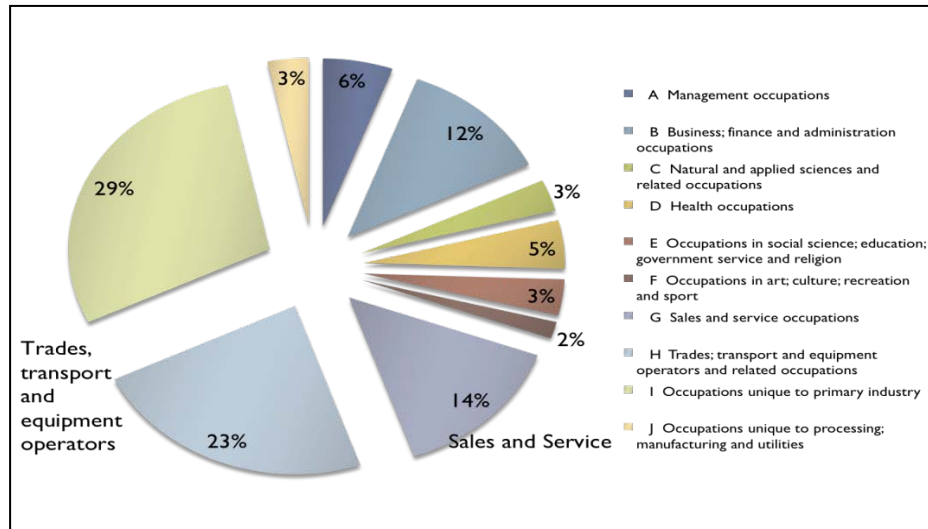


Figure 3. Occupations in the Beaver County, AB.
 Source: Statistics Canada. 2007. “2006 Census of Agriculture.”

3. SOCIO-ECONOMIC INDICATORS

Literature on social impact assessment (SIA) is large and well established (Gamble, 1978; Burdge, 2004; Vanclay, 2002). The U.S. Government organized an Inter-organizational Committee to establish a set of guidelines and principles for social impact assessment (The Inter-organizational Committee on Guidelines and Principles for Social Impact Assessment, 1994). In Canada, “the so-called Berger Inquiry developed a template for social impact assessment that remains influential in the published literature” (Asselin and Parkins, 2009). Dietz (1987) argues that the weakness of many social impact assessments has resulted from a lack of a theoretical or conceptual basis for conducting impact assessment. For the purposes of this particular assessment we have chosen the concept of sustainable development.

Promotion of sustainable development is a fundamental purpose of environmental impact assessment (Canadian Environmental Assessment Agency, 2009). Therefore, to ensure sustainability the full costs of development must be identified, mitigated, compensated or offset. The project development must focus on the attainment of ecological and community sustainability, both at the local and regional levels. Sustainable development is generally defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p.43). Sustainable development has several important implications for the non-renewable resource sector. For development to be sustainable, three tests must be met. First, impacts must remain within ecological constraints. Next, the development must be economically viable over the long term. Finally, it must maintain cultural identity of the community, be compatible with ethics and values, and allow those affected to maintain connection to the place, land, and people (Wisner, 1996; Berkes and Fast, 1996).

Dietz (1987) defines a social impact assessment as the identification, analysis, and evaluation of the social impacts resulting from a particular event. A social impact is a significant improvement or deterioration in people’s well-being or a significant change in an aspect of

community concern (Dietz, 1987). The definition includes two criteria for an impact: a subjective one and an objective one. Subjective impacts are those perceived by, or of concern to, those affected, whether or not an outsider finds those concerns realistic.

Objective impacts are those considered important by an outside expert. The factors to be considered in a SIA study should be determined in conjunction with input from the community (Vanclay, 2002). Outside experts will often minimize the importance of those social changes which are of greatest importance to those affected by a project. The result can be an assessment which ignores the factors which are most important to the development of political opposition to or support for a policy (Dietz, 1987). To ensure that all perceived social impacts are also taken into account many authors utilize participatory impact assessment (Sinclair and Diduck, 2005; Becker and Vanclay, 2003; Becker, Harris, Nielsen and McLaughlin, 2004).

Many authors in SIA resist setting down a set of indicators for SIAs because, by their very nature, social impacts will be different for every community and every situation they are applied to (Becker and Vanclay, 2003; Dietz, 1987). This particular assessment has in large part taken a participatory approach. It is focused on values identified by community members and on significant social impacts on the people living in the countryside area of the proposed Sherritt Dodds-Roundhill Coal Gasification Project, that are relevant to sustainable development of the area.

Potential impacts were classified according to three components of sustainable development: ecological sustainability, economic sustainability, and community sustainability (Wisner, 1996; Berkes and Fast, 1996). These variables then were further grouped into several categories to assist in thinking about the range of impacts (Becker and Vanclay, 2003): family and community impacts; economic impacts and material well-being; quality of the living environment; health and social well-being; institutional, political, and equity impacts. Some of the impacts are experienced at the individual level, some are experienced at the family level, and others are experienced by a community. The following is a brief description of each component and impact category that are originally proposed by Schooten et al 2003.

Ecological sustainability

1. Health and social well-being. Projects often generate uncertainty or fear and sometimes the impacts perceived in anticipation of the planned intervention can be greater than the ultimate impacts. Impacts here include feelings in relation toward the project, such as uncertainty, annoyance, and dissatisfaction; physical health (actual and perceived), and mental health, such as stress, anxiety or general loss of self-esteem.

2. Quality of the living environment (actual and perceived). Impacts here include physical environment, i.e. exposure to dust, noise, and other nuisances; intangible, non-market aesthetic values, such as enjoyment of relatively clean, healthy, and a naturally beautiful environment.

Economic sustainability and viability

3. Economic impacts and material well-being. Impacts here include standard of living, income levels, employment, property values, and economic resilience. These impacts relate to changes in wealth and prosperity of individuals and the community as a whole.

Community sustainability

4. Cultural impacts. Impacts here include cultural integrity and heritage. The region has a one hundred year history of settlement that has created a sense of place and a connection to the land that cannot be replaced. It also considers the history of people in the region multi-generational families that still live in the area and worked to shape the community as it is today. It also relates to the rural/agricultural way of life and potential impacts on it.

5. Family and community impacts. These impacts are related to the family, especially intergenerational issues, and to the community as whole, including social networks. This includes obligations to living and future family members, community identification and cohesion, social division, inequity, and tensions. A value such as sense of community is critical to sustainable

community. This is especially true for rural communities because they have fewer resources than urban areas and cannot function without involvement from rural residents. As with many rural communities, there is concern over the intergenerational issues in terms of community sustainability. The project may pose barriers for younger people to stay in the area and for the community to endure.

6. Legal and political impacts. These impacts include public participation, integrity of government and its ability to represent and protect people’s interests. A sense of having influence over decisions that affect their lives is important for the community to remain sustainable. This also ensures making more balanced decisions.

After identifying the general categories of impacts a short list of impacts was generated (Table 1). We did not intend to identify all the possible impacts of the proposed project. Rather, the short list was intended to highlight the broad categories of potential impacts to be explored during this study involving participants from the community. Some impacts were proved to be significant for the affected countryside, while others received less attention because participants did not deem them important. The method that was used to explore these impacts is discussed in the following section.

Table 1. Indicators of socio-economic impacts of the Dodds-Roundhill Coal Gasification Project on rural communities.

1.	community identification and connection, attachment to place
2.	community cohesion (actual and perceived)
3.	social tension, divisions within the community
4.	feelings in relation to the project
5.	natural and cultural heritage
6.	standard of living
7.	economic resilience
8.	employment
9.	quality of the physical living environment (actual and perceived)
10.	aesthetic quality
11.	integrity of government agencies (how well they protect people)
12.	participation in decision making

4. METHOD

As this report consists of exploring a bounded example of a particular phenomenon – impacts of the proposed project on a clearly identified community – it follows the general definition of an ethnographic case study (Berg, 2004; Stake, 2005). As such, it requires using methods of qualitative inquiry: description of the contextual setting, analysis of secondary qualitative data, and semi-structured interviews with community members.

Depending on the level of the impact, we utilised different approaches to assess the impact. For example, impacts experienced at the community level, such as change in employment or economic resilience, are best described by broad economic indicators. To assess the impacts of this type we conducted a background review of socio-economic trends and conditions in Beaver County. Individual, family, and many community impacts, such as community cohesion, are best identified through examination of personal experience (lived or perceived). Accounts of personal experience can be obtained through individual interviews with people who live in a community and experience, or expect to experience, the impacts of the project.

As our unit of analysis is at the individual level, the first step in this method was interviewee selection (research participants). The snowball sampling technique was utilized to identify study participants. Key informants were selected through the review of available secondary data on the project and contacted via phone and email communication, or in person. Key informants shared their stories and, further recommended other potential study participants. Semi-structured interviews (Appendix A) helped to establish insight into actual and perceived socio-economic changes in a community. Additionally, a third party agricultural producer, who was unaware of the details of the project and well removed from the project area, was chosen to speak of the concerns that may arise in his example should such a project occur in his area, as a means to test the universality of the impacts described by the affected interviewees. Given that only one person outside the affected region was interviewed, it cannot be assumed that universality exists, however, perhaps this person may have contributed insight we had not previously encountered or predicted.

The project was limited greatly by time, and the human resources required to conduct a thorough examination of the perspectives and concerns of residents. The group would have preferred to have more opportunity to survey a broader sample of the local population, but due to spatial and temporal limitations, participants were largely targeted and strategically selected. While there were some further referrals from participants as to who may be interested in lending their opinion to the study; these referrals were also largely strategic and selected in a non-random manner. Other special groups of people, such as regional agricultural societies, historical societies, or environmental conservation groups, were unable to be sampled, as they were not readily available via telephone or e-communication. Additionally, the random-sampling of residents, in our case through random-digit phone dialing (RDD), proved fruitless and time-consuming, a resource which was most limited. A more effective study would include random-sampling methods, such as RDD or impromptu surveys at the home or social gatherings. For the purposes and scope of this project, the sampling portion and breadth of input was adequate to begin to build a framework in which social impacts can be constructed and understood.

In all, fifteen people contributed their opinions and perspective regarding the proposed project. Most individuals were either residing within the site boundaries of the proposal, or within one mile. Two respondents were well removed from the site and the community, but held positions in the government of Beaver County, and were quite aware of the project and the social, economic and political dimensions surrounding the project. As was mentioned above, one respondent was neither affected by the project directly, nor aware of the proposal, but shared his concerns about developments as they affect agriculture. Of the respondents who were directly affected by the project, most had lived their entire lifetimes in the area, and some claimed their families heritage in the area goes back to the start of the 20th century, as their families homesteaded in the area. One resident has lived in the community for 9 years, another for 40, but both feel just as strongly about the preservation of the land and community as those who have lived their entire lives there. Two women comprised the list of respondents; however our research did not delve much into the question of gender inequity or differential impacts for women.

We were unable to speak to a resident who were entirely in favour of the proposal, mostly as those in favour have not organized themselves in the same manner as those opposed to the development. Estimations about the proportion of individuals who were in favour of the project, by those that were interviewed, were broad and unreliable. For the most part, it was agreed that there existed a public/private discord in sentiments in that those who may be in favour in private, are staunchly opposed in public. Two affected respondents were opposed to the development, but felt there was little to gain in confrontation, and more to achieve through cooperative negotiation. In this manner, they felt this project or others like it are inevitable, and they may as well attempt to secure themselves a “fair deal”. In all, it is fair to say that most all were opposed to the proposed development, with the exception of the representatives speaking on

behalf of Beaver County. They had stated the County is torn in two directions; they are opposed in that they wish not to have their residents uprooted and displaced, but are pressed to meet the demands and desires of residents for the services the county provides on a limited budget.

Finally, the area's Member of Parliament had initially agreed to cooperate in our survey, however later declined, as the matter does not personally affect him, and the project does not concern the jurisdiction of the Government of Canada as of yet. The area's Member of the Legislative Assembly, who happens also to be the Premier of Alberta, was unavailable at the time the survey was being conducted. His office, however, did offer to arrange an appointment to meet at a later date, which unfortunately did not fall within a useful timeframe of this class project.

5. FINDINGS AND DISCUSSION

We divided our findings into groups of impacts and described them accordingly, rather than splitting qualitative and quantitative results. The findings are heavily based on the qualitative data (interviews) and therefore are given descriptively. Where available and appropriate, the quantitative data are used to support qualitative findings.

5.1 Health and Wellbeing impacts

Health Impact Assessment (HIA) is used to determine the potential health affects of a proposed development on an affected population of people (Wisnar et al., 2007). Operating on a definition of personal health set forth by the World Health Organization ("a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" (WHO, 1967)...[to] the extent in which an individual or group is able, on the one hand, to realize aspirations and to satisfy needs, and, on the other, to change or cope with the environment" (WHO, 1984)) assessment is based upon factors used to determine health-related impacts. These factors are closely tied to other social indicators, such as income and social status, education levels and concentrations, condition of the physical environment, social support networks, genetic endowments, access and use of health services, and gender differences (WHO, 2009). While there will likely be negative health effects for some portion of the population as a result of the construction and operation of the mine, in the context of our sample population, it is assumed likely that the population will not be affected physically by the mine. We assume that affected residents will not be employed at the mine, or will be far enough removed from the site and therefore not affected by environmental industrial fallout. That being said, it is evident in our research that the project has, and will have a great impact on the mental and emotional well-being of the rural population surrounding the proposed site.

Research indicates a strong link exists between relative income levels and individual health (Becker and Vanclay, 2003). Each census subdivision falls below the median income level of the province (\$63,361), but each is not negatively affected by their relative income levels, indicating somewhat similar pre-existing conditions of health. A similar trend can be seen with the level and completion of education for the county. Much like rising levels of income, rising levels of education generally leads to an improved general health. As far as the state of the physical environment and the existence and utilization of social support networks are concerned, information can not be interpolated from census data. Evidence for impacts in these facets of the residents' lives will be explored more in following sections.

Summarizing the input we received through a series of interviews, it became evident that the residents are least concerned with impacts to their physical health, and more concerned with the emotional and mental health of people in the area. The interviewees unanimously expressed concern for the out-migration of human capital (highly skilled labour) as a result of the mine.

Their concerns went beyond the families forced to move by the footprint of the mine project, and into the surrounding areas. Some were convinced that others, not immediately affected, will move away out of desire for being away from the project. Others forecasted a significant influx of unskilled labourers into the region, seeking employment at the mine and its supporting services, and bringing a bevy of other social concerns with them. There was recognition that the community lacked a diversity of younger people to farm, and they expect the project would not encourage younger farmers to take root in the area. Following this, many expressed a concern with the project impacting their ability to pass on their farms, as an inheritance of family, community and heritage, to younger generations. They were not largely concerned with the ability of the reclaimed land to be agriculturally productive, but the land (and water) was a major concern from their perspective.

Impacts on resident's mental and emotional health were expressed and forecasted by the research participants. The unveiling of the project has caused many residents undue stress and anxiety, and the delay of the completion of the EIA and the ruling from the Province of Alberta exacerbates the emotional tension that exists within the community. Many different people deal with the problem in varied manners, and no interviewees detailed any extreme instances of anxiety or depression. The County representatives informed us that the project proponents have offered emotional support and assistance to anyone who asks. Some research participants felt defeated by the proposal, while others feel fatigued by it:

Emotional uncertainty is stressful, particularly when it comes to things such as jobs and homes.

It feels like a David and Goliath situation. They are pretty big. They are monsters, just a big, big [company].

Determinants of a community's health are very similar to other determinants examined within an appropriate Social Impact Assessment. Indicators used to measure impacts in the social, economic, cultural, and the physical environment can be used to gauge impacts on the wellbeing of an affected population (Becker and Vanclay, 2003). While the impacts expected to arise with the disruption of their community and out-migration of residents is their largest concern, there are likely more impacts to arise due to the development.

5.2 Impacts on the Quality of the Living Environment

The direct and indirect impacts on the biological environment will likely be covered in great detail within the proponent's completed Environmental Impact Assessment (EIA). What we found through our interviews is that there will also be a significant impact to the community as the local culture is greatly dependent on the condition of the environment. All of our respondents were either involved with agriculture, or knew of its significance in Beaver County. Those who were involved with agriculture viewed the project as a direct assault to their way and quality-of-life, as productive farmland would be removed, then reclaimed at a later time. This disruption caused concerns for the preservation of ground water flow in aquifers, and the aesthetic value they place on open areas of productive land. Among the producers, there was little faith that the land could be restored to its original capacity and beauty, some suggesting that even once reclaimed, they would want little to do with it. Another respondent was convinced, if reclamation occurred properly, that the productive capacity of the land could in fact be improved, beyond its current ability, however he shared some doubt as to whether the proponents would take their reclamation measures far enough to achieve that end. Two respondents stated the agricultural producers group formed in the 1970's was borne out of concern for the groundwater aquifers, and though surface waterways were protected and buffered in the current proposal, there was no provision or concession that the groundwater flows would be protected. The responses we

received were varied, but all expressed reclamation of land, preservation of water and the destruction of their prairie landscape as an issue of great concern:

They say 'Well if we have to, we will haul water', but I don't see them hauling water for 10 years, or 2 years, or whatever it takes for the aquifer to come back again. It won't come back while it's open, and they feel it won't affect it more than a mile away.

Looking at the land out here, there's about 4 or 5 classes of land, and they could actually improve a lot of it – as far as the topography and ability to farm it. In this area, you only figure about 125 to 130 acres that is cultivatable per quarter. There's sloughs and bluffs and so forth. They could put the same amount of wetlands in, but put them in a bigger block. Try to get the same percentages, back to where it was, and instead of scattered about the whole thing, it could be spaced so that you have a viable, say a 2 mile stretch of field all in one place, even a mile. It wouldn't take that much to improve it, put it that way.

I am most worried about the water source to our farm.

As well as concern for their own area, the respondents also expressed their awareness and apprehension of developments affecting other rural and agricultural regions, revealing some of their greater concern for their industry and community:

What really bothers me is [Anthony] Henday Drive, right through prime agricultural land, 10 miles from anywhere, or 5 miles from anywhere, and now they're building south of that too. That land will never go back to agricultural production. This stuff here will eventually go back to agricultural production. Not the same people, but it'll be farmed again.

Farms are gone with a strip mine. Homes are gone, our shelterbelts are gone, our yards are gone, our community is gone. People will be split up and move other places.

Additional to the concerns for the environmental integrity and aesthetic value of the land in respect to the project, there was also concern for the capacity of the area's infrastructure to support such development, specifically roads in the county. Nearly each of the interviewees was aware the Beaver County government will be pressed to meet the needs of county residents for adequate and quality highways, while participating on behalf of its affected residents. The travel from areas north of the project area south towards Camrose would be affected, but there were also a great number of mine employees expected to commute daily from the city of Edmonton in the east. Highway 14 was not viewed as being able to support the construction, industrial and commuter traffic the project would bring from Edmonton. In speaking to the county, they admitted the proposal is certainly at the front of their decisions on road repair, expansion and construction. In some cases, where a localized repair would be adequate, the county has gone ahead and repaved the entire section of road, in anticipation of the potential increase in use and utilization. While little concern for the ability of hospitals, schools and housing were expressed, there was hope that the proponents, once established, would contribute to further develop recreational and social areas for the community, such as curling rinks, baseballs parks and community halls.

5.3 Economic and material well being impacts

Economic impacts are seen by the project proponents as the major benefits the project will bring to area residents and to the province as a whole. First of all, the project would create 3,300 temporary and 300 permanent jobs. However, as Statistics Canada (2007) data indicate, the unemployment rate in the Beaver County is 1.6% which is substantially lower than average Alberta rate (4.3%). In other words, county residents are not going to benefit from the creation of new jobs. To fill new jobs the project would need to bring outside workforce which will entail other social impacts.

On the other hand, the income levels in the county are much lower than in other parts of the province. The median income levels of Beaver County residents were \$51,449 after taxes in 2006, compared to \$54,869 in nearby Camrose County and to \$60,035 in the city of Edmonton (Statistics Canada, 2007). The implication of this fact is that should the Beaver County residents choose to enter the project jobs it could potentially increase their income.

Another argument for the project proponent is that the project would increase the tax base and property values. For some properties, especially those ones that are not adjacent to the project boundaries, this could be the case. Properties that are located within the project area will likely be compensated at fair market rates, so these owners will probably not be affected significantly. However, the properties adjacent to the project boundaries can lose in their value due to proximity to the project nuisances such as noise, dust, crowding, adverse visual effects, obstruction of view, and others.

Farmers depend on land as a source of income. If they will be forced to move from their land it becomes very crucial to compensate them fairly in order to ensure their economic well-being will remain at least at the same level as before the project. This concern was expressed by interview participants:

There's a small group of people who are always being asked to pay the price for these big projects. We're left with a mess; we're left with dislocation of our community. If you want to push ahead with these projects, pay that small number of people generously.

It is expected that the project will bring associated businesses into the area to serve project needs and project workers. This might have an effect of increased economic resilience. At the same time, resource-based communities are known to be vulnerable to market fluctuations (Marshall, Fenton, Marshall, and Sutton, 2007; Bradbury, 1989). For example, declining oil prices and followed decline in Alberta oil production led project developers to explore other final product options (Sherritt class presentation). This indicates the potential for future negative effects of the market deviations on the project and the Beaver County community. One interviewee put it this way:

[Being] focused on one industry – what kind of a community does this create?

In general, economic impacts are not seen as primary concerns of the Beaver County residents. These impacts can be both positive and negative for the county population depending on many factors such as income level, geographical proximity to the project area, or market conditions. Most interviewees were concerned with impacts other than economic and material well-being:

Money parts can be answered. Whether it's fair or not is another question.

Cultural, family, and community impacts were among those ones identified by rural residents as most controversial.

5.4 Cultural impacts

Many farmers live in Beaver County because it is a special place for them. It can be special in different ways. For some people it is their cultural heritage. 71.7% of the population that lives in Beaver County is third or more generation (Statistics Canada, 2007). Moreover, it is not only a matter of heritage. Many farmers identify themselves with this area:

This is what helped to build this area. I like small towns. I like the rural life. It would change things and force off people who have a lot of history here.

As a cultural group, farmers appreciate their way of life. It is not just a way to make a living:

Financial security is not what we're after; it is a side benefit of doing what we love to do.

Interviewees expressed concerns that the proposed project poses threats to this cultural integrity. Approximately 200 farm families, or more than 500 people¹, will be dislocated from the area.

However, population mobility data indicate that 20% of the county population moved to the area less than 5 years ago (Statistics Canada, 2007). For this relatively mobile group of population, an issue of cultural impacts is probably less significant than for the rest residents of the Beaver County.

5.5 Family and Community impacts

Beaver County has a long history. Many farmers have lived here for a long time. Interviewed farmers have lived in the area from 9 years to their entire lifetime. Many families were from homesteads from the early 1900's. Therefore, they feel an obligation to their ancestors to keep their land, while they also feel obliged to current and future generations. Interviewees were worried with potential difficulties for them to pass on their land to younger farmers. The proposed project can also create barriers for younger farmers who are trying to plan into the future to keep their roots in the community and to return back after the project completion:

[The] project is at the back of everyone's mind, [it] changes planning and development.

Sense of community, of belonging to the place, is one of the intangibles that can not be monetized. Loss of this feeling is an impact hard to assess quantitatively:

How do you determine a value for having to move away from your community, friends, your farm site. How do you place a dollar value on that? They can never place a dollar value for all the things you leave behind.

The interviewees were concerned about loss of community cohesion and integrity. Some people might hope to benefit from the project and therefore support the project advancement; some might lose their land or their way of life and oppose the project, while others might be indifferent in relation to the project. This creates the division in the community and potentially could cause tensions. In any outcome, the project has already changed people's lives and the community:

[The project] has taken over the lives of the community.

On the other hand, the proposed project, while potentially disrupting the community cohesion, has already played a certain role in uniting people in social networks, even before the

¹ average household size – 2.6 (Statistics Canada, 2007)

project is launched. An existing association of local farmers opposed to the project has strengthened in addition a new group against the project has been initiated and has recruiting more than 150 members (Vocal presentation). Community mobilization, creation, and strengthening of social networks are examples, probably unanticipated, of positive social impacts that have resulted from the proposed project:

They couldn't have done a better job of uniting the farmers against them.

Another impact is social differentiation and inequity. There is a concern that not everyone will be treated the same or compensated fairly. As discussed in economic impacts, some people might benefit from property value increase, some will be compensated, and there could be people who will lose as a result of the project implementation. These issues of differentiation and inequity are sensitive and should be given close attention by both the project proponents and the government.

5.6 Legal and Political impacts

The legal and political impacts were also identified as being large factors following the beginnings of the proposed project. Throughout the interviews we did not feel that there was a strong feeling of resentment towards the proponents. However we did detect such negative feelings were felt towards the provincial government. The main concern towards the government was their lack of adequate regulations and rules for resource developing companies such as Sheritt.

Sheritt will follow the rules. People are more worried that the rules and regulating bodies will favour the proponent, the government is tilted towards the corporations. The company will only follow the rules that are set out for them. These rules favour the developer.

Another key concern that a large majority of interviewees expressed was that government was not actually addressing their concerns only listening to appease.

[I] do not feel that we are being represented at all. Historically speaking all of these projects get rubber stamped in. They will give us some time of day but it's only out of due diligence, but [I] do not feel that they are actually listening. [They are] only listening to make us go away.

A third concern expressed by interviewees was that the goals of the government are no longer representing the wants of the Alberta population.

The province of Alberta is going to have to look at how much development do we want? Where is our future going? Is there something besides development? The province needs more long term planning. Politics deal with short term but the long term effects are going to be on our kids and grandkids.

This project has brought forth a lack of trust in the current government's ability to meet the needs of their constituents. It is interesting to note that those affected by the project are actually quite impressed by the proponents and the job they have done thus far of involving the public. They are however disappointed with the government and feel that they are seriously lacking in regulation, adequate public involvement and developing a province that will be sustainable for future generations.

6. CONCLUSION

Throughout the interview process, a number of concerns and perceived impacts became unanimously expressed. All the interviewees expressed a concern for and around the displacement of people and the culture they are involved in maintaining, the fair compensation for people directly and indirectly affected by the establishment of the project, the perceived harm to the environment created by an open-pit mine, and most of all, the high degree of stress and emotional worry centred on the uncertainty of whether the project will proceed, and how it may affect their farms, their neighbours, their heritage, and their community. We feel these four conditions should be described most in the proponent's EIA with regards to rural residents of Beaver and nearby Camrose County.

The project, as described previously, is a planned open-pit coal mine. In order to extract and process the coal, the current landowners situated within the boundary of the project must be removed, and relocate themselves permanently, or temporarily as they wait for the mostly agricultural land to be reclaimed and made available to them. Affected peoples have many options once their land is purchased by the proponents in order to begin the mine. These people can relocate, continuing to farm elsewhere, retire, or pursue an entirely different career path, or they may wait until reclamation of the pit mine has completed, as the proponent has conceded the original landowner the first right of refusal, under the Land Acquisition Principles and Negotiating Guidelines (LAPs) (Sherritt, 2008). In the period of 20-40 years that the mine plans to be operational, the interviewees expressed myriad concern for the out-migration of "native" residents and cultural practices, to be displaced by an in-migration of unskilled labourers and a wholesale shift in the values and focus of the community. This in itself is not a single and solitary impact as a result of the mine, but infers the following of many more impacts as seen by the community. There was not a belief that the mine, while temporary in operation and existence, will only have temporary impacts. The various respondents felt the mine has greater and more varied long-term and permanent impacts which they believe are not likely to be addressed by the EIA.

Each respondent stated concern for the fair and adequate compensation of land-owners who will be displaced by the project, and those perhaps outside the boundary of the project, but affected nonetheless by their locality. There was not unanimous agreement on how these people and intangible items may be compensated for, or if even they could possibly be monetized, however each did not feel the current Land Acquisition Policy Guidelines did not address this issue to an extent that they see as equitable. To this end, some would rather the project not proceed; while others feel with some improvement, the project can proceed while compensating those involved fairly and adequately. Much effort and negotiation has been put into the LAPs, and the concept of minimum acquisition guidelines can be viewed as pioneering into fair compensation practices, however they come up short for many of our respondents. In order to be effective and to mitigate the potential impacts revolving around land acquisition, the completed EIA must pay special attention to compensation for procured land and the intangible values removed along with the physical surface.

In the 1974, when Calgary Power planned to develop the same coal reserve that Sherritt plans to extract for purposes of power generation, the regional rural residents banded together and formed the Round Hill Dodds Agriculture Protective Association (RHDAPA) in opposition to the development out of concern for the project's impact on the groundwater of the surrounding area (RHDAPA, 2008). Today, the members of RHDAPA and others either unaffiliated or affiliated with other interest groups are concerned about the ecological significance of establishing such a large open-pit coal mine for the purposes of furthering the Alberta Energy Industry. Surface waters have been protected and buffers have been established, but groundwater has no expected provisions within the EIA. Further to that, much like the point above regarding the removal of people and agricultural land, there is concern about the environmental implications for a large-

scale temporary project. Concerns were not focused on emissions from the mine and the plant itself, but on the destroyed capacity for the land to produce the environmental goods and services to the capacity it has currently, before the start of the project. Many respondents were convinced the proponents will be able to reclaim the land to its physical capacity, however they expressed little faith in the reclamation regulations imposed by the provincial government and the ability of the proponents to reclaim the land to a standard improved from when it was acquired. In general, the interviewees are not convinced the mine project can proceed without any impact on the surrounding natural environment, even after the project has extracted all the coal it intends and has reclaimed the affected lands.

Finally, each respondent claimed to be experiencing, or know someone who has experienced, a great deal of anxiety and stress as a result of the announcement of the project. The uncertainty in their futures and the futures of those around them has led them to worry a great deal about the unfolding of announcements and events. Each person's experience and how they are able to handle the situation is different, but there currently exists a sentiment where the residents would just like to know what the project holds in store for them. On one hand, there is optimism that the project can be deterred as it was in the 1970's, while on the other, there is immense worry about what will happen to them, their community and the implications held within for future generations, should the project proceed. While many residents have banded into social organizations opposed to the development, there was not a positive sentiment that these organizations and grassroots efforts could effectively deter such developments or equitably compensate them for their troubles. Developments such as these are seen as "rubber-stamped", or assured certain by the current government, who hopes to further develop and strengthen Alberta's most significant industry. Such beliefs leave these respondents feeling futile and helpless with regards to securing their own future, and living life as they would prefer. While impacts such as this do not carry a value easily quantified, the proponents and the contents of the EIA should do something to address this universal, yet differentially experienced impact.

All this is not to say the proponents do not plan to address these issues within their EIA, and the project is seen as wholly unwanted and detrimental. On the contrary, there were also resounding positive impacts as a result of the project proposal. First of all, the community has witnessed the strengthening of its social networks, through organizations such as RHDAPA, or the Voice Of Community And Land (VOCAL), where people of similar opinions and concerns can work together toward their goals as a collective. One respondent was thankful for the opportunity to meet others in the region as a result of attending meetings held by these networks. As a result of these social organizations, the LAPs arose, a unique method to address land procurement for similar developments, and the guidelines have been borrowed for negotiations for other projects by other developers. The empowerment of these groups to negotiate and also intervene on behalf of its members has been seen as a great success.

Perhaps not a positive impact, but a positive result of the proposal thus far, has been the proponent's effort to include these affected groups, as well as many others, in the steps in developing the EIA, and the final project. Each of our respondents had stated satisfaction with Sherritt, and even some praise for their manner of public participation and knowledge dissemination. While the project is not wanted in the area, the dislike for the project did not reflect on the proponents as an organization. We were informed that the proponents have been diligent in conducting public information sessions, and pro-active negotiation and consultation with affected persons and organizations. While the expected completion of the EIA has been delayed due to a changing national economy, the residents are still anxious to hear from Sherritt regarding the fate of the project. Once the EIA is completed, the affected parties have faith they can work with Sherritt as interveners in the project approval. It is important to note that the proponents have worked hard to address as many people and concerns they could to this point, to the satisfaction of the people we had interviewed.

In summary, the project will not be able to proceed without any impact on the area as compared to no development at all, and the impacts will be different for each affected person. In our search for potential social impacts as a result of the development, we interviewed a number of agricultural producers from Beaver County, the location of the mine proposal. The most significant impacts on this rural community, as expressed by a handful of interviewed residents, will be those impacts arising due to the displacement of people and residents of long standing, the removal and reclamation of agricultural lands and the environmental services they provide, the fair and adequate compensation for producers removed from their land, and the emotional stress and anxiety experienced by these people as a result of the uncertainty of their future and the future of their community. Some of these impacts, items and values can be compensated for, but the level of compensation is something that is not easily defined, in order to be seen as equitable by those we interviewed. The results of our research indicate that Sherritt International Corporation has done a satisfactory job of working with community members to attempt to arrive at a level of fair compensation. But at this time, the final completed EIA is delayed, pending further economic review. Due to this, nothing is certain for the respondents, and they anxiously await the final product. In the end, affected residents will be compensated by the minimum guidelines set forth by the LAPs, but in the words of one of our respondents: “realities don’t start until the project happens.”

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8. APPENDICES

Appendix A. A list of interview questions

- 1) How might the project impact the community?
- 2) Could the project be changed in any way so that it would be more beneficial?
- 3) What are the impacts (positive and negative) for various groups within the region?
(ex. Women, men, youth, farmers, businesses)
- 4) What do you gather is the general perception of the project proponents, and the process of sighting the project in this community?
- 5) Do you feel that the impacts can be compensated for? What would compensate your losses?
- 6) What alternatives are there to this project?
- 7) What is lacking in the community?
What is your view on public participation in accordance with this project?
- 9) What is your history in the area? (i.e. how long have you lived here, family etc)
- 10) Has the community cohesion changed since the project was proposed?
 - a. Is there division in the agricultural community?
 - b. Are most people for or against the project?
 - c. What's the coffee shop talk?
- 11) What goals do you have for the community?/ What is the future of this community?
- 12) How do you feel that your perspective on this issue is being represented by your elected officials at all levels?

Questions for elected officials:

- 1) How have you formed your opinion?
- 2) How do you feel that you are representing your constituency? How do you know it is appropriate representation?
- 3) Do you feel that there are potential alternatives to this project? What are they?
- 4) What response have you had from the greater community? In what forms?

Appendix B. Beaver County community profile

Characteristics	Total	Male	Female
Population in 2006	5,676	2,940	2,735
Population in 2001	5,644		
2001 to 2006 population change (%)	0.6		
Total private dwellings	2,126		
% of the population aged 15 and over	78	79	78
Total population 15 years and over	4,435	2,310	2,125
In the labour force	3,475	1,950	1,525
Employed	3,425	1,920	1,505
Unemployed	55	35	15
Not in the labour force	955	365	595
Unemployment rate	1.6	1.8	1.0
Generation status			
1st generation	300	155	145
2nd generation	950	525	425
3rd generation or more	3,175	1,630	1,550
Mobility status - Place of residence 5 years ago			
Total population 5 years and over	5,315	2,740	2,575
Lived at the same address 5 years ago	3,875	2,020	1,855
Lived within the same province or territory 5 years ago; but changed addresses within the same census subdivision (municipality)	370	190	180
Lived within the same province or territory 5 years ago; but changed addresses from another census subdivision (municipality) within the same province or territory	945	480	465
Lived in a different province or territory 5 years ago	75	25	50
Lived in a different country 5 years ago	50	20	30
Mother tongue - Other language(s)	745	350	395
Median income in 2005 - All private households (\$)	52,111		

Source: Statistics Canada. 2007. 2006 Community Profiles. 2006 Census.

Appendix C. Beaver County Census of Agriculture

Farm characteristics	Number of farms reporting		
Total number of farms	795		
Total number of operators	1,140		
Farm operators	Total number of operators	Total male	Total female
Number of operators on all farms	1,140	815	325
Farms classified by industry group	Number of farms reporting		
Cattle ranching and farming	304		
Hog and pig farming	9		
Poultry and egg production	6		
Sheep and goat farming	11		
Other animal production	105		
Oilseed and grain farming	296		
Vegetable and melon farming	4		
Fruit and tree-nut farming	5		
Land tenure	Number of farms reporting	acres	hectares
Total area	795	746,055	301,918
Area owned	768	440,035	178,076
Area leased from governments	46	19,054	7,711
Area rented or leased from others	347	197,194	79,802
Crops	Number of farms reporting	acres	hectares
Wheat	295	146,323	59,215
Oats	209	22,326	9,035
Barley	241	55,336	22,394
Mixed grains	30	5,390	2,181
Corn	10	950	384
Rye	12	1,227	497
Canola	308	121,568	49,197
Alfalfa	288	39,300	15,904
Other forage	216	24,946	10,095
Vegetables (excluding greenhouse)	7	29	12
Fruits, berries and nuts	10	46	18

PART IV: COMPARATIVE CASE STUDY

Social Impact Assessment of the proposed Dodds-Roundhill Coal Gasification Project
AREC 450-550 Social Impact Assessment
Class Project Report

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1. INTRODUCTION

Social impact assessment is a tool for predicting and mitigating impacts from specific project and policy developments. As an example, the communities of Beaver County in Northeastern Alberta, Canada, are facing the considerable uncertainty of a proposed large-scale coal gasification project. While new to the area, coal mining is not new to the region, and communities have witnessed, and mitigated the impact of development for the past half century. Growing community concern, and federal legislation requires that a social impact assessment (SIA) be conducted to predict and mitigate potential impacts of resource development. In this paper we utilize the circumstance of other regional communities that have experienced similar developments to utilize one SIA tool called the comparative diachronic model (CDM). The CDM is traditionally an empirical report (Burdge, 1977), however, this paper responds to the call from Asselin and Parkins (2009) to combine qualitative and quantitative research for a more robust and balanced study design. The main objective of this paper is to combine the two forms of research in a novel study design to predict possible impacts to the Town of Tofield and the surrounding region. A secondary objective is to present reflection and recommendations from our experience with CDM and the potential future use of this research design.

1.1 Defining and exploring SIA

There are many definitions of SIA, and each serve a distinct purpose based on the strategies used in the assessment. Initial definitions of SIA predominantly focused on the determination of negative impacts associated with project developments of policy implementation and emphasized an inherent link to a regulatory context (Vanclay, 2003). However, as the SIA process developed, the definitions shifted and SIA was explained to be more than just the prediction of negative impacts (Vanclay, 2003). Because, unlike EIAs, SIA is not bound by a regulatory context that defines its practice and the definitions are so varied, it is important to define social impact assessment prior to commencing an assessment. For our project, social impact assessment, as defined by Vanclay (2003), is concerned with all issues that affect people, both directly and indirectly, as a consequence of development. In this case, the development is a coal mine and coal gasification plant. The objective of SIA is to ensure the development that occurs maximizes the benefits and minimizes the costs of the development, particularly where the costs to the community are concerned (Vanclay, 2003).

Social impact assessment emerged in the mid 1970s as a means of reducing the negative socioeconomic impacts to communities facing natural resource development and of enhancing any positive impacts. Following World War II, large-scale development of Canadian natural resources began. At first, the environmental and social or cultural consequences of these developments were to a large extent ignored (ICGPSIA, 1994). As the severity of these consequences started to become apparent, however, strategies began to correct these occurrences. Early methods of social and environmental impact assessment focused on “after-thought solutions” rather than prediction and mitigation (ICGPSIA, 1994). However, as environmental effects, such as the destruction of wildlife habitat, air and water pollution, and contamination of fish became evident, public interest in environmental issues grew (Craig, 1990; ICGPSIA, 1994). This public interest in the environmental and social impacts of natural resource development leveraged the rapid assemblage of strategies to predict and understand impacts.

A growing concern for causes of social change demanded the development of SIA strategies (Craig, 1990). One of the earliest and most famous applications of SIA was a qualitative (or political) examination of the potential impacts of the proposed Mackenzie Valley Pipeline (MVP) in the 1970s. This SIA, a federal government inquiry conducted by Justice Thomas Berger, is best known as the Berger Inquiry (Burdge, 2004; Gamble, 1978; Interorganizational Committee on Guidelines and Principles for Social Impact Assessment,

1994). The Berger Inquiry was influential as a template for social impact assessment because of the data collection methods described as, the “the blending of expert evidence with the thoughts of the ordinary citizen”, demonstrating the need for public participation in the assessment process (Gamble, 1978). This inquiry leveraged the halting of the MVP development, and exemplified the potential strength of both a qualitative design and the SIA report in halting and mitigating potential socioeconomic impacts of development to communities.

1.2 The comparative diachronic model

Since the emergence of environmental impact assessment (EIA), there has been a growing call for social impact assessment that can anticipate changes that might occur in a community facing development or policy change. Nearly 25 years ago, Freudenburg and Keating (1985) discussed the potential for an anticipatory model of social impact assessment. And even before the 1980s, the anticipation of impacts through comparative research was a component of social impact assessment (Taylor *et al.*, 1995; Burdge, 1998).

The comparative diachronic model is a practical approach to social impact assessment to discover the potential irreversible and undesirable changes to be experienced by a community undergoing natural resource development (Burdge, 1977). It aims to predict the probable impacts of development on a case study community. The model incorporates a parallel assessment of three communities: a case study community, a comparison community, and a control community. The model is somewhat static in design. It functions by “taking snapshots” through time to observe the impacts of the natural resource development (Figure 1) (Burdge, 1977). In utilizing the model, longitudinal baseline data for a case study community is first collected. Second, a comparison community is selected for a similar history of development. EIA reports are then examined and longitudinal data collected. In such, the model observes the comparison community through time from before to after the development occurred. Third, a control community is selected for a similar socio-economic context and has not experienced such a development project as the control community. Fourth the history of each community is examined and compared to predict plausible outcomes for the case study community. If such impacts are discovered, Burdge (1977) states that alternatives and mitigation measures must then be considered.

The SIA process is often conducted in six main phases: scoping, profiling, formulation of alternatives, projection and estimation of effects, monitoring for mitigation and management, and evaluation. Taylor *et al.* (2000) links this process to the use and sources of comparative data and will be described as follows. Scoping involves the intuition of the practitioner and a review of the literature to develop the case study model. Profiling involves looking at the history of the “host” community of the development project to investigate how the community has responded to past social changes. In the formulation of alternatives, the comparative model can develop scenarios of change. Next the profiling of the community involves the identification of potential impact areas. Following this stage, the comparative case study can provide valuable lessons for a previously conducted ex-ante assessment. The final stage of the process is an ongoing one, involving continual re-evaluation and learning.

2. STUDY DESIGN AND CONTEXT

This paper examines the use of a CDM for the development of the coal gasification mine proposed to the East of Edmonton, Alberta. The region to be developed is across agricultural and residential areas surrounding the town of Tofield, Alberta, and the village of Ryley, Alberta (Figures 2 & 3). We have developed the CDM for this study. It includes first the *impact study* of Tofield, Alberta; a community that is anticipating significant future socioeconomic impacts from the proposed Sherritt coal mine and coal gasification plant. Second, the *comparative study* is Wabamun, Alberta, which experienced significant impacts from Highvale and Whitewood coal

mines in the late 1900s (Figure 1). Third, the control study is the town of Mannville to the East of Tofield, which has had a similar agricultural history but has not witnessed a resource development project of this type or magnitude.

As summarized in the Sherritt's public disclosure document, Sherritt proposes a phased approach to build a surface coal mine and a coal gasification facility in the Central Parkland Region (The Pembina Institute, 2009; Sherritt, 2009). The total area of the mine is 31,337 hectares, or 312 square kilometers (The Pembina Institute, 2009; Sherritt, 2009). The current mine boundary has enough coal resources to fuel two gasification units for approximately 40 years (The Pembina Institute, 2009; Sherritt, 2009). However, Sherritt's long-range plans include 4 gasification units in total which would require an expansion of the mine boundary (The Pembina Institute, 2009; Sherritt, 2009). The coal gasification facility will process coal feedstock to produce synthesis gas (syngas), which can be used for fuel, as a petrochemical feedstock or further processed into high purity hydrogen (to fuel vehicles and aircrafts and heat buildings) (The Pembina Institute, 2009; Sherritt, 2009). Projected impacts include air and water pollution, significant effects on groundwater aquifers and surface water hydrology in the region, energy use and land disturbance (The Pembina Institute, 2009; Sherritt, 2009). Sherritt applied to the government for approval in early 2008 however the project is on hold due to complications related to the use of end-products (The Pembina Institute, 2009; Sherritt, 2009).

Coal mines are not a new occurrence to the region. Sherritt is the largest thermal coal producer in Canada (Sherritt, 2009). Sherritt's Prairie Mines & Royalty Ltd. operates eight coal mines in Alberta and Saskatchewan (Sherritt, 2009). Three of which are sub-bituminous coal mines near Wabamun Lake: Highvale, Whitewood and Genesee (Sherritt, 2009). The Whitewood and Highvale mines are owned by TransAlta and have been in operation since 1962 and 1970 respectively (Sherritt, 2009). The Whitewood mine located north of Lake Wabamun covers 3,331 hectares and supplies the Wabamun thermal generating plant with approximately 1.4 million tonnes of coal annually (Sherritt, 2009). The Highvale mine is located south of Lake Wabamun, about 70 kilometers (43 miles) west of Edmonton, Alberta (Sherritt, 2009). The Highvale mine covers 12,140 hectares and is the largest surface strip coal mine in Canada (Sherritt, 2009). It supplies approximately 13 million tonnes of coal mined each year to Sundance and Keephills (Centennial Project) thermal generating plants (Sherritt, 2009). There is another mine near Wabamun called Genesee, which is owned by EPCOR and has been in operation since 1989 (Sherritt, 2009). It is located approximately 70 kilometers southwest of Edmonton, Alberta, and provides 5.5 million tons of coal a year for the Genesee Generating Station (Sherritt, 2009). The presence of all the coal mining activity in the Wabamun area makes it an appropriate comparative case study to predict potential impacts from the proposed coal mine and gasification plants in the Dodds-Roundhill region.

We have conducted the CDM for the Sherritt's proposed Dodds-Roundhill coal gasification mine. The case study (host) community is Tofield, Alberta. The comparison community is the Wabamun, and it is located 130 km west of Tofield. We will be analyzing social impacts resulting from Wabamun's Whitewood and Highvale mines and subsequent Keephills, Sundance, and Wabamun power plants located in the Wabamun area. The control community is Mannville, Alberta. Located 99.2 km east of Tofield, Mannville has not experienced a mine development, and is primarily an agricultural town and area (Canada Census, 2006). These three communities are our CDM framework for the development of the mine.

3. METHODS

3.1 Quantitative methods

The Canada Population Census was the source of secondary data for the baseline community report. The Canada Population Census was the only known source of secondary data

for such a longitudinal study. Data used was for the years 1951, 1971, 1996, and 2006 to create a longitudinal comparison (Canada Census, 1951; Canada Census, 1971; Canada Census, 1996; Canada Census, 2006). We used variables available in the Census of Canada (Appendix A). These variables were intended to construct a historic and longitudinal story for each of the communities. Data was collected at the census division (Figure 4) and census subdivision (Figure 5) level. Statistics Canada (2009) defines a census division (CD) as:

Group of neighbouring municipalities joined together for the purposes of regional planning and managing common services (such as police or ambulance services). These groupings are established under laws in effect in certain provinces and territories of Canada. For example, a **census division** might correspond to a county, a regional municipality or a regional district. In other provinces and territories where laws do not provide for such areas, Statistics Canada defines equivalent areas for statistical reporting purposes in cooperation with these provinces and territories. (Accessed April 12, 2009).

The Census division is the largest geographical division at the Provincial level. The smallest rural geographic division level is the census subdivision (CSD). Statistics Canada (2009) defines a census subdivision as:

[An] area that is a municipality or an area that is deemed to be equivalent to a municipality for statistical reporting purposes (e.g., as an Indian reserve or an unorganized territory). Municipal status is defined by laws in effect in each province and territory in Canada. (Accessed April 12, 2009)

In this report, data was collected for the CDs of Census Division no. 10 and Census Division no. 11. Data was collected for the CSDs of Tofield, Wabamun, and Mannville. They were intended to cover indicators of change, such as: population changes, education levels, division of labour between men and women in the work force, and immigration/ emigration. The data from these variables capture some empirical evidence of changes in each of these communities through time. The data was then compiled into a separate database, compared, and analysed.

3.2 Qualitative Methods

We focused on certain indicators for our qualitative analysis that were adapted from Schooten et al. (2003). These indicators are: gender distribution, population, income, community stratification, and subdivision of land. We used semi-structured open-ended interviews and divided our qualitative assessment into outlining positive and negative impacts. To observe a broad perspective of the Wabamun community's thoughts and opinions of the Whitewood and Highvale coal mine projects, it was desired to interview both residents who are employed by the mine and those residents who live in the area surrounding the mine, but are employed through other fields. It was anticipated that residents who were not employed in mining or at the local power plants would identify the adverse impacts from coal mining activity in the area. We targeted interviews with residents who had originally been displaced, as a result of the mining developments, considering it important to compile the full breadth of perspectives of potential mine impacts.

To collect primary data from the residents in the community, we asked for contacts from employees of the Wabamun power plant. Background information was also collected through internet searches for organizations and community groups in the Wabamun area. E-mails were sent over the first and second weeks of March 2009 to community groups (see Appendix B). Phone contact was made with the village of Wabamun administration office, the economic coordinator of Wabamun, the Mayor of Wabamun's office, and the Interlake Golden Age Club. This contact referred us to potential participants.

Another strategy to recruit potential participants was with posters mounted through the community. Each poster had two questions on it: *Do you feel you, or your family, experienced*

any impacts (positive or negative) from open-pit coal mining in the Whitewood – Highvale area? Do you know of any community members who experienced any impacts (positive or negative) from open-pit coal mining in the Whitewood – Highvale area? As well, the posters included a brief description of our project, and nine tear-off contact phone numbers and e-mail addresses (See Appendix D). The posters were placed on bulletin boards throughout the town of Wabamun, at gas station bulletin boards on Highway 16 near Fallis and Wabamun, at a corner store located near Mink Lake, on two bulletin boards in Paul Band First Nation, at Stony Plain general store, and on two bulletin boards located in the town of Stony Plain.

During the interviews with community members, each participant was informed of the university project and the purpose of the project prior to being interviewed. Each participant was informed that they were not required to participate and did not have to answer all the questions if it made them uncomfortable to do so. As well, they were assured that the survey results would be confidential. Interview questions were prepared in advance to include an investigation of each of the indicators (see Appendix C).

Despite efforts, we received very low response. In response, we collected secondary data via the internet. We used archival newspapers in the Factiva database. Papers of interest were between the years of 1975 to 2009, using *Wabamun* as a key search word. The newspaper articles were then selected and sorted based on information that involved coal mining, power plants located near Wabamun, environmental and social issues or concerns in or near Wabamun, as well as research results or studies conducted in and around Wabamun.

4. QUANTITATIVE RESULTS

4.1 The case study community of Tofield

Tofield is a town with a rich history of farming that was settled over 100 years ago. In the early 1950s the population of the town was just under 900 people (Table 1). Since then, the town has more than doubled to 1,865 people in 2006 (Canada Census, 1951; Canada Census, 2006). Most people in the town are 40 years old, with a median age of 42.7 years. Nearly half of the population of the town immigrated within the past 5 years. Of the nearly 2000 people in Tofield in 2006, only 746 were in the labour force. Among this work force, only 65 individuals are employed in the agriculture sector. However, this is acknowledging that the statistics are for the town of Tofield, and that a more rich story may be observed when we look at the larger area of the CD.

4.2 Division No. 10 surrounding Tofield and Mannville

Division no. 10 surrounds the towns of Tofield and Mannville and has an overall population of just under 87,000 people (Table 2). Nearly 40,000 people in the area have not received post-secondary education. Furthermore, a greater percentage of the census division population is involved in the agriculture sector with 11,190 people or approximately 12 percent (%). Sixty years ago, at the time of the 1951 census, the population of the region was just over 50,000 people. Males dominated the work force, and again 11,499 people were in the agriculture sector, or approximately 23 percent of the population. This is nearly twice as there was in 2006. In the 1971 census, the population of the region dropped to 46,270 people with the number of people employed in agriculture dropping to 2990 or six percent (%).

4.3 The comparison community of Wabamun

The comparison community of Wabamun, in 2006, the village had a population of 601 people, with nearly half residents women, and half men (Table 3). The residents of Wabamun appear to be more transient, with only 30 percent of the population having resided in the same place five years earlier. Wabamun is similar to Tofield in the percent (10%) of people involved in agriculture and other resource-based activities, in this case 60 individuals. The census of Canada does not differentiate between different resource activities in 2006, for example agriculture and mining (Table 3). The census of Canada data from before the mine opened and after it was in operation, do not collect pertinent data on the town, but is only available at the census division level.

4.4 Division no. 11 surrounding Wabamun

Division no. 11 surrounds the city of Edmonton and covers an area to the west of the city. Before the opening of the Whitewood mine, the CD had a population of 226,199 people, where 3400 people were employed by mining. Interestingly, after the mine opened, the number of people employed by mining decreased to 685. Approximately one third of the population in the work force had less than grade nine education, although this increased from the 1951 census where nearly 85 percent (%) of the population had not received any level of education. In 2006, the CD had a population of 1,076,103 people, where 50% of the population has moved in the last year. This does not determine the immigration of people because it could be their tendency to move within the division as well. In 2006, one third of the labour force had not received a degree or diploma, where men and women were employed and educated in equal numbers. As well, only six percent (%) of the population was employed by agriculture and other resource based industries (Table 4).

4.5 The control community of Mannville

The control study is the community of Mannville in Division no. 10 and is approximately 130 km away from the town of Tofield. In 2006, the population of Mannville was 782 people (Table 5). Approximately half of the population is in the labour force, and of those, 50 percent (%) are employed by agriculture. There are 375 people in the workforce in Mannville, and 280 of them have no post-secondary education. The average income of those employed is \$24,992 CD. In 1950, the population of Mannville was 528 people and has not greatly changed since then.

4.6 Longitudinal data collection

The use of the Canada Population census rendered several holes in the data. First, except for the variable “population” for Tofield and Wabamun in the 1951 census, data was not available for CSDs Tofield, Wabamun, and Mannville before 1996. Furthermore, Wabamun is not included in the 1951 census. At the CD level, only three variables were available from 1951 through 2006. These were: Population (total), Number of people in the labour force (total), and Number of people employed in agriculture and other resource-based industries.

5. QUALITATIVE RESULTS

We contacted several mine employees and were able to conduct in-person interviews with three separate Wabamun area residents employed at the Whitewood - Highvale coal mine. We travelled out to the mine and met directly with the employees at their place of work. Of the three employees that we interviewed, one was a project engineer, one was a member of the land reclamation department, and one was in charge of resident complaint department. All participants were long time residents of the Wabamun community and represented three different sections of the mine. While each participant was from different sections of the mine, their perspectives were remarkably similar. Each participant had been either born and raised in the community or had

moved into the area over thirty years ago. The individuals that migrated into the community did so because of their desire to live in the area and not due to a specific employment opportunity.

All participants mentioned very similar negative impacts that the mine is, or potentially could be, having on the residents and surrounding community. The following lists of negative impacts represent the primary concerns that were mentioned in all three interviews. The farmers who lost their homes and their land were identified as those who suffered the most detrimental impacts of the mining operations. In addition many surrounding residents complain about the noise which is generated by moving equipment, blasting, and power plant operations. The blasting also creates shockwaves that can be felt by immediately adjacent residents to the mine, and can even be potentially damaging to housing structures. The mining operations interfere with ground water movement and many households surrounding the mine experience water pressure problems. During the mining process all the vegetation is removed, this coupled with the movement of heavy equipment produces a lot of dust and leads to many resident complaints. With mining operations also come commuting workers, travelling contractors, and equipment and material deliveries which all greatly contribute to a heavy increase in local traffic. The increase in traffic leads to the production of dust, longer wait times at intersections, an increase in the number of traffic accidents, and general anxiety for local travel. The mine also creates anxiety in other ways. Farmers who live within the project area may be waiting not knowing if or when they will be forced to relocate, while mine employees may be wondering how long they will be employed given the finite source of the coal.

While it would appear that there are a number of negative impacts imposed by the mining operations two of the individuals interviewed mentioned concerns regarding the validity of the surrounding residents' complaints. An example was brought up where one of the employees' neighbours openly admitted to making noise complaints purely to receive compensation. He had stated that even though the noise did not necessarily bother him, the more he complained the more he received in compensation payments.

The primary positive impact mentioned was employment. A large portion of the Wabamun residents are employed through the mine, which is beneficial for a number of reasons. Not only does the employment opportunity keep people living in the community and attract new people to the community, but it also provides a source of income which largely gets circulated back into the community through the spending at local businesses. The mine also provides a substantial source of income for the community through tax revenue. The mine also reclaims the land that it disturbs, and often it may be reclaimed to more agriculturally productive land than what may have existed prior to the mining disturbance.

Given the opposition to the mining project and concerns currently being voiced in the Tofield area, we anticipated that there may be some community stratification that would have developed over the years of mining operations between the farming community and the mining community. According to all the individuals interviewed, there is no significant amount of community stratification taking place in the Wabamun area. It seems that there are a handful of people who are strongly opposed to the mine, while the majority of the community is in favour of the development. There are still a number of community events at which farmers and mine employees all participate, their children all attend school together and participate in the same extracurricular activities. It would seem that the mine has not had any long term seriously detrimental social impacts on the Wabamun area as the community appears to be very cohesive.

Conducting Web-based searches for organizations in the Wabamun area, revealed the community groups: Lake Wabamun Watch and Lake Wabamun Residents Committee. Lake Wabamun Watch was described as an environmental society, which consisted of various stakeholders who assumed responsibility to supervise any environmental issues that came up with respect to the open-pit coal mines and power plants resulting from TransAlta Utilities activities. The Lake Wabamun Residents Committee was organized as a response to the CN derailment into Wabamun Lake, which occurred in August 2005. This organization focused on recommendations

for better response and coordination systems, improved industry training, and more stringent standards.

Although the organizations Lake Wabamun Watch and Lake Wabamun Residents Committee contained some relevant information with respect to environmental concerns, with Lake Wabamun Watch specifically related to mining activities in the Wabamun area, further contact with members of these organizations was not feasible. The e-mail addresses provided on the Lake Wabamun Watch website were no longer active, and the e-mails were returned. This website hadn't been updated since 2004. The Lake Wabamun Residents Committee did not have any e-mail contacts, and the telephone numbers were specifically for inquiries related to the CN oil spill. As well, according to the website hadn't been updated since 2007, suggesting that the organization is no longer active.

There were no responses to e-mails that were sent. Phone contact was made with the village of Wabamun, the events, marketing and economic development office, as well as the Interlake Golden Age Club. The events, marketing, and economic development office provided contacts specifically to the TransAlta mines and power plant. The Interlake Golden Age Club was not interested in discussing any impacts related to coal mining activities. There was no response from any of the posters that were posted.

Media Reports

The archival newspaper search provided 17 articles related to coal mining, and environmental impacts that were related to Lake Wabamun. The articles were specifically chosen based on any issues or concerns with respect to Lake Wabamun and the surrounding Environment. The articles mentioned positive and negative impacts from coal mining activity, yet the majority focused on adverse impacts.

Some of the articles discussed the reclamation efforts, whether they involved concerns or achievements. For example, the reclamation successes of a coal mining area near Wabamun Lake (Brooymans 2004), or concerns about heavy metal leaching from the use of Edmonton's residential garbage and sewage sludge as compost (Mandel 2000). There was also discussion about environmental issues in and around Lake Wabamun, such as reduced water levels in the Lake Wabamun, the impacts on breeding and nesting habitat for birds, and the matter in which TransAlta has been extracting and diverting Wabamun lake water into the North Saskatchewan River (Honenbalken, 1995).

Other articles demonstrated controversy over scientific research in the area. One article outlined the findings from a Scientific Review Panel, mentioning that mercury levels in the fish are low, and blamed both surrounding industry and cottage residents for the damaged fish habitat (Schindler, 2005). Another article illustrated community response to the scientific findings, stating community concerns with the lack of focus in the scientific inquiry with regard to TransAlta's power plant production of 600 kilograms of mercury a year (Doull, 2005).

Some articles described how there was negligence on behalf of TransAlta to take all precautions reducing their environmental impacts, exemplifying some conflict in the community. For instance, the Alberta government ordered TransAlta to increase the amount of water it returns to Wabamun Lake from one of its power plants (The Canadian Press, 2003). Another article discusses how pollution in the air and water by the Wabamun power plant have degraded recreational use of the lake, and how the power plant needs either an upgrading or decommissioning (Broadcast News 2001). One of these articles involved a local environmental group that wished to involve the United Nations to deal with mercury contamination in Lake Wabamun (Brooymans, 2004), while another article involved an investigation concerning 2000 dead fish found and heavy metal poisoning in the lake (National Post). TransAlta also responded to Honenbalken's previous article (1995), denying some of the accusations that ash is being dumped into Lake Wabamun, and that not all of the water taken from Wabamun is being diverted

into the North Saskatchewan River, instead a diversion is merely being considered (Dychkowski, 1995).

There were also other studies being conducted in the area, looking at health impacts from mining activity. One article mentioned a study being done in the Wabamun area that was looking for 50 children participants in order to determine air pollution effects as a result of the coal-fired generating plants (Broadcast News, 2004). Another article discussed some issues with scientific findings from coal mining impacts and the hazardous effects of dust, that contains silica, being released in the mining process and potentially causing health problems (Lakritz, 2001).

6. DISCUSSION

6.1 Discussion of quantitative methods and results

This report faced some successes and many failures in attempting develop a robust comparative model by reconstructing historical baseline data and undertaking qualitative research. We have nevertheless encountered valuable experiences from this research from which lessons can be learned.

The ability to collect secondary baseline data (historical data) directly influences the success of a comparative case study. This can in some cases be a challenge. Two factors have directly limited the collection of data for this comparative analysis. First, the absence of an original SIA/EIA report. The Wabamun mine was opened prior to the requirement for proponents to conduct an EIA and hence there is no initial baseline report of impacts or indicators to which a second case study community can be compared. Freudenburg and Keating (1985) discuss a similar potential for challenge where data or knowledge is simply not available. They state that the comparative model is only as good as the data available (Freudenburg & Keating, 1985). Second, the availability of census data, in this case the Census of Canada data, is often difficult to track through the several decades. The Wabamun mine, being opened in the 1960s, requires the analysis of data from the 1950s. The Census of Canada variables are not consistent between the 1950s to the present. Therefore, the lack of baseline data availability renders potential gaps in developing a comparative case study.

Reliance on census data paints an incomplete picture of the changes witnessed by communities. Although, the comparative diachronic model seems quite ideal in theory, aligning the contexts of communities to compare and predict differences could be powerful. However, we have encountered challenges in collecting data that can clearly articulate the story of change in a community. The census of Canada proved to be of limited use in following a certain longitudinal trend. For example, the population for the town of Mannville was surveyed in the 1951 census, but not again in the 1971 census, neither were any of the towns (Tomahawk and Seba Beach) surrounding the Whitewood mine. Furthermore, the detail necessary to observe community-level changes, are not available in the older censuses of Canada (in 1951 or 1971). Details such as the number of individuals employed in mining are available at the census division level, but not more local than that. This abstraction reduces our ability to definitively show “before” and “after” changes faced by a community.

The comparative diachronic model is only valid for development projects that have occurred in some earlier period of time. As we face rapid changes in how development and what development is occurring, this model would not work to assess the impacts of first-time projects. As technology rapidly changes and the requirements from natural resources advances, the ability to compare these processes to ones previously conducted may be increasingly difficult. Perhaps there will be a need to develop other methods for comparison between community impacts that can utilize communities with certain differences, but offer valuable lessons.

Conducting a comparative diachronic SIA can be very valuable as an ex-poste assessment. Similarly, this could have provided insight into the changes experienced by the towns such as Wabamun surrounding the Whitewood mine. It could have further assessed the

validity and accuracy of the indicators used in the Whitewood mine and whether the mitigation measures were appropriate. Unfortunately, since the mine was opened prior to the requirement for an environmental impact assessment, there is no data to which to compare this ex-poste assessment.

A potential response to the lack of data from the census of Canada, could have been to open the field of comparison communities internationally. Taylor et al. (2000), developed a comparative study between New Zealand with Australia and North America. They suggest however, that this comparison must be utilized in the context of learning from the experiences of other communities, more than conducting direct predictions.

In presenting this research to professional consultants of SIA and local people from the Dodds-Roundhill area, one question was asked several times: why did we choose Wabamun as a comparative community? It was suggested that perhaps the community of Forestburg would have been better. These comments led us to consider that perhaps there are some flaws with the comparative diachronic model as outlined by Burdge (1977) to include only one comparison community. When we consider fairly unique case study communities where there is no one community that works as an ideal comparison, perhaps there is room to develop a new model that profiles more than one comparison community from which to extrapolate more accurate and plausible impacts. The reliance of the comparative diachronic model on one ideal comparison community appears to be a weakness of the model design and we suggest the development of a model that utilizes more than one.

Asselin and Parkins (2009) acknowledge the challenge of a time-lag between the case study and comparison communities. Citing Burdge and Johnson (2004), they state that there are several crucial steps to selecting an appropriate comparison community:

- (1) Using the county as a unit of analysis, (2) identifying a project with similar size and purpose, (3) finding a community with similar geography and culture, (4) using a similar time period, and (5) using comparable data sources. (Asselin and Parkins, 2009).

They discuss encountering challenges with a 25 year time difference between their case study and comparison community. In our experience, the time difference of nearly 50 years between the initial mine development in the 1960s and the present context of the Dodds-Roundhill proposal, has exacerbated the challenges. This was faced in both the collection of secondary data with the Population Census of Canada as well as with the collection of primary data in directly contacting the community.

Conducting the CDM at the county and regional level presented certain challenges. Even though Burdge and Johnson (2004) recommend the comparison community be in the county or region, following this recommendation might have greatly hindered our CDM design. This framework allowed for similar socioeconomic circumstances between the CSDs, as well as similar cultural backgrounds. The Wabamun area is a less agricultural environment, but still having some agricultural history and background. While forming to these recommendations geographically, again, the time lag between the projects might have led to them being less comparable than either expected or desired.

6.2 Discussion of qualitative methods and results

While the methodology was useful and the reasoning behind our community comparison study was sound, it is very difficult to draw a definitive conclusion from this study. This might have been so for several reasons. For example, while the information provided by the mine employees was insightful and informative, but it may not be painting an accurate picture of the reality of the Wabamun community. Given that all three people are employees of the mine, there will be some natural bias that will support the mining operations. Without opposing opinions provided from residents, not affiliated with the mine, it is difficult to objectively evaluate the study and draw any firm conclusions about the socioeconomic impacts caused by the mining operations.

While the newspaper articles focused primarily on environmental impacts, there is a link between environmental impacts and social impacts. For instance, environmental impacts, such as reduced quality of the water in Lake Wabamun can be understood to connect with social indicators. For example, Schooten et al. (2003) discuss how social indicators can include community members perception of the quality of the living environment. Some of the environmental impacts mentioned by the newspaper articles can be associated with social impacts. As Schooten et al. (2003) mention, stress, anxiety or depression; negative feelings in relation to the project; or a breakdown in social networks and community cohesion, are all social impacts, and these social impacts can likely arise from the various environmental issues and community conflict mentioned in the newspaper articles resulting from mining activity.

As previously mentioned, TransAlta's Whitewood mine has been in operation since 1962, and their Highvale mine has been active since 1970. This suggests that mining activity has become an integral component of the community of Wabamun. The community residents in and around Wabamun have been exposed to mining activities for several decades since the inception of TransAlta mining operations began in the area. In this comparative social impact assessment, there was very little response from community residents in the Wabamun area, and a great reluctance by the community to discuss any adverse impacts from the mining activity.

Burdge and Johnson (2004) discuss how by collecting data from personal interviews in the actual area where the resource development was already occurring, that a comparison can be made with the community that is anticipating resource development of similar nature, and the further discuss demographic and sociological variables that can be useful for understanding impacts (Burdge & Johnson (2004). Yet, there was no information provided by Burdge and Johnson's (2004) paper that discussed how to cope with difficulties encountered when there is a lack of interest by the comparison community to respond. Although it was acknowledged that there were inherent gaps in the literature with respect to this comparative case study approach in social impact assessments in Asselin and Parkins (2009). The issues with lack of response or interest by the comparison community to participate suggests another area that is not discussed in the comparative diachronic method in SIA. Perhaps this lack of interest by the comparison community stems from the view that the study will not bring about any positive change, or benefits to their community, instead it merely will take up their time to potentially benefit another community and aid in enrichment of the learning experiences for a University of Alberta class. It is possible that had this project been a research project, as opposed to a class project, that increased community participation discussing coal mining impacts would have been warranted.

While there were organizations that expressed some concerns with social and environmental impacts related to industry in the area, Lake Wabamun Watch and the Lake Wabamun Residents Committee, only one dealt specifically with coal mining related activities. Lake Wabamun Watch's disbanding suggests that there is less public concern for coal mining related activities in the Wabamun area. There are several explanations that could provide information as to why there is less overall concern for mining impacts in the area.

Among these explanations is first, the CN derailment generated a great deal of public concern. For example, we were unable to find any newspaper articles related to coal mining activities following this CN oil spill in August 2005. The newspaper articles suggested that there was some degree of public concern, as described in several of the articles prior to the oil spill. Following the oil spill, there was much less concern for mining impacts, environmental or social, as after August 2005, the newspaper articles solely involved the events transpiring the CN derailment. After 2007, it was very difficult to find articles related to the CN oil spill or coal mining impacts. It is difficult to assume why this is the case, yet there are some possible reasons.

Following the settlements with the residents of Wabamun and surrounding area it is possible that people in the community had become complacent with the clean-up efforts and/or the compensation. This assumption can be connected with coal mining and power plant operations since it is likely that following the CN derailment that TransAlta had already settled

some of their longstanding issues with community members that were mentioned in the previous newspaper articles. It is also plausible that the increased attention to the quality of Lake Wabamun was also of concern to TransAlta, since Wabamun lake water issues came up continuously in the secondary data analysis. This may have resulted in increased precautions, to ensure that their activities were no longer of concern to the community residents, environmentally or socially.

The community residents of Wabamun and surrounding community did not wish to discuss any adverse impacts related to mining, and very few residents were willing to discuss positive impacts. This may have been a reflection of the methodology we chose, such as attempts to inform the communities that a study of this nature was occurring. For example, Daniel discusses that unresponsiveness in studies that can be attributed to outright refusals and unlocated respondents (293). While phone calls were made, some respondents that were contacted gave the impression that this study made them uneasy, which resulted in a shift in how we chose to contact community members. We adapted our methodology as we encountered difficulties locating respondents so as to minimize any discomfort community members felt in relation to this study.

In retrospect, the posters requested to discuss positive or negative impacts from mining activities in the area may have generated a feeling of insecurity in the Wabamun community, since TransAlta operations in the area employs a large number of people. For example, TransAlta's Highvale and Whitewood coal mines currently employ between 619 and 659 people, while the Keephills, Sundance and Wabamun power plants (located in Wabamun) employ 685 people (TransAlta, 2009). While it is unknown how many of these employees are residing in the Wabamun area, it is likely that these employees working in Wabamun generate a great portion of economic activity in the area. In this sense, Wabamun community members may have viewed a study revealing any adverse impacts from coal mining activities as a potential threat to the security of these mining related jobs, and thus, a threat to the security of the community's economic livelihood.

As previously mentioned, there was the possibility that community members in and around Wabamun felt this study was a threat to one's livelihood. With a substantial reliance on coal mining for livelihood, it is reasonable to assume that coal mining also contributes to one's self-identity. Coal mining has been occurring in and around the community of Wabamun for over 50 years, and with such a large amount of employment brought about by TransAlta mining operations, it is likely that coal mining has become integral to the community. Not only is it likely that coal mining may constitute a large portion of the Wabamun community's identity as a coal mining town, it also is possible that coal mining contributes to many residents' self-identity, as employed in coal mining activities. For instance, as one is employed at a coal mine or power plant for an extended period of time, their skills would become refined and specific. This may generate a sense of pride in one's work skills and contribute to one's sense of identity. With the community of Wabamun being exposed to over 50 years of coal mining activity in the area, it is reasonable to conclude that there is a portion of residents in this community who feel a sense of self-identify related to coal mining activities. This connection between coal mining activities and the town of Wabamun may help to explain why residents may have hesitated to participate in our study.

Another explanation for a lack of response to our study may have dealt with previous experiences with research studies that Wabamun residents have already encountered. There were prior environmental research studies that were being conducted in the Wabamun area, and Doull's (2005) article mentioned that there was community concern over the scientific research that had occurred in the area. Some of the concern of community members in Wabamun dealt with a report, prepared by a panel of scientists in January of 2005. Complaints involved the parameters chosen in the study and different interpretations concerning aspects of the study, for the amount of watersheds in the area (Doull, 2005). This is not to imply that there were errors in the scientific research in the area, but it does suggest that there was a level of dissatisfaction and

mistrust on behalf of community residents in Wabamun with previous scientific findings in the area concerning the quality of the environment from mining activity. This implies that the community residents in Wabamun and surrounding area may have been hesitant to participate in further studies by researchers concerning mining activity and its impacts, due to a level of dismay created by previous scientific findings.

While there are several assumptions that can be made to explain why there was a hesitancy to find willing respondents in our comparative case study, none of them have been substantiated. The Alberta Health and Wellness study conducted in 2004 to determine levels of air-borne contaminants in the Wabamun area, it was mentioned in their 2006 report that although they had utilized numerous recruitment strategies to acquire participants in the Wabamun area for their study, there were barely able to recruit two thirds of the amount of participants they were targeting (Alberta Health and Wellness, August 2006). This suggests that other recent studies in the Wabamun area have also encountered difficulties in recruiting participants for local research projects. This further indicates that there is still much to be learned with regard to flaws in the comparative diachronic model in social impact assessment, and the specific community context where this research was carried out. As mentioned, the issue of unwillingness to respond was not discussed in previous literature concerning the comparative case study model. This experience points out that there is another dimension to the model that has increased its ineffectiveness for comparison with other communities. The manner in which there were very few respondents is suggestive of one perspective in the community concerning a study of this nature. After five decades of mining activity and subsequent impacts, it is entirely possible that the residents now residing and working in the Wabamun area are used to the way things are and may feel that this study may lead to undesirable change.

Many of the issues raised with respect to a lack of respondents in the Wabamun community with regards to this study were merely speculative. Recommendations for overcoming some of the obstacles we encountered include an improved methodology that focuses on empowering the participant communities to allow them more control in the research process. This can be accomplished by developing a trusting relationship with the community, allowing for the research to proceed at a pace dictated by the community, and community selection based on a community's desire to have the study conducted. These recommendations are explained below in further detail.

An improved methodology could include increased time within which to complete this study. What was missing from this study was a trusting relationship with community members in the area. This could have been accomplished if we had spent a longer period of time in the community, working towards establishing a level of trust in order to build a relationship where respondents felt comfortable sharing information regarding mining impacts. It is likely that the topic of impacts from coal mining is a sensitive one to the residents in the area. For instance, Daniel mentioned that one factor that can attribute to a lack of response in sociological studies includes an increasing sensitivity that results from feelings that one's privacy is being intruded (292).

Acknowledging the sensitivity towards discussing mining impacts, there are some means to overcoming it. To do so, Kowalsky et al. (1996) highlights the importance of allowing for research to progress at a pace that the community is comfortable, in such that that the research process may include a stopping phase, a waiting phase, and finally a transition phase (272-273). While Kowalsky et al.'s (1996) discussion focused on entry into an Aboriginal community, the recommendations are meaningful and useful for the CDM and our experience.

Qualitative research includes an aspect of community participation, which St. Denis refers to as community-based participatory research. In order to achieve *success* when utilizing community-based participatory research, it is essential that the researcher be aware of the welfare of the people in the study as well as related needs of the community (cited in St. Denis, 56). In our study of the comparative diachronic model, the Wabamun community did not require

research of this nature to be done, since there was no evidence that the community desired to discuss any issues with respect to our study of coal mining impacts. Kowalsky et al. (1996) also mention how research needs to be focused on the betterment of the community as opposed to the investigator [our class], or outside stakeholder [Tofield/Ryley/Roundhill communities] (268).

The resistance sharing negative impacts in Wabamun is different to our experience with Tofield, Ryley, and Roundhill. The residents in these communities expressed interest to having their concerns for coal mining activities acknowledged publicly. For instance, there are two groups that currently focus on opposing Sherrit international's coal mining interests, RHDAPA and VOCAL. These groups are currently actively expressing their concerns with the potential coal mining project of interest to Sherrit international. The absence of current organizations interest in mining impacts in the Wabamun community may further explain why there was hesitation to discuss impacts.

7. LESSONS AND RECOMMENDATIONS FOR FUTURE CDM

To fulfill our secondary objective, we next explore and expand on lessons and recommendations from the experience of conducting a CDM with the Dodds-Roundhill project.

7.1 Conducting CDM with multiple comparison communities

As earlier mentioned, in presenting this research to an academic audience and to farmers and landowners implicated in the Dodds-Roundhill mine, one particularly interesting question was posed: Why did we use the town of Wabamun as a comparison community in lieu of other possibilities? We have explored this comment to consider the limitation of the traditional CDM model design to have a single comparison community. Hence, we recommend the development of a design that incorporates more than one comparison community. For example, while one community may be ideal as a comparison for certain reasons, another may be better for other reasons. In future CDM projects more than one community could provide predictions and recommendations that would be triangulated for a more comprehensive summary. This could be particularly useful in the case that there are holes in the data. It is hoped that the collection of data from different communities might buffer any absent data.

7.2 Comparison community with EIA report

We faced a great challenge in compiling a historical baseline report for the town of Wabamun from the coal mine developments. The absence of the initial EIA/SIA report and data from the development in the 1960s forced us to rely on the Population Census of Canada. This data was not initially collected with the intention of conducting an SIA, and thus the variables are inconsistent with the study design of SIA. Now acknowledging this flaw in using longitudinal census information, we recommend that a any CDM uses a comparative community with an EIA report and available secondary data from sources other than a federal census.

7.3 Value of quantitative and qualitative data

Despite our challenges in collecting both quantitative and qualitative methods, we hold the acknowledgement that combining these research strategies remain of great value (Sinclair & Diduck, 2005; Asselin & Parkins, 2009; Craig, 1990). We feel that the unsuccessful use of these methods were not as a result of the research strategies but other restrictions to our research design (e.g., constraints of time, resources, and secondary data).

7.4 Time Lag

As discussed, the time lag between comparison communities was a great challenge for both the primary and secondary data collection. Based on this experience, we recommend that greater care be taken in selecting a comparison community. A community that may be ideal in

terms of geography and culture might not be appropriate due to a time lag between project developments. We furthermore recommend that time lag be taken into great consideration. Once again, Asselin and Parkins (2009) describe a challenge with a time difference of 25 years, and for us 50 years was too large for comparison. We thus recommend that comparison communities be selected within 15 years of the case study project.

7.5 Alternative strategies for future CDM work: some lessons learned

While the ideas and methodology behind our comparative case study were sound, there were a number of things that we may have done differently to achieve more substantial results.

Returning to the reflection on appropriate selection of a comparative community, we recognize that Wabamun was most likely not the ideal choice for a comparative case study with Tofield. We may have been more successful to have found a mining operation that surrounded a larger community than Wabamun, which was smaller than Tofield, Dodds, Roundhill, and Ryley. It would also have been useful to have found a mining project that had performed an SEIA prior to the beginning of operations. To observe a community that has been subject to mining activities, and use those observations to accurately predict what kind of impacts can be expected in a completely separate community, that will be subject to future mining activities, it is very important that those communities and those mining operations be as similar as possible.

An additional constraint to the success of our project was limited student hours and the lack of a budget. It might have been possible to find a more suitable case study community with more time and money to do so. Additional time would have allowed for more contact to be made with community members, make a greater physical presence in the community, and access those who might have disapproved of the mine or those who were removed from their land prior to the beginning of mining operations.

Our affiliation with the University of Alberta may have given us an inappropriately radical portrayal. We had attempted to have a neutral opinion, welcoming positive and negative comments, however, since the mine has been in operation for roughly fifty years, it now not only seems to be widely accepted within the community, it now seems to be a source of identity for the community. We feel that the idea of a group of university students, asking questions about the impacts of the mine, made the Wabamun residents very nervous. If our posters had explained why we wanted to know about the mining impacts and had some kind of assuring statement that we were not there to harm their source of income or way of life, they may have been more willing to respond.

8. PREDICTIONS FOR THE DODDS-ROUNDHILL MINE AND SURROUNDING COMMUNITIES

8.1 Land eviction or sale

We expect that after a long fought out battle, and despite all efforts, farmers will be forced from their land, hopefully compensated as fairly as they possibly can be. As the mining operations and plant construction begin we will see an increase in the Tofield and surrounding community populations.

8.2 Community stratification

There will be large amounts of community stratification between those opposed to the mine and those in favour of the mine.

8.3 Out-migration

Over the course of twenty to thirty years the individuals who are still extremely opposed to the mine will have moved away and we will once again see community cohesion in the smaller

communities of Dodds Roundhill and Ryley, similar to that of Wabamun once mining community identity settles.

8.4 Population

We think that the Tofield population will grow quite substantially as a result of the combination of mining operations and the many other projects that are currently being implemented within the town. This was somewhat demonstrated with Wabamun, where there are many smaller sub-communities within the town as opposed to there being one large cohesive community with which every resident tends to identify. It was further demonstrated that population of the town of Wabamun did not increase directly from the mine, but this does not mean that the areas surrounding or the city of Edmonton did not increase. The proximity of Tofield to Edmonton suggests that perhaps workers and their families will reside in Edmonton or Sherwood Park and commute to the mine site to work. This has been further demonstrated with research conducted by Jha-Thakur and Fischer (2008) that showed workers take up temporary residence close to the mine site, but live permanently in nearby larger urban centres (Jha-Thakur & Fischer, 2008).

8.5 Environmental degradation: mental and physical health

It seems quite inevitable that environmental degradation will occur with the opening of the mine and associated excavation. Despite reclamation efforts, and the Sherritt mine in Wabamun has demonstrated reputedly successful reclamation, there will be periods of significant environmental damage. Vanclay (2003) discusses the link between environmental change and degradation, and the impacts that this could have to personal identity and stress or distress. Likewise, environmental degradation can have significant impacts on health that may be short-term or long-term and will surface later in residents' lives (Haley and Tunstall, 2005). There was a period of great concern among residents of the Wabamun area in regards to the water and habitat quality of the water systems that thread the area and was suspected to be due to the mine activities (Lake Wabamun Watch, 2003). We thus predict potential mental and physical health impacts from the environmental degradation linked to the mine.

8.6 Water quality

It was found that the power plants in the vicinity of Lake Wabamun have increased the inputs of several trace metals into the lake (Schindler, 2004). Although, the metals at Wabamun Lake do not appear to have caused detectable changes in the aquatic community and are not a human concern for recreational uses of the lake or in drinking water wells, the effect of trace metal contamination in the Dodds-Roundhill region is uncertain. The waste products (emissions and wastewater discharge) associated with the Wabamun mine operations have contributed to this increase in heavy metal concentrations (Schindler, 2004).

In particular, Schindler's (2004) study on lake sediments demonstrates an increase in mercury concentration, above the level of background concentration expected in the region. Sources of mercury include geological formations, forest fires, and transport from other industrial processes near the Wabamun region (Schindler, 2004). A comparison with earlier sediments and with other central Alberta lakes indicates that this increase in mercury content is "largely a consequence of regional emissions, in addition to long-range transport of industrial emissions from other areas" (Schindler, 2004, pp. 29) Additionally, a significant increase in polycyclic aromatic hydrocarbons, or PAHs, a number of which are known carcinogens, was demonstrated in the Lake Wabamun region (Schindler, 2004). This increase in PAHs is shown to be related, like the trace metals, to the power plants and other fossil fuel burning activities in the Wabamun region. Even more concerning, the current lake level at Wabamun is lower than historic levels and there is an increase in the water salinity related to the mining activities. The results of

Schindler's study of Lake Wabamun (2004) that relate an increase in trace metals, particularly mercury, PAHs, water salinity and a decrease in water levels to mining activities is important for predicting the potential impacts in Dodds-Roundhill. Basing our predictions on Schindler's study of Lake Wabamun (2004), with the development and operation of a coal mine and coal gasification plant we expect an increase in trace metals, PAHs, and water salinity and a decrease in water levels in the Dodds-Roundhill region. These environmental impacts linked to the mining activities will result in potential mental and physical health impacts in the surrounding communities.

8.7 Air quality

Air quality has been a concern in Wabamun. The organization Lake Wabamun Watch cited air quality as one of their issues of concern (Lake Wabamun Watch, 2004), and discussed the implementation of air monitoring stations to record levels of sulphur dioxide, oxides of nitrogen, hydrocarbons, ground level ozone, particulate and ammonia (Lake Wabamun Watch, 2004). As a follow-up to these concerns, Alberta Health and Wellness prepared a study called the Wabamun and Area Community Exposure and Health Effects Assessment Program. This study was designed to monitor the levels of air-borne contaminants and analyze the relationship between the air quality and human health. This study concluded that there were no elevated levels of mercury, arsenic, benzene, ethylbenzene, xylene, nitrogen dioxide, sulfur dioxide, ozone, or volatile organic compounds (Alberta Health and Wellness, August 2006). While poor air quality was mentioned in the secondary literature citing concerns with exposure to silica dust from coal mining activity in the area (Lakritz, 2001), the Alberta Health and Wellness 2006 study was not able to substantiate any concerns with air quality in the Wabamun area. Therefore, it cannot be predicted that Tofield residents will experience health risks or increased exposure rates from air contaminants released from coal mining activities. We can, however, predict that there may be perceived environmental degradation among residents that could impact the community based on the work of Schooten et al. (2003).

8.8 Expansion of mine and exacerbated impacts

As explained in Sherritt's public disclosure document, the current mine boundary has enough coal resources to fuel two gasification units for approximately 40 years however Sherritt's future plans include 4 gasification units in total (The Pembina Institute, 2009; Sherritt, 2009). This means more coal is required to achieve Sherritt's long-term goals and an expansion of the mine boundary is likely. This expansion of the mine boundary will broaden the area affected by mining activities and will increase the number of affected persons. The impacts associated with the initial mine boundary will thus be exacerbated with an expansion.

8.9 Housing shortages

Since the population is expected to increase in the Dodds-Roundhill region related to the introduction of the mine and coal gasification plant, as well as natural progression, a housing shortage is predicted.

8.10 Economic resilience

The Mayor of Tofield (N. Chehayeb, personal communication, February 23, 2009) expressed great delight in the new dependence of Tofield on the proposed Dodds-Roundhill mine. This focused dependence, however, could reduce the resilience, and thus subsequently impact the vulnerability of the community and surrounding areas to economic changes (Powell & Jiggins, 2003). If this dependence is quite strong, we predict a lower ability for the community to adapt to economic changes particularly in the oil and gas industry, which could have devastating impacts

to Tofield specifically. That said, these changes could potentially be absorbed by surrounding communities, and the city of Edmonton.

9. CONCLUSION

In this report we have utilized the comparative diachronic model for Social Impact Assessment for the Dodds-Roundhill Coal Gasification project proposed by Sherritt in Alberta, Canada. With this model we identified the case study community of Tofield just east of the city of Edmonton. We selected the community of Wabamun to the West as the comparison community since it has had similar developments previously. The control community is Mannville, to the East of Tofield. We utilized a quantitative and qualitative methodology according to growing calls for such this type of mixed research methods in SIA. We did this, however, with less successful results. We encountered challenges in both quantitative and qualitative data collection, from determining variables from census tables that change through time, to being unable to contact residents in the comparison community. Although unable to present definitive results, from this experience, we have compiled a discussion, lessons learned, recommendations, and predictions that we hope to be of value to both the proposed project and to future developments with the comparative diachronic model.

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11.1 Appendix A: Quantitative variables derived from the Population Census of Canada

- 1 a). Population total
 - b) Population - male
 - c). Population – female
- 2). Number of people having attended school
- 3 a). Number of people in the labour force
 - b). number of men in the labour force
 - c). number of women in the labour force
- 4). Number of people in agriculture and other resource-based industries
- 5). Number of people employed in mining and quarrying
- 6). Number of people employed by trades, transport and equipment operators and related occupations
- 7). Average income of persons 15 years and over
- 8). Number of people with no certificate, diploma or degree (1951 variable)
- 9). Number of people who are migrants to the area
- 10). Number of people who are non-migrants to the area
- 11 a). Level of schooling in work force less than grade nine (male)
 - b). Level of schooling in work force less than grade nine (female)
- 12 a). Number of people with no certificate, diploma or degree (total)
 - b). Number of people with no certificate, diploma or degree (male)
 - c). Number of people with no certificate, diploma or degree (female)
- 13). Number of people having lived at the same address 5 years ago.

11.2 Appendix B: Contact email letter sent to Wabamun residents

Hello,

My name is Magdalena Jordan and I am writing you on behalf of my social impact assessment class offered at the University of Alberta. Our focus in this class is to understand the social and economic impacts that residents experience as a result of mining activity. We are currently conducting a social impact assessment for the Tofield, Ryley and Roundhill areas in relation to a proposed open-pit coal mining project. We have selected the Wabamun community to be used as a comparison for identifying social impacts that have occurred from coal mining in the area, as a means of anticipating what impacts the Tofield and Ryley communities might also experience. If you, or anyone you know, would like to share any impacts that were experienced from the mining activity in the Wabamun area, we are very interested in meeting with you. Any information provided would be greatly appreciated by our class, as well as by residents living in the Tofield, Ryley and Roundhill area.

All the Best,
Magdalena Jordan
mjordan@ualberta.ca
(780) XXX-XXXX

11.3 Appendix C: SIA introduction and questionnaire for the Highvale and Whitewood Mining Projects

Hello, my name is _____, and I am enrolled as an undergraduate student at the University of Alberta. I am currently taking part in a class that is focussed on identifying the socio economic impacts, caused as a result of large industrial projects, and was hoping to have a moment of your time. The primary focus of our class is based around the proposed Dodds Roundhill gasification project that is planned for the Tofield area. We are attempting to identify and predict the social and economic impacts that the proposed coal mine will have on Tofield and the surrounding communities. Given that the Wabamun community has been exposed to a very similar project, we feel that by speaking with some of the Wabamun residents and listening to what they feel are the biggest impacts that the mining operations imposed on the Wabamun community, we may be able to predict similar impacts for Tofield and the surrounding communities.

With your permission I would like to ask you a few questions that would aid in the identification of what you feel were the most significant impacts of the Whitewood and Highvale coal mining operations. You do not have to answer any of the following questions and may end your participation in this interview at any time. All of your answers and information that you provide will be kept completely confidential.

* These questions have been adapted from Schooten et al. *Social Change Processes and Social Impacts*

1. How long have you lived in the community?
2. What were your reasons for moving into the community? Were they employment based?
3. What do you feel are the positive impacts caused by the mining operations in this area?
4. What do you feel are the negative impacts caused by the mining operations in this area?
5. How do you feel the mine has influenced the Wabamun community?
6. How do you feel that you and your family fit into the community?
7. Does it seem like there is any community stratification between the mine employees and those involved in agriculture?
8. How would you describe the number of people who are in favour of the mine verses the number of those who are opposed?
9. How would you describe the cohesiveness of the Wabamun community?

Health and social wellbeing

In relation to mining activity in/near your community:

*- Have you noticed any impacts on your physical health?

*- Did you experience any psychological impacts: for example, stress, anxiety, depression, changed self-image/esteem?

- Did your view of your future aspirations, for you and/or your children change?

Economic impacts and material wellbeing

In relation to mining activity in/near your community:

*- Did you notice any changes in your workload needed to survive or maintain your standard of life?

*- Did you notice any changes in the economic opportunities available?

*- Did you notice any changes in property values?

*- Do you feel there were any changes in the employment levels, and options?

- How reliant do you feel the community is to this activity?

Family and community impacts

In relation to mining activity in/near your community:

*- Did you notice any changes in the population levels in your community?

- Were there any noticeable changes during the different stages of mining development?

*- Did you notice any changes in social networks in your community?

*- Did you feel there were any changes to your connection to the community?

- Did you feel a change in your sense of belonging?

*- Did you notice any changes to the cohesion of your community?

Cultural impacts

In relation to mining activity in/near your community:

- Did you feel there were any changes to the cultural values in the community?

- Did you feel there were any changes to the local culture, for example traditions?

Quality of the living environment

In relation to mining activity in/near your community:

*- Were any changes noticed in relation to the physical environment? (Dust, noise, risk?)

- Were there any changes in your recreational opportunities?

- Were there any changes to the aesthetic values in your community?

- Were there any changes to the adequacy of physical infrastructure in the area?

- Were there any changes to the access of social infrastructure?

*- Did you feel that your exposure to hazards increased? Or any changes to safety in the area more generally?

*- Did you notice any changes of crime and/or violence in the community?

Institutional, legal, political and equity impacts

In relation to mining activity in/near your community:

- Did you feel that you were given an adequate chance to participate in the decision making process?

- Did you feel that impacts and/or compensation were distributed fairly?

Gender relations

In relation to mining activity in/near your community:

*- Did you notice any changes in gender distribution?


- Do you feel there were any changes to dynamics of the care and maintenance of members in the household?

- Did you notice any changes in the division of household labour?

* Questions of focus in the event of time constraints during the interview process

11.4 Appendix D: Poster distributed through Wabamun

How do YOU feel?



Students from the University of Alberta are conducting a social impact assessment for a proposed open-pit coal mine in Dodds-Roundhill, and would like to contact residents in the Wabamun area to learn of any impacts from the Whitewood - High Vale open-pit coal mines to be used as a comparison community.

Do you feel you, or your family, experienced any impacts (positive or negative) from open-pit coal mining in the Whitewood - High Vale area?

Do you know of any community members who experienced any impacts (positive or negative) from open-pit coal mining in the Whitewood - High Vale area?

We would appreciate any feedback either by phone, personal interview, e-mail, or we can arrange for an anonymous survey.

Please contact Magdalena Jordan if you would like to participate in this study.

Thank-you!
Previously
contact info

Tear here:
Previously contact info

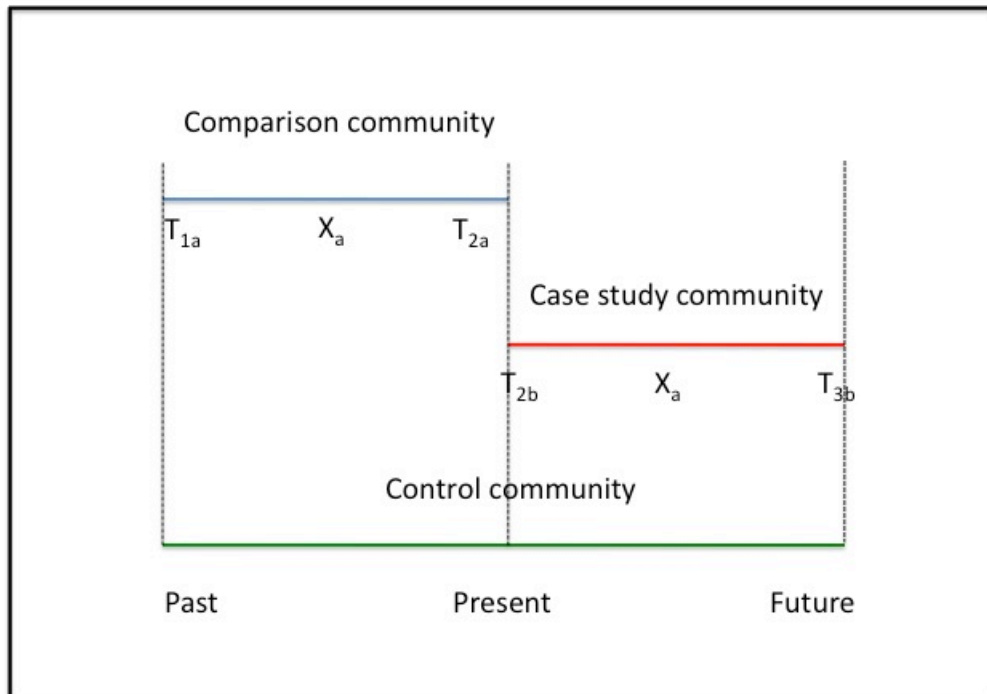


Figure 1. Diagram of the comparative diachronic model



Figure 2. Map of Comparison community of Wabamun. Source: www.ag.s.gov.ab.ca



Figure 3. Map of the comparative diachronic model communities: Tofield, Wabamun, and Mannville

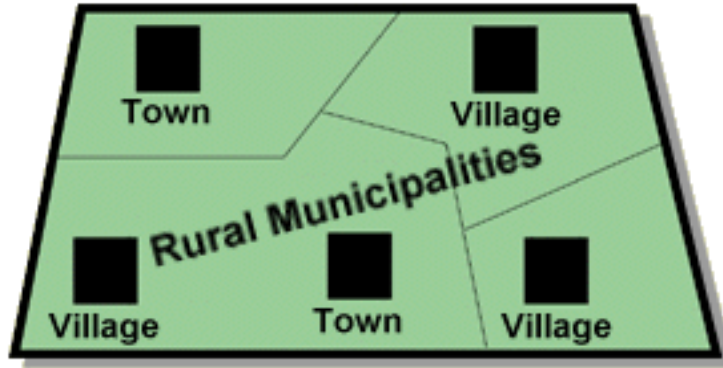


Figure 4. Diagram of the census division.

From: Statistics Canada, 2009.
http://geodepot.statcan.ca/Diss/Reference/COGG/ShortDescription_e.cfm?GEO_LEVEL=3&TUTORIAL=1&ABBRV=CD. (Accessed April 12, 2009)



Figure 5. Diagram of the census subdivision.

From: Statistics Canada, 2009.
http://geodepot.statcan.ca/Diss/Reference/COGG/ShortDescription_e.cfm?GEO_LEVEL=10&TUTORIAL=1&ABBRV=CSD. (Accessed April 12, 2009)

Table 1. Census data for the town of Tofield

Variable	Tofield 1951	Tofield 1996	Tofield 2006
Population	878	1,645	1,876
# Male			
# Female			
# having attended school			
# people in the In the Labour Force		22,303	765
# men in the In the Labour Force			
# women in the In the Labour Force			
Agriculture and other resource-based industries		60	65
Employed in mining and quarrying			
Employed by: Trades, transport and equipment operators and related occupations			
Median income - Persons 15 years and over (rural)			23,579
Average income - Persons 15 years and over (rural)			
No certificate, diploma or degree (1951 variable)***			
Migrant			
Non-migrant			
Level of Schooling in work force less than grade nine*** male			
Level of Schooling in work force less than grade nine*** female			
Level of Schooling in work force less than grade nine*** total			
No certificate, diploma or degree			430
Male			185
Female			250
Lived at the same address 5 years ago			900

Table 2. Census data for Census Division No. 10.

Social Impact Assessment of the Proposed Dodds-Roundhill Coal Gasification Project

Variable	Year 1951	Year 1971	Year 2006
Population	50016	46270	86,796
# Male	26613	24055	
# Female	23403	22215	
# having attended school	10972		
# people in the In the Labour Force	17,427	28170	48485
# men in the In the Labour Force	15585	18675	
# women in the In the Labour Force	1,842	9495	
Agriculture and other resource-based industries	11499	2990	11,190
Employed in mining and quarrying	331	30	
Employed by: Trades, transport and equipment operators and related occupations			9,910
Median income - Persons 15 years and over (rural)		2507	25,717
Average income - Persons 15 years and over (rural)		3678	
No certificate, diploma or degree (1951 variable)***		15800	
Migrant		11125	
Non-migrant		49310	
Level of Schooling in work force less than grade nine*** male		10055	
Level of Schooling in work force less than grade nine*** female		7425	
Level of Schooling in work force less than grade nine*** total		17480	
No certificate, diploma or degree			38,605
Male			
Female			
Lived at the same address 5 years ago			

Table 3. Census data for the town of Wabamun

Variable	Wabamun 1996	Wabamun 2006
Population	645	601
# Male		
# Female		
# having attended school		
# people in the In the Labour Force		285
# men in the In the Labour Force		
# women in the In the Labour Force		
Agriculture and other resource-based industries	80	60
Employed in mining and quarrying		
Employed by: Trades, transport and equipment operators and related occupations		105
Median income - Persons 15 years and over (rural)	24,814	27,022
Average income - Persons 15 years and over (rural)		
No certificate, diploma or degree (1951 variable)***		
Migrant		
Non-migrant		
Level of Schooling in work force less than grade nine*** male		
Level of Schooling in work force less than grade nine*** female		
Level of Schooling in work force less than grade nine*** total		
No certificate, diploma or degree	270	145
Male		80
Female		65
Lived at the same address 5 years ago		185

Table 4. Census data for Census division no. 11

Variable	Year 1951	Year 1971	Year 2006
Population	226199	380530	1,076,103
# Male	114919	190100	
# Female	111280	190425	
# having attended school	37952		
# people in the In the Labour Force	90007	244860	633,590
# men in the In the Labour Force	68880	155745	
# women in the In the Labour Force	21127	89115	
Agriculture and other resource-based industries	11458	2740	37,865
Employed in mining and quarrying	3400	685	
Employed by: Trades, transport and equipment operators and related occupations			117,640
Median income - Persons 15 years and over (rural)		2036	29,006
Average income - Persons 15 years and over (rural)			
No certificate, diploma or degree (1951 variable)***			
Migrant		135640	
Non-migrant		363890	
Level of Schooling in work force less than grade nine*** male		45485	
Level of Schooling in work force less than grade nine*** female		39150	
Level of Schooling in work force less than grade nine*** total		84635	
No certificate, diploma or degree			193,485
Male			94,745
Female			98,740
Lived at the same address 5 years ago			528,745

Table 5. Census data for the town of Mannville

Social Impact Assessment of the Proposed Dodds-Roundhill Coal Gasification Project

Variable	Mannville 1951	Mannville 1996	Mannville 2006
Population	528	758	782
# Male		335	
# Female			
# having attended school			
# people in the In the Labour Force			375
# men in the In the Labour Force			
# women in the In the Labour Force		285	
Agriculture and other resource-based industries		50	120
Employed in mining and quarrying			
Employed by: Trades, transport and equipment operators and related occupations			55
Median income - Persons 15 years and over (rural)		19,779	24,992
Average income - Persons 15 years and over (rural)			
No certificate, diploma or degree (1951 variable)***			
Migrant			
Non-migrant			
Level of Schooling in work force less than grade nine*** male			
Level of Schooling in work force less than grade nine*** female			
Level of Schooling in work force less than grade nine*** total			
No certificate, diploma or degree			280
Male			140
Female			140
Lived at the same address 5 years ago			370