MANITOBA CLEAN ENVIRONMENT COMMISSION

MANITOBA-MINNESOTA TRANSMISSION PROJECT

VOLUME 7

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Transcript of Proceedings
Held at RBC Convention Centre
Winnipeg, Manitoba
WEDNESDAY, MAY 17, 2017

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WEDNESDAY, MAY 17, 2017
UPON COMMENCING AT 9:30 A.M.

THE CHAIRMAN: Good morning, everyone. Welcome back to our hearings into the Manitoba-Minnesota Transmission Project. And we left off yesterday part way through the socio-economic the socio-economic analysis by Manitoba Hydro. So we'll continue that presentation.

MR. BOHLKEN: Good morning, Commission and ladies and gentlemen. It's Frank Bohlken from Stantec again and I'll be talking about community health and well-being. With me is Butch Amundson, who is the traditional land use discipline lead, and he'll be talking about First Nations and Metis health, which was one of the effects that we assessed in this section.

So many community health effects are felt at the community level, so both the LAA and RAA consisted of the boundaries of the regional municipalities traversed by the project. Communities with a reasonable likelihood of being used by the project to provide health services were also included, for example, the City of

Steinbach, the City of Brandon and the City of Winnipeg.

Community health and well-being is a valued component, because social and economic changes resulting from the project may have health effects on residents within the local assessment area. Such effects may be manifested as increased stress or annoyance, changes in physical health, potentially resulting in increased demand for health services.

Changes in the availability of traditional foods resulting from vegetation clearing or changes in accessibility to Crown lands may cause health effects to members of First Nations and Metis communities, due to changes in food security, diet and nutrition.

Manitoba Hydro has demonstrated a trajectory of learning that continues with the EIS for the Manitoba-Minnesota Transmission Project. The Bipole III EIS was critiqued for gaps in its baseline and assessment of effects related to community health, a too narrow definition of health and lack of specific public health mitigation measures. The EIS for the Keeyask Generation Project was more successful in terms of

the scope of community health issues that were addressed. All health related topics raised in the regulatory reviews of both the Bipole III Transmission Project and Keeyask Generation Project that are relevant to the MMTP project have been addressed in this EIS. The scope of review was also informed from community health sections of environmental assessments of transmission lines and other linear development projects from other jurisdictions.

During engagement we heard the following concerns related to community health: Stress and annoyance, potential for stress and annoyance resulting from interference with current or planned land uses. Example, proximity of the project to residences, concerns in potential change in property values, changes in recreation activities. We also heard about potential health effects associated with the project workforce, including the proximity of the workforce to communities and additional demands that they may place upon the healthcare system.

We also heard about concerns related to traffic, which are addressed in the EIS in section 13 in infrastructure and services, and

human health effects related to environmental changes which were discussed yesterday by Dr. Leece in the human health section.

Project routing addressed community health issues in several ways. Through routing, the extent of proximity of the project to residences and communities was limited, thus reducing potential for stress and annoyance associated with project proximity. Concerns regarding Crown land for harvesting identified from engagement were also considered during routing. Sorry, I didn't advance a slide, but that's the one that went with my last little speech.

There are five areas that were assessed in the community health chapter: Effects resulting from the mobile workforce, stress and annoyance, effect from socio-economic change, potential effects on healthcare services and infrastructure, and First Nations and Metis health related to traditional food consumption and food security.

As noted, other health topics were addressed by Dr. Leece yesterday, including those related to noise, EMF, and air quality. And those

are not part of the Community Health Assessment.

The HIA, sorry, the Health Impact Assessment drew on a number of information sources. These included secondary health data collected from, for example, Statistics Canada, then called Aboriginal Affairs and Northern Development, the Workers Compensation Board, and the Manitoba Bureau of Statistics, interviews with representatives from regional health authorities and the Government of Manitoba's office of Disaster Management, information collected during public engagement and engagement with First Nations and Metis, as well as throughout the route selection process. And we also drew on other studies that were conducted for the EIS, and their conclusions, for example, the assessment on wildlife, vegetation and traditional land use, which is relevant to the assessment of effects on First Nations and Metis health.

So, turning to our key issues, we're going to start off with the mobile workforce. The peak workforce for the project is estimated at about 175 people, but this is for all project components. This will be including the work on the substations as well as the transmission line.

The peak workforce in the new right-of-way would be approximately 80 persons.

Due to the relatively small number of project workers and the reasonable likelihood that a proportion of them will be hired from surrounding communities, and consideration of the mitigation measures with respect to mobile workforce, including availability of first aid attendants and supplies, for example, the effects of the mobile workforce on local communities or health services is anticipated to be negligible during construction, as well as operations.

Stress and annoyance effects can range from aggravation to physical health consequences. The source of stress and annoyance are likely to be different during different project phases as shown in this slide. During preconstruction, uncertainty about the future, including concerns over the EA process, for example, or say VECs on private property may increase stress levels. During construction it is possible that noise and dust and presence of the workforce could be primary factors for inducing stress.

And during operations this may stretch to concerns over issues such as EMF or an

annoyance over the transmission line, changes to the landscape, and indeed the presence of the project.

During construction, the project has the potential to generate health benefits tied to the provisions of jobs and income, which is one of the social determinants of health. So this is regarded as a positive development. As well as, again, due to the small size of the construction workforce and short construction period, adverse effects -- so adverse effects on socio-economic health in the LAA are expected to be negligible.

I'm going to pass it over to Butch now.

MR. AMUNDSON: Thanks, Frank.

Alterations to the landscape such as clearing of vegetation may make subsistence foods and medicine less readily available. Changed access to preferred harvesting areas create quality concerns regarding vegetation management and alter the quality of the experience of harvesting food and medicines, resulting in avoidance of the PDA extending into the LAA.

Mitigation measures to reduce effects include implementation of the access management

plan, implementation of the erosion and sediment protection plan, flagging, buffers and avoidance of identified sensitive areas, implementation of the weed management plan, and the use of non-chemical vegetation control in specific areas such as identified plant harvesting areas. As the project route is limited to 752 hectares of Crown land representing 0.5 per cent of Crown land in the RAA, changes to availability of harvested resources in the RAA is anticipated to be negligible.

In consideration of mitigation measures, effects on First Nations and Metis health due to change in subsistence foods and medicines is anticipated to be negligible.

Back to you, Frank.

MR. BOHLKEN: Thank you, Butch.

We understand that some areas of health care service delivery are already somewhat strained in communities in and around the LAA, including -- this is from our baseline research -- including Bethesda Regional Health Centre in Steinbach, as well as the Glenboro Health Centre. However, residual effects during construction are predicted to be negligible because of the low

number of construction workers associated with the project, as well as the availability of first aid supplies and attendants to address minor workforce injuries, and the relatively low duration of construction activities. As well, residual effects during operation and maintenance are expected to go negligible on the health care services and infrastructure due to the low workforce numbers.

So in addition to the mitigation measures that were just mentioned by Butch with respect to First Nations and Metis health, this is a summary of some of the key mitigation measures that would be used to address community health effects. These would start off with routing, avoiding effects through routing, as previously discussed in presentations by Ms. Bratland. Engagement and information sharing on an ongoing basis to help address concerns that related to just information and understanding, which lack thereof could result in contributing to stress or annoyance. Mitigation measures for visual quality, noise and vibration, dust and mud, so some of the causative factors for stress and annoyance, by mitigating those causative factors

we'd be hopefully reducing stress and annoyance levels. Mitigation measures with respect to plants and wildlife, which would be addressing, again, traditionally harvested foods and products. Again, as Butch mentioned, flagging environmentally sensitive areas and plant harvesting sites during clearing and avoiding using, for example, using herbicides at those areas. Provision of first aid supplies and personnel for workers in order to be able to treat minor injuries if they unfortunately arise would reduce need for, reduce the need for using the community health services. Emergency response plan includes provisions for, for example, emergency evacuation of an injured worker. And coordination with the Southern Health Regional Health Authority on a primary care mobile clinic for the southern parts of the route that are a little further away from primary care facilities.

Manitoba Hydro continues to engage with First Nations, Metis, and the public, and will continue to share information on the project and topics of interest. Again, this would help provide information which could be contributing to -- a lack thereof which could be contributing

to stress or annoyance.

I'm going to pass it over to Butch now to start off with the next slide.

MR. AMUNDSON: Regarding First Nation and Metis health --

MR. BOHLKEN: I'm sorry, it's me still. So we're now going to summarize the findings and conclusions as mentioned, stress effects, or sorry, effects from the mobile workforce are anticipated to be negligible really because of the small size of the workforce, relative to the communities that they are working in, as well as the short duration of construction activities and during operations of a very small workforce.

With respect to stress and annoyance, while many causes of stress and annoyance will be mitigated by the measures that I outlined, Manitoba Hydro acknowledges that some individuals will remain stressed and annoyed over the project. Such effects are predicted to be of low magnitude during construction and moderate magnitude during operations. It's also predicted that issues can be addressed, if they result in physical health effects, by the healthcare system and would not

put undue strain on that system.

Now over to Butch.

MR. AMUNDSON: Regarding First Nation and Metis health, the project effects on traditional food harvesting or food security are limited because of the area of Crown land in the PDA and the return to unrestricted access to the transmission line after construction, apart from maintenance activities.

Back to you, Frank.

MR. BOHLKEN: So as I mentioned, the effects on health, community health effects related to socio-economic change, or effects on healthcare services and infrastructure are anticipated to be negligible, due to again the small size of the workforce, short duration of construction activities. And in regards to the healthcare services and infrastructure, a small anticipated incremental demand that's easily addressed within the available capacity.

So in summary, project effects on community health and well-being are considered to be not significant. Just to be clear on what not significant means, there is no regulatory defined significance thresholds for community health and

well-being. In this assessment an effect was defined as being significant if either of the following two criteria were met. The project results, first the project results in exceedance of available capacity or a substantial quality of healthcare infrastructure or services; or the project causes physical or mental health changes that are irreversible and detectable at the population level.

The rating of not significant does not preclude adverse or irreversible effects on health of individuals in the community, however. In addition, not significant rating does not mean that effects are not important to individuals or groups of individuals.

With regards to cumulative effects, potential project effects due to socio-economic change, the mobile workforce in the healthcare capacity, as I mentioned, are considered negligible and were not carried forward into the cumulative effects assessment. Multiple projects with respect to stress and annoyance, multiple projects can contribute to stress and annoyance particularly if there is spatial and temporal overlap, for example, due to longer exposure to

construction activities, increased traffic levels. Reasonably foreseeable future projects can also cause stress and annoyance through perceived risk of EMF in regards to other transmission lines, and exposures and concerns over changes, for example, in property value, similar to what might be experienced from the MMTP project. But construction phase cumulative effects for the reasonably foreseeable projects, which include other transmission lines, pipelines, residential developments mainly, construction phase cumulative effects expected to be of limited duration. However, some effects such as concerns over EMF, as an example could persist over life of certain projects. These can be addressed through ongoing engagement and information sharing.

So back to Butch.

MR. AMUNDSON: Cumulative effects on traditional food and medicine harvesting include change in access to and alteration of Crown land. These may result in a reduction of Crown land considered available for harvesting. However, in consideration of cumulative effects on wildlife and wildlife habitat, chapter 9, vegetation and wetlands, chapter 10 of the EIS, and traditional

land and resource use, chapter 11 of the EIS. Cumulative effects on First Nation and Metis health related to availability of country foods and medicines within the RAA is expected to be of low magnitude. However, changes in access, the altered experience of harvesting, and concerns regarding contamination could result in stress and annoyance for First Nation and Metis individuals. With mitigation measures, cumulative effects are anticipated to be not significant.

MR. BOHLKEN: Okay. That concludes our presentation on cumulative effects.

MS. BRATLAND: Next up is our presentation on heritage, and we're just going to shift the seating order briefly.

MR. MCLEOD: Good morning panel, ladies and gentlemen. My name is David McLeod. I'm an associate and senior archeologist with Stantec Winnipeg. I have a Masters degree in Anthropology and I was responsible for the heritage assessment of the alternative final preferred and existing corridor, the routing analysis, drafting chapter 12 of the EIS, and drafting the heritage resources TDR.

MR. AMUNDSON: And good morning, my

name is Butch Amundson. I'm a principal with Stantec in Saskatoon. I'm the technical lead for Aboriginal Affairs and Heritage Resources in Saskatchewan. I have a Masters degree in Archaeology from the University of Saskatchewan, and I was responsible on this project for study design and for quality review.

MR. MCLEOD: So as mitigation measures mentioned today, we're discussing heritage resources as a valued component of the project, and we're following the presentation road map that other disciplines have done previous, an overview, what we heard, what we assessed, our key issue review, mitigation monitoring and follow-up, and our findings and our conclusions.

I'm going to start off by talking about our valued component assessment area. The project development area, or PDA, was a corridor a minimum of 80 and a maximum of 100 metres wide. Our local assessment area, or LAA, was a 200 metre wide corridor of the final preferred route and the existing transmission corridor.

The LAA was based, or was used based on where projects, or project effects could potentially interact with heritage resources.

The RAA, or the regional assessment area, for the final preferred route and existing transmission corridor is the Lake Manitoba Plain ecoregion of the prairie's ecozone.

The PDA and LAA for Dorsey and Riel converter in the Glenboro South station was the footprint of the proposed expansion.

Our temporal period for the heritage resources assessment was from approximately 12,000 to 70 years ago, or before present TP. Now, this range was used as this is the chronological range for sites that can be recorded with the Historic Resources branch of Manitoba, Sport Culture and Heritage.

So why heritage? Heritage resources are the tangible remains of past land use activities, and they also include the intangible, such as a cultural landscape. Heritage resources are also important because of First Nation and Metis concern, legislative requirements, scientific relevance and interest, and of public concern. Now heritage resources include objects and properties that are important for their architectural, historical, cultural, environmental, archeological, paleontological,

aesthetic or scientific view. And some of these examples of heritage resources that we were showing were not recovered during our MMTP assessment, but they are from sites from the regional assessment area.

So the value of heritage resource sites is measured not only by the individual artifacts they contain, but by the information about the past that might be contained from studying the objects, the spatial relationship of artifacts within a site, and the context and assemblages, the context of assemblages and sites across the landscape. It must be stressed that heritage resources are fragile and the product of unique processes and conditions of preservation.

So we talk a lot in archaeology about provenience, the provenience of artifacts. That's the vertical and horizontal measurements of where artifacts are located in the site, that's their provenience. And the provenience of artifacts provides valuable context and insights from both a time, which is your vertical, and space, which is your horizontal perspective.

MR. AMUNDSON: Cultural resources are intangible and conceptual, such as cultural

practices or a cultural landscape, and they're not usually directly observable to archeologists. Identification of these resources is usually done through the traditional land and resource use study portion of a project. Mitigation through design helps to avoid disturbance to practices and fragmentation of cultural landscapes.

Cemetery locations are included in the heritage resources assessment because of the potential for unmarked burials along the perimeter of abandoned and active cemeteries. Community and church cemeteries were often developed shortly after the homestead settlement and before local government infrastructure was developed and records were maintained. Our experience in rural areas across the prairies has shown that fences around cemeteries often fail to fully contain the earliest burials.

The approach of this assessment, therefore, recognizes the potential for unmarked burials at active and abandoned cemeteries.

MR. MCLEOD: Now we're going to discuss the project effects. And what we looked at for project effects was changes to the number of known and potential heritage resources and

changes to the number of cemeteries.

Now, these changes for heritage resources during construction, potential effects during construction could disturb known and potential heritage sites by dislocating artifacts that are within or just beneath the surface. Now these construction activities include brushing for access roads, staging areas, transmission line right-of-way and tower locations.

Furthermore, the removal of standing vegetation could also create unstable soil environments and associated surface runoff, that will result in the horizontal and vertical displacement of surface or shallowly buried artifacts. Soil removal for tower footings in our staging areas could also disturb known or potential heritage resource sites. Other construction activities include grading for access, a compaction from vehicular traffic, particularly in areas of sandy soil such as in the Sandilands Provincial Forest, and construction of access roads could also provide increased entry to areas on intact heritage resources by individuals, and could result in unauthorized site collection. And finally, spoil piling of excavated soils and

rocks could damage known or unknown heritage resources below the surface.

For cemetery sites during construction, the potential effects include ground disturbance activities associated with access route and bypass trail development, right-of-way clearing, geotechnical investigations, transmission tower construction. Now, tree and ground vegetation removal at a tower location could interact with unmarked burial locations, if cutting requires subsurface disturbance such as root removal at tower foundation sites.

Discovery of unmarked human burials is considered in this assessment as a specific potential environment effect due to the sensitive nature of human remains and because inadvertent exposure of human remains invokes the Province of Manitoba's burial policy.

Now, for both heritage and cemeteries during operation and maintenance, the potential effect pathways include brushing activities to maintain access roads, the transmission right-of-way over the tower locations, and any brushing activities to expand access roads. Subsoil removal or re-grading of access roads in

areas that were not developed during construction could also result in disturbance of heritage resources.

MR. AMUNDSON: Lessons learned. For the lessons learned, we began by applying to this heritage resource assessment a standard industry approach that was used, similar to that used on past Manitoba Hydro projects. Other projects in our experience include assessments of electrical transmission lines in other jurisdictions, such as the study completed for Sask Power of the Saskatoon North Reinforcement Project.

Past Manitoba Hydro assessments have also included construction monitoring as a part of a cultural and heritage resources protection plan, a CHRPP. A CHRPP is based on learnings from previous projects, knowledge of the existing heritage resource conditions within the project area, and any recommendations from the Historic Resources Branch after the review of the HRIA. The CHRPP includes First Nation, Metis and non-indigenous community participation. Project interactions with heritage resources primarily occur in the PDA due to disturbance, specifically at tower locations.

MR. MCLEOD: Our regulatory guidance was the Heritage Resources Act, specifically section 12, subsection 2, that pertains to heritage resources impact assessment. Other portions of the Act that apply are sections 53 and 54 that pertain to heritage permitting, and parts 1 and 3 of the Act that deal with provincial and municipal site designations.

MR. AMUNDSON: So what we heard, during engagement and ATK studies we learned of the Chief Yellow Quill's trail to the United States pictured here. Further, the Dawson Trail is located within the final preferred route. Black River, Long Plain and Swan Lake First Nations indicate the area between Marchand and Sandilands as a cultural gathering place during certain times of the year. Traditional knowledge studies identified the area south of Spur Wood siting as a ceremonial and gathering location. The Assiniboine River and Red River crossings within the existing corridor were identified as areas of potential heritage resources related to First Nation camps and Metis farmsteads. ATK studies identified areas of cultural importance east of the final preferred route.

MR. MCLEOD: What we heard during the public engagement program, we heard that the Rat and Seine Rivers and the Bedford Ridge may have high heritage resource potentials. We also heard that one of the alternative routes was within 100 metres of the Ridgeland cemetery. We heard of potential for homestead farms in the Marchand area, and of a Centennial farmyard near the final preferred route.

Centennial farm is defined by 100 years of continuous family ownership of agriculture land, with a minimum size of 50 acres, and direct descendants, male or female by marriage.

The slide on the left kind of gives you an idea of an early farm, this is in the Stuartburn area, it kind of gives you an idea of what the landscape would have looked like when agriculture was first starting down in the southern portion of the area.

During routing considerations, what we looked at were previously recorded archeological sites, undeveloped areas, cemetery locations and potential archeological sites. Our routing considerations focused on municipally or

provincially designated heritage sites, because these are legally protected under the Heritage Resources Act; intact previously recorded archeological sites, these are registered with the province; areas of potential heritage resources, that's part of the Heritage Resource Impact Assessment, or HRIA requirements. And we looked at areas that were primarily undeveloped, that is not cultivated or had not been developed by residential, quarrying or forestry and reforestation. We also looked at locations of cemeteries, such as the Ridgeland cemetery in Prairie Grove.

During the routing process, heritage resource locations were plotted in comparison with the various route segments as areas of least preference, and then the segments were subsequently rejected to avoid the sites. The compiled heritage resource database was used during the alternative and final preferred routing process for the new right-of-way. Therefore, the locations of known heritage resources and cemeteries were considered during the route selection process with avoidance as the analytical determinant.

The assessment methods included establishing existing base conditions, review outcomes of the public engagement process and First Nations and Metis engagement process, as was previously discussed, review of previous research, conducting predictive modeling, and then doing field assessments. Previous research data collection and their analysis was used to determine the existing conditions.

Now, the previous research we discovered consisted of a Masters thesis in 1975 in the Sandilands area, and a 1976 Heritage Resources Impact Assessment of a Manitoba Hydro 230 kV, then it was known as the Ridgeway to the United States Transmission Line, and now known as the 49R Ridgeway to Richer and the R50M Richer to Moranville.

Now, our data consisted of Historic Resources Branch website for the locations of municipally and provincially designated sites, the Historic Resource Branch inventory of previously recorded sites and Centennial farms. The Manitoba Land Initiative website was accessed to review Dominion Land Office township plans that were compiled during the first land surveys of Manitoba

between 1872 and 1910. The township plans contain information such as topography, vegetation, location of cart trails, developed and undeveloped rail lines, and former stream channels.

We also looked at original landowner data that were collected from land grants of Western Canada. That data base dates from 1870 to 1930 and is available on the Library and Archives Canada website. These records indicate the type of land acquisitions such as Metis land grant, homestead, or sale.

River lot ownership records available through the Provincial Archives of Manitoba were examined, and that pertained to the existing corridor along the Assiniboine and the Red Rivers.

We also looked at topographic maps at a 1 to 50,000 scale, accessed on the Natural Resources Canada website site, to plot cemetery locations. Now, they're identified on the topographic maps by a C, and an area delineated by a rectangular hash line around that C.

These locations were subsequently located on Google Earth Pro Imagery to obtain a geo reference location for the centre point of the cemetery. We also looked at the Canadian Gen

website that has the cemetery project interactive data.

MR. AMUNDSON: Predictive modeling for the project was based on a selection of key variables relevant to southeastern Manitoba, and on the professional judgment of the archeologists. Predictive modeling variables include proximity to water. Access to potable water and the plant and animal resources they support are important determinants in precontact settlement patterns. Locations where the route is adjacent to or across a stream or adjacent to a body of water is considered to have moderate to high heritage potential.

Topography, relic beach ridges such as the Bedford Ridge and the beach ridge, the beach strands in Sandilands area were important, high, dry, sheltered lands for precontact people and important source areas for a variety of resources and were considered to have moderate to high heritage potential.

Soil type, areas with glacio-fluvial, glacio-lacustrine, alluvial and sandy or aeolian soils are considered to have moderate to high heritage potential because of the resources they

contain. Glacial till is considered to have moderate potential, as these could be source areas for lithic tool production, stones for boiling and stones for anchoring lodges.

Proximity to known sites. Archeological sites tend to occur in clusters on preferred landscapes. Any place that the alternative routes, the preliminary preferred route and the final preferred route is within 500 metres of a known heritage site, where the right-of-way extends between two known heritage sites, is considered to have moderate to high heritage potential.

Past land use. Areas of native vegetation are considered to have moderate to high heritage potential, as it is more likely that archeological sites retain vertical and horizontal integrity. Areas that had been cultivated or previously disturbed by past development are considered to have low potential, as there is a high likelihood that resources have been disturbed, especially in upland areas with little soil accumulation.

Proximity to historic trails. Historic trails are indicators of long established

desired paths across the landscape. Precontact trails were often continued to be used by people in the historical era to the present day, such as by cart trails and then sometimes followed by roads and rails.

Locations where the alternate routes, the preliminary preferred route and the final preferred route intersect or are within 500 metres of a cart trail, as identified in the Dominion Land Township Plans, are considered to have moderate to high heritage potential for archeological sites.

Also the Canada/United States border is the medicine line, and traditional knowledge indicates that burials are near it. There are also boundary commission sites along the 49th parallel.

MR. MCLEOD: There were three components to the analytical assessment of effects on heritage resources. The evaluation of potential project effects on known heritage resource sites, on the left-hand screen, the top photo is of the Spur Wood siting area, the bottom photo is of the Burford area. It was a small rail sighting.

We also looked at the evaluation of potential project effects on undiscovered heritage resource sites, such as down in the Sandilands, which has natural vegetation, such as the photo on the left. Again, the United States border, the Canada/United States border rather, and areas within the existing transmission corridor along the Assiniboine and the Red River. We also looked at the evaluation of potential project effects on known cemetery sites.

For archeological sites, the database acquired from the Historic Resources Branch was part of the predictive modeling process. Previously recorded sites within the local assessment area of the alternative routes, final preferred route and existing corridor were examined. For Centennial farmstead sites, those within the local assessment area, and cemeteries, those within the local assessment area. And I'm going to reiterate that our local assessment area for the Heritage Resources Assessment was a 200 metre corridor.

The assessment provided information for alternative route evaluation and ultimately the final preferred route. Dorsey and Riel

converter stations and the Glenboro South station were also considered in the assessment.

So some of our key findings. Major portions of the final preferred route have been previously disturbed by agriculture, residential development, forestry and quarrying. And as we have mentioned, agriculture alters archeological sites by disturbing the vertical and horizontal relationships of artifacts, their provenience, deeply buried sites and, therefore, below the plow zone, generally occur adjacent to large streams such as the Seine and Assiniboine Rivers where flood silt is deposited.

We determined that the final preferred route intersects the Dawson Trail. Now, the Dawson Trail at the crossing point has been developed into a provincial highway, as you can see by the two slides on the left-hand screen. There is also residential development and an existing transmission line that are located on either side of the former trail. Other historic trails have been modified into vehicle access routes that are still used today.

We examined the Rat River crossing and determined that it had a low potential for

heritage resources. The Seine River may have a potential for deeply buried heritage resources. We also determined that the east edge of the Centennial farm is 85 metres west to the west edge of the local assessment of the final preferred route.

Now, I'm going to just address the Centennial farm along the final preferred route. This farm was not included in our initial database obtained from the province and I really don't know how it was missed. It's a data point that was missed.

And when the question of the Centennial farm arose, I re-examined the database that we had acquired and it wasn't there. However, after subsequent discussion with the Historic Resources Branch, they confirmed that the farm was indeed a Centennial farm.

So does it change any components of the EIS? Well, it would add an additional Centennial farm to table 12.4, so it would read 16, and would increase that table total to 179. It would also add a site dot at the farm location to maps 12-100 in chapter 12, the EIS, and also map 12-14. It would not change the assessment

conclusions as the farm is outside of the PDA and LAA of the final preferred route. And when we were looking at our effects, we were examining the change to the number of heritage sites. It's still a Centennial farm, whether or not the project is approved and the transmission line goes in, it still remains a Centennial farm.

Other findings, we located a circa 1900 homestead on the north side of the Assiniboine River within the existing transmission corridor, and we also located an undated historic homestead building foundation within the LAA of a preferred alternative route near the Canada/United States border. Believe it or not, there is a rock foundation within that mess of rocks. The reason we say it's an undated, no artifacts were recovered that could suggest a relative date of occupation.

This route was subsequently removed as an alternative during the routing workshops, and there are no concerns as to the reported archeological site.

We also determined that the Ridgeland cemetery was near segment 312. During the routing workshop, segment 311 was created to move the line

east of the cemetery but not encroach a wetland.

Finally, our findings, there were no concerns with the Dorsey and Riel converter stations and the Glenboro South station.

MR. AMUNDSON: A summary of key mitigation measures. For archeological sites, there will be a preconstruction review of structural locations along the final preferred route and it will be compared with the key finding, as described in the previous slides.

A 64-hectare portion of the final preferred route west of Lonesand has moderate to high heritage potential, as this area has not been cultivated or previously developed and is recommended for further assessment and/or ground-truthing once tower locations are known.

At waterway crossings, structures will be located as far back from the water's edge as possible for stability and to prevent bank erosion. Construction procedures used at each crossing will be based on site specific considerations. Some may be recommended for further assessment and/or ground-truthing once the tower locations are known.

Mitigation measures such as

construction monitoring in areas of high heritage potential and implementation of the CHRPP, including education of construction workers and environmental inspectors, are implemented to limit potential project effects.

Protective barriers will be placed around heritage resource sites if any are inadvertently found during construction. Construction will be monitored by a professional archeologist in areas that are considered to be heritage sensitive. Contractors will be educated regarding the Chance Find Protocol.

MR. MCLEOD: For the Centennial farms and homestead, mitigation measures for these sites include preconstruction assessment of towers in areas of known Centennial farms, examination of tower locations at the circa 1900 homestead site recorded in the existing corridor, and implementation of the CHRPP as required during construction.

For cemeteries, we have already pointed out the adjustment of the preferred route, but further mitigation measures for cemeteries are timing construction to avoid any religious ceremonies or practices or interments at the

cemetery, an education of construction contractors as to the Provincial Burial Policy and the appropriate protocols of human remains or objects thought to be human remains are uncovered.

MR. AMUNDSON: The Cultural Heritage Resources Protection Plan. The CHRPP includes processes and protocols for protection of cultural and heritage resources discovered or disturbed by construction activities. It provides protective measures for known cultural and heritage resources, and it provides for First Nation and Metis input into heritage resource management decisions. The construction environmental protection plans incorporate recorded cultural and heritage resources and their protection measures.

MR. MCLEOD: So for effects, our effects were the change in number of known and intact heritage resource sites and change in sites inadvertently exposed. And the second effect was change to the number of cemeteries. So the direct change would be a loss or disturbance to site contents and site context through construction and operation activities, such as brush or topsoil removal. No net change is anticipated to heritage resource sites within the final preferred route.

Furthermore, there was no net change anticipated in the number of known cemeteries.

Residual effects are those effects remaining after implementing mitigation measures. And as we have stated, the majority of the final preferred route traverses cultivated lands that have limited potential to contain intact heritage resources. However, it is difficult to predict or identify the location of all archeological sites. So a residual effect on heritage resources is considered to be significant if it results in a change to the number of known and intact heritage resource sites currently listed in the PDA and LAA of the final preferred and existing route.

Project related effects and heritage resources and cemeteries occur within the PDA and during construction. These effects are mitigated at or before construction and, therefore, no residual effects on heritage resources are expected. There are no previously recorded heritage resource sites within the PDAs for the Glenboro South station or the Riel Converter Station or the Dorsey Converter Station. The potential for heritage resources at these sites is low and, therefore, there are no potential

interactions with heritage resources and no residual effects are anticipated. Therefore, with regard to residual effects, there is no change to the number of intact heritage resource sites and no change to the number of cemeteries.

For cumulative effects, the future projects proposed within the PDA and LAA are primarily located on lands that have already been impacted by agricultural or residential development. These developments include components of Bipole III, St. Vital transmission complex, and the St. Norbert and Headingley bypasses. Agricultural expansions into areas within the LAA that have not been previously cultivated have the potential to disturb heritage resources.

The Headingley and St. Norbert bypasses could disturb unknown heritage resources if development occurs in areas that have not been previously disturbed. However, major portions of the bypass development have been disturbed by either agriculture or residential development. Therefore, no cumulative effects or change to heritage resource sites and cemeteries are anticipated within the MMTP PDA or LAA.

So change to heritage resource sites. Disturbance to known heritage resources and chance discovery of heritage resource objects are expected to be negligible within the final preferred route. Furthermore, protection plans for heritage resources have been developed to address heritage resource concerns, and these protection plans include First Nation and Metis consultation.

Change to heritage resources sites, therefore, are expected to be negligible within the final preferred route. Similarly, changes to cemeteries are expected to be negligible within the final preferred route.

Thank you for your time. That is our presentation.

THE CHAIRMAN: Thank you for that interesting presentation. Does that conclude everything on the socio-economic side of things for Hydro? Okay, good. Oh, one question, yes.

MS. MAYOR: Sir, just one comment. I know there was some reference by Mr. Amundson earlier this morning to the traditional land and resource use issues. Just for clarification, on cross-examination, he's going to be returning with

the biophysical panel tomorrow to do an actual presentation on traditional land and resource use. So questions should be deferred until tomorrow along those lines.

THE CHAIRMAN: Okay. Thanks for that. Just making a note on it, I'll just be a second here.

All right. That brings us to questioning on the socio-economic presentation. Just before we start that, I had a couple of general comments to make. We are going to hold everyone to the estimates given to the secretary for this questioning. That will take us close to the end of the day if we do that. We're hoping we could even start on a small portion at least of the next presentation. All of that to try and get us back to the original schedule. We're still behind, although we have made some progress in the last two days.

I wanted to thank the intervenors, variety of intervenors actually yesterday for their cooperation in helping us to regain some of that time. So that was much appreciated. So thank you all.

And just a reminder of a couple of

things that were mentioned yesterday. One is, we would ask the intervenors to concentrate on the questions. There will be time during each of your presentation to make statements, observations and conclusions. So if we could concentrate on getting to the questions in this exercise. And then on the alternative side to Manitoba Hydro and the panel, I know it's a different panel today, but if you could provide the answers as quickly as you can, and if the answer takes additional time to produce, if you could move on, take that under advisement and move onto the next question, and then provide that information once you have put it together. That can be even during the same session or at a later time.

All right. Thanks. And I believe we're starting today, I'll just double-check here, I believe we're starting today with Dakota Plains. Is that your expectation?

MR. MILLS: I'm ready.

THE CHAIRMAN: Okay. Thanks. Sorry, for the record that will be Mr. Warren Mills.

MR. MILLS: I'm not ready, sir, can I go at the end?

THE CHAIRMAN: Sorry, what was the

nature of the issue there?

MR. MILLS: I don't have one photo.

MS. JOHNSON: If he wants to go to the end, that's fine.

THE CHAIRMAN: All right, we'll move you to the end.

Okay. That brings us next in the order, that will be the Consumers Association of Canada. Are you ready to go? Apparently they have switched with MMF, so we'll turn to MMF next, and that will be Ms. Strachan.

MS. STRACHAN: Good morning.

So I'm going to focus my questions on two of the presentations, the visual quality presentation and the community health presentation. So I'm going to start with visual quality, so I would invite Mr. Bohlken -- did I pronounce that right?

MR. BOHLKEN: Yes, you did.

MS. STRACHAN: Okay. I would invite you, Mr. Bohlken, to answer these questions.

So I note on page 17-9 of the EIS, it states that:

"Only viewpoints ranked as moderate and high were included in the effects

assessment because these were determined to be the viewpoints of greatest concern to residents, First Nations and Metis and stakeholders."

So from this I understand that the moderate and high priority viewpoints were determined through consultation with the residents, First Nations and Metis and other stakeholders; is that correct?

MR. BOHLKEN: Well, it results from engagement were factored into the engagement that was undertaken at that time, as well as, as I mentioned in my presentation yesterday, other research, secondary research on, for example, recreation sites. So, yes, those stakeholders, First Nations and Metis, to the extent that information was available during engagement, was factored into the selection of viewpoints.

MS. STRACHAN: Thank you. That actually takes me right to my next question which is, when I look at the description of the priority viewpoints, so those were the viewpoints that were carried through to be assessed, in the description above that on the EIS, which is on page 17-40, I didn't see any mention of First Nation or Metis. So I'm wondering, can you clarify if any of the

priority viewing areas were those that were identified by First Nation and Metis peoples?

MR. BOHLKEN: Okay. Just a minute.

MS. BRATLAND: What page number was that again?

MS. STRACHAN: I believe it's 17-40, there is the chart of the I think 14 priority views. Sorry, I believe I gave you the wrong page number.

MR. BOHLKEN: So we didn't, from the results of the engagement, we didn't have identified viewpoints I believe from First Nations or Metis, so they are not reflected in this list.

MS. STRACHAN: So none of the priority viewpoints that were carried through to assessment were viewpoints that were deemed of importance to First Nation or Metis peoples?

MR. BOHLKEN: As I said, there weren't any viewpoints that were identified by First Nations and Metis as deemed of importance, so we didn't have that information to inform this list.

MS. STRACHAN: Thank you. And so is it fair to say that it could be difficult to evaluate the impact on First Nations and Metis use of the land through picking sort of static

viewpoints, when the use of the land is not sort of a person standing in one place, gazing in one direction, as it would be for a resident that doesn't want to see a transmission line through their front window? Would you acknowledge that there is a difference between those two?

MR. BOHLKEN: Okay. So in this section we looked at, the assessment was on visual quality and not on use of the land. So I think that if your question is regarding traditional land use, that wouldn't have been addressed in this section.

MS. STRACHAN: My question isn't so much on traditional land use, but on the interaction between visual quality and traditional land use. And I'm just wondering how that interaction is captured in your evaluation of visual quality, or if it is?

MR. BOHLKEN: Well, so one of the criteria that we looked at was visual sensitivity class, and this was briefly brought up yesterday, and that includes, for example, the nature of the view, the biophysical criteria that informs the view. So to that extent, and that we did, we considered what information that we got back from

engagement and brought that forward into our analysis. It could have helped inform it, but specifically related to say issues of importance to visual quality from First Nations and Metis, we didn't have that specific information to inform the assessment.

MS. STRACHAN: So I just want to note that in chapter 16, which is the traditional land and resource use chapter, it points you to chapter 17, visual quality, where it says that, it recognizes that the physical presence of the transmission line during operation and maintenance may deter TRLU. Then it says see chapter 17, visual quality. I then went and saw chapter 17 and I couldn't really figure out where that was dealt with in chapter 17.

MR. BOHLKEN: Could I perhaps explain that a little bit?

So in chapter 17, the assessment is more about the actual physical presence, to what extent does the transmission line occupy a field of view from particular viewpoints. What is the prominence of the transmission line? So that is the focus of the visual quality section.

And Butch, do you want to talk about

how that's interpreted in the traditional land use?

MR. AMUNDSON: Yes. The traditional land and resource use acknowledges that the presence of the transmission line, the towers and the conductors presents an alteration of the experience of land and resource, traditional land and resource use.

MS. STRACHAN: Okay. But that wasn't dealt in any direct way in chapter 17 is what I understand?

MR. BOHLKEN: That's correct.

MS. STRACHAN: Thank you. I just have a couple more questions on visual quality, and this relates to the resilience assessment that was made. And this is the one that was on page 17-40. I'm sorry about my incorrect reference earlier. And on that page, it talks about how the local assessment area was deemed to be moderately resilient to further visual disturbance. And I'm wondering, was ATK or Aboriginal worldviews considered when you came to that conclusion on the resilience of the landscape to further disturbance?

MR. BOHLKEN: Okay. So resilience is

one of the characterization criteria, it's for socio-economic context that's presented in 17-7. When we prepared the characterization criteria, we were informed by a variety of information including, you know, our practices from previous assessments and information that we had obtained through, for example, by examination of other environmental assessments, ATK studies and results of engagement. So I would say that as a general statement, yes, not necessarily specifically reflecting -- was it, did you say an Aboriginal worldview?

MS. STRACHAN: Yes. And I ask that because I believe in previous panels I had asked about the consideration of Aboriginal worldviews in characterizing residual effects, and also in characterizing significance thresholds. And I believe the answer was that there was some awareness of general concerns around cumulative effects, and sort of the overall alteration of the landscape as sort of being already past a threshold of significance. So that's why I also asked about Aboriginal worldviews, as well as sort of the specific ATK that you have.

MR. BOHLKEN: Yeah, okay. Did I

answer your question?

MS. STRACHAN: I think so, but I'm just going to ask one more follow-up.

MR. BOHLKEN: Okay.

MS. STRACHAN: So I note that there's sort of three points listed there on that page, 17-40, that were considered in coming to this characterization of moderate resilience. And one of those was the importance of visual quality to residents' quality of life, current and future residential development, recreational opportunities and tourism, and then also topography and vegetation. So those three things were specifically considered, but not ATK or the importance of visual quality to Aboriginal users. Is that correct?

MR. BOHLKEN: Well, again, we did look at ATK studies to try to understand if there were additional factors that could be incorporated. So these are the factors that I guess generally reflected the feedback as well as, feedback from engagement as well as professional opinion on issues that could be of importance.

MS. STRACHAN: Thank you. So I think those are all my questions on visual quality. I

just have a few questions about community health. And so I believe Mr. Amundson would be the appropriate person because I'm going to focus on First Nation and Metis health.

So I note that in the EIS, and this is on page 19-29, it recognizes that health from many Aboriginal people is wider than just measures of mortality and morbidity. And so it states that, for example, the ability to access the land and participate in traditional activities is an important support for positive health. And so would you agree that it's not only access and availability of resources, but also the condition under which the land can be accessed or used that is important to Aboriginal health?

MR. AMUNDSON: Yes. We acknowledge that the experience of practising traditional land and resource use is an important component of that.

MS. STRACHAN: And so on slide 13 of your presentation, I believe it gives one of the main conclusions around First Nations and Metis health. And it states that:

"Changes in harvested food availability in the RAA due to the

project is negligible. No acute or chronic First Nations or Metis health outcomes are predicted due to the project."

So that's your basic conclusion, that the effect on First Nation and Metis health was not significant because changes in harvested food availability, there wasn't going to be much change in the availability of those resources?

MR. AMUNDSON: The EIS does state that there will be a potential reduction in the consumption of country foods and the use of -- availability of country medicines, but I'm going to leave it to Mr. Bohlken to answer based on the health part of that.

MR. BOHLKEN: Okay. So with respect to the significance determination, the two criteria that we had for significance, as I had mentioned in my presentation, were first off the project would cause an exceedance in available capacity or substantial decrease in the quality of healthcare, infrastructure and services; or second, the project causes physical or mental health changes that are irreversible and detectable at a population level.

So for one of those significant thresholds to be exceeded, the change in availability of traditional food stuffs would need to result in a health consequence that would be detectable at the population level. And based on the work that we did in consideration of the extent of clearing of the right-of-way, for example, in relation to the potentially available areas for harvesting and food stuffs, and then as it translates into diet and food security, for example, that could result in a health effect -- I am sorry if that's a bit of a drawn out sentence -- our conclusion is that on a population level that would not occur.

MS. STRACHAN: Thank you. That was very helpful. And that really gets at my question, because I was trying to understand, on this slide the last point acknowledges that there could be a perception in the change of experience of traditional land use that might cause First Nation and Metis to avoid certain areas where the transmission line is present or where they can see the transmission line. And so what I'm hearing from you is that you looked at access and availability of country foods and medicines, but

you didn't look at sort of the impact of this perception or of avoidance behaviours that might be caused by the transmission line, and whether or not that might have an effect on First Nations and Metis health. Is that a fair characterization?

MR. BOHLKEN: Okay. Well, I can handle part of that. So we did look at, consider stress and annoyance as one of the effects of the project. And these don't need to be related to, you know, actual measurable affecters, so to speak, but could be due to perceptions. You are changing, in some non-measurable fashion could be change in experience, for example. To the extent that these contributing factors result in stress and annoyance, that's acknowledged, and so that is addressed in that section.

MS. STRACHAN: I'm sorry to cut you off. The stress and annoyance I didn't think was addressed specifically under Aboriginal and Metis health, sort of tied specifically to this change in the experience of traditional land use. I thought that was sort of a separate section.

MR. BOHLKEN: Okay. So that's correct. It's a broader topic, yes.

MS. STRACHAN: I'm sorry to cut you

off, you can sort of finish your thought there.

MR. BOHLKEN: I just wanted to conclude. So that, at least the stress and annoyance was addressed as one of the effects in the section. And maybe, Butch, on the experience?

MR. AMUNDSON: To expand on the idea of availability, especially availability -- and perhaps -- I hope I can express it clearly -- the perceived, or the alteration of the experience of traditional harvesting, if that results in a harvester avoiding an area, that actually is a reduction in the availability of the resource if they choose not to go to that place. So that does affect availability as well.

MS. STRACHAN: And I'm sorry, I didn't really get that from reading this section. Is that explicitly addressed somewhere that I missed?

MR. AMUNDSON: It's probably more fully provided in the context of the traditional land and resource use study that I'll be presenting tomorrow.

MS. STRACHAN: But not explicitly tied to any health effects that might come from this alteration in experience or avoidance behaviours.

MR. AMUNDSON: I defer the answer of

that question to Frank, with the exception of that we're talking here about individual choices, whereas the health effect is regarding population, population health.

MR. BOHLKEN: Okay. So I'm now going to be quoting from page 1955 and 1954, so I'm just going to read a quote from the EIS that will hopefully help inform your question.

"According to the traditional knowledge reports provided by the Roseau River Anishinaabe First Nation and the Black River, Long Plain and Swan Lake First Nations, these First Nations reported close connection with the land and active engagement in traditional and cultural activities, including hunting, trapping, fishing and harvesting of subsistence foods and traditional medicines. However, the extent to which communities participate in these activities is described appropriately or in general terms and it is uncertain how many community members rely on subsistence foods from the LAA as a source of

nutrition or experience food insecurity. The activities described in the TK reports and data from the First Nations food and environment are not representative of all First Nations engaged with the project. However, based on available information it is likely that the project will to some degree alter, interfere with access to, and participation in traditional and cultural activities and may contribute to decreased consumption of subsistence foods and traditional medicines for some community members."

MS. STRACHAN: Thank you. That's very helpful. And so on the basis then of this admittedly incomplete information, low effects on Aboriginal health were concluded or were predicted to occur?

MR. BOHLKEN: That is correct.

MS. STRACHAN: Thank you. Those are all of my questions.

THE CHAIRMAN: Thank you for your questions and for the responses. That brings us

to a couple of minutes before 11:00 o'clock, so we'll take our break now and be back here for 11:15. Thank you.

(Proceedings recessed at 10:58 a.m. and reconvened at 11:14 a.m.)

THE CHAIRMAN: All right. Welcome back everyone, and thanks for being timely. We're going to move back to the original order and catch up with Dakota Plains. And Mr. Mills, I understand we've got the picture up now?

MR. MILLS: We do, yes.

THE CHAIRMAN: Okay, good. So Mr. Mills.

MR. MILLS: Thank you, Mr. Chairman, thank you panel. We appreciated your presentation.

We have three points we'd like to touch on, and Mr. Chairman, we'll try and be brief. I don't remember which panel member made the reference, but with regards to herbicide, I heard the statement Manitoba Hydro will advise indigenous and Metis people prior to herbicide use, and then the discussion moved on. Does anyone remember who made that statement?

DR. LEECE: Yeah, it's Bryan Leece. I

would have made that statement as part of the human health risk presentation.

MR. MILLS: Thank you. Maybe a question to Maggie, will herbicide use be covered in a subsequent panel or is this the place to have that discussion?

MS. BRATLAND: That was already covered by a previous panel.

MR. MILLS: Okay. Then the question was, or the statement was made by Dr. Leece, Manitoba Hydro will advise indigenous and Metis prior to herbicide use. We have seen Manitoba Hydro's herbicide use ads or articles in the Free Press and perhaps The Sun. Can someone confirm how indigenous and Metis will be advised prior to herbicide use?

MS. BRATLAND: I'm sorry, there's no one on this panel that can confirm that for you. The First Nation and Metis engagement team works on communication with those communities, and then the vegetation management program would be involved in communicating. And these assessment professionals are not the appropriate people to ask.

MR. MILLS: It was the doctor's

reference, but fine. Thank you.

With regards to visual quality, Mr. Bohlken, is that correct?

MR. BOHLKEN: Yes, it is.

MR. MILLS: Thank you. I have never met a last name I couldn't mangle, sir, so I'm going to call you Frank. With regards to the visual assessment you provided us with, did you model any other tower types in your assessment?

MR. BOHLKEN: No.

MR. MILLS: Did you model any other galvanized finishes such as any dulling techniques?

MR. BOHLKEN: No.

MR. MILLS: Did you model any other conductor configurations or conductor diameters?

MR. BOHLKEN: No.

MR. MILLS: Did you model any other tower heights?

MR. BOHLKEN: No.

MR. MILLS: Did you model any other tower spacing?

MR. BOHLKEN: No.

MR. MILLS: Thank you.

Trevor, could that slide come up?

Thank you very much.

This is a photo that I took on the Bipole III right-of-way. That photo represents Manitoba Hydro's slash burning protocol and that slash represents about 2 hectares, 2 to 3 hectares of the line.

Dr. Leece, in your slide of health risks during construction, you made mention to vehicle emissions and dust. Did you ever consider the effect of slash burning on air quality and health?

DR. LEECE: The effect slash burn was not included in the air quality assessment.

MR. MILLS: Thank you. We heard Mr. Matthewson, I believe, indicate that there may be as many as 500 hectares of right-of-way clearing required through bush and forest, and we heard Mr. Penner indicate that slash burning may well be a solution that Hydro chooses.

Dr. Leece, would you agree with me that if that takes place times 250 times, which would be that representing 2 hectares, and Manitoba Hydro indicating they may clear as many as 500 hectares, would you agree with me that there may well be a measurable change in air

quality within the area while the work takes place?

DR. LEECE: There are a couple of things to remember, that not all of that 500 hectares would be burned.

MR. MILLS: Do you know that, sir?

DR. LEECE: Yes. The other thing --

MR. MILLS: Excuse me, I just want to focus on that point. Can you indicate to us what amount of slash burning will take place?

MS. BRATLAND: I'm just going to jump in on that. The 500 hectares of cleared area, we cannot estimate exactly how much would require burning, where that burning would happen, as we do have commitments to landowners that if they would like to retain the timber that is cut on their lands, that arrangements will be made for that. So at this point it's difficult to estimate exactly how much would be burned, but I feel fairly confident in saying that it would not be the entire 500 hectares.

MR. MILLS: With respect, Maggie, wouldn't that be to another panel, as you previously indicated on another issue?

But to carry on, Dr. Leece, the

Provincial Government makes the following statement.

"Smoke from burning crop residue affects people's health, road safety and the environment."

Would you agree with me that that same statement would hold for smoke from burning slash residue?

DR. LEECE: That would depend on where the burning occurs and what the potential for people to be exposed to it is. If this was right next to a residential development, then yes. If this is out in rural areas where there is nobody around, the answer would be no.

MR. MILLS: Would you agree with me that if it was a condition of this licence that instead of burning slash, Manitoba Hydro made every effort to use the biomass productively and to mulch the remainder, that the risk to localized air quality would be reduced?

DR. LEECE: Without doing more investigation, I cannot agree or disagree with that.

MR. MILLS: Mr. Chairman, we have no further questions. Thank you.

THE CHAIRMAN: Thank you very much for those questions and the responses from Manitoba Hydro.

So we're now moving to Southern Chiefs' Organization, I think we're back onto our rotation now. So we'll move onto the Southern Chiefs' Organization and Mr. Beddome.

MR. BEDDOME: Thank you very much, Mr. Chair. James Beddome for the record. I want to also thank the panel for being here today. I should only take, I don't think I should take too, too long today. But first I just wanted to acknowledge and wanted to thank counsel for Manitoba Hydro, in their opening statements, for referring to the Truth and Reconciliation recommendations, and I just want to put on record recommendations 19 and 22. And it will relate to my first question, and that's 19:

"In consultation with Aboriginal peoples to establish measurable goals to identify and close the gaps in health outcomes between Aboriginal and non-Aboriginal communities, and to publish annual progress reports and assess long-term trends. Such efforts

would focus on indicators such as infant mortality, maternal health, suicide, mental health, addictions, life expectancy, birthrates, infant and child health issues, chronic diseases, illness, and injury incidents, and the availability of appropriate health services."

And then at 22:

"To recognize the value of Aboriginal healing practices and use them in the treatment of Aboriginal patients in collaboration with Aboriginal healers and elders where requested by Aboriginal patients."

So given all of the foregoing, and the that Manitoba Hydro has acknowledged their responsibility, is Manitoba Hydro willing to make a commitment that they are going to implement these recommendations in their Health Impact Assessment? Are they going to commit to annual progress reports and recognizing Aboriginal healing practices?

MS. BRATLAND: With respect to your comments, Mr. Beddome, I think that's -- sorry,

Mr. Bedford.

MR. BEDFORD: Mr. Beddome also should remind the panel, as I reminded your panel, that some of these recommendations are directed to the Federal Government. So I believe he's quoted from two recommendations, they are recommendations to the Federal Government, not to Manitoba Hydro.

MR. BEDDOME: That's a fair point, Mr. Chair. Although I think they provide some guidance and my question is specific to what Hydro's practices would be.

THE CHAIRMAN: Mr. Beddome, so accepting the fact that these are recommendations to the Federal Government, is Hydro objecting further to the question, notwithstanding the fact that it was a recommendation to the federal government?

MR. BEDFORD: If Mr. Beddome wants to rephrase the question and ask my client's witnesses on the subject of indigenous health and this project, what the plans are, what the plans aren't, that would become perhaps relevant to the work that you have to do.

MR. BEDDOME: Sure. Perhaps I can try to be a bit more specific.

Mobile health clinics were mentioned, and it was also discussed how Manitoba Hydro is going to work to employ as many indigenous people as possible. And my client thanks you for that and hopes that that's sincere.

Question being, at these mobile health clinics, will there be Aboriginal healing practices available to indigenous employees? Give me one specific example.

MS. BRATLAND: I think through our ongoing First Nation and Metis engagement program, if we hear that that's something important to the communities or individuals that are employed on the project, that we would certainly take that under advisement.

MR. BEDDOME: And in terms of annual reporting, is there going to be some reporting that's going to deal with health outcomes, and in particular the differences between Aboriginal and non-Aboriginal communities?

MR. BOHLKEN: So the question was on annual reporting, I think, of health outcomes. And really for a transmission line construction project, and that's what we're looking at here, we're assessing potential changes and effects

really from construction activities are going to be fairly short-term in duration and, again, fairly spatially spread out. And it doesn't really lend itself to doing monitoring activities, for example, to be able to monitor for changes in outcomes, again, due to the short duration of the construction activities.

MR. BEDDOME: Thank you for that. And just one further question to that which is, you determine the impacts on local hospitals and health centres would be not significant based on the small size of the employment of how many people would be employed on the project.

However, in the worst case scenario, which we need to consider in this type of assessment, if there was, you know, a considerably catastrophic accident, and I hope that never happens -- but how many injuries, like if you had -- you know, did we do an assessment, if there were 10 injuries or 20 injuries, at what point would the local health services be overwhelmed and, therefore, that impact would become significant?

MR. BOHLKEN: Well, to answer that question, we looked at the average, and I'm going

to get the information in a second, but we considered the information on heavy construction injury rates and we multiplied that by the size of the workforce to calculate an estimated injury rate. And this would be, again, it was in the order of magnitude of, well, not -- fairly low, and much lower than would result in any change in effects on community health services.

MR. BEDDOME: If I could follow up with that. You were taking a look at average rates of injury in the heavy construction industry, looking at the number of employees, and you were getting a determination that way, which would get you an average; correct?

MR. BOHLKEN: Well, that would get us the -- again, based on average construction rate injury rate, so it's, again, based on broad statistical basis for construction activity in Manitoba.

MR. BEDDOME: And I hear you on that, that's the average. And my question is, what if the numbers came in well above the average? And you know, I don't want to foreshadow anything terrible, but let's say you're doing a helicopter delivery and a number of people get injured,

something completely catastrophic that none of us would hope for, then the averages are probably going to be skewed, especially with a small workforce. So at what point, how much above the average do we have to go at which point that effect becomes significant?

MR. BOHLKEN: I'm just going to again read from the significance threshold that we're using here.

MR. BEDDOME: Can you just give me a page reference when you refer to it, just so I can go back and look at it later? Thank you.

MR. BOHLKEN: Okay. So the first part of the significance threshold is that the project results in exceedance of available capacity or a substantial decrease in quality of healthcare services, health infrastructure or services.

In this hypothetical situation, there again considering that, as I mentioned earlier, the maximum size of the workforce is 175 persons of which 80 would be employed on the transmission line, the new transmission line right-of-way. In consideration that in the scenario you mentioned that there are, first of all, multiple health services available in reasonable proximity to the

project, including those in Winnipeg, there would be provisions for emergency evacuation as part of the emergency response plan. So yes, the significance conclusion would still hold in that scenario.

And the reference was at the bottom of 1921 of the EIS for the significance threshold.

MR. BEDDOME: Okay. And thank you for that. Just if I understood you correctly, so let's take it one step further, this is almost unlikely, would probably never happen, but all 80 people employed on the transmission line get injured, you figured still it would not be significant because there's enough health services that could absorb all 80 of those injuries?

MR. BOHLKEN: Highly unlikely scenario, we would feel that the health services within, again, proximity to the project would still be able to handle, you know, the response.

MR. BEDDOME: Thank you. I appreciate that. I think I have one more question for you and then I'll probably be turning over largely to Dr. Leece. Maybe two more, I'm a typical lawyer.

The first one is just, how do you -- you talked a bit about aesthetic impact. How do

you quantitatively measure or define aesthetic impact?

MR. BOHLKEN: It's a good question. Aesthetics is subjective. And what might be of importance to one individual might be different for somebody else.

So what we do in the methods that are outlined in the section is we, first of all, we try to characterize what the view is going to look like from a couple of different criteria. One is the visual sensitivity which is composed of, well, what is the view looking at, what is the sort of amount of heterogeneity, what are the aesthetic values, what is the viewer condition, who is there, how frequently would people likely be looking at the view? So we're looking at it from that perspective. We're also looking at it from the extent of built interventions in the landscape, so how has it changed by, for example, infrastructure buildings and so forth?

So, through those baseline measurements we're trying to describe the view in a manner that we could then take forth in the assessment and assess how a change that would result from project infrastructure, for example,

could affect those aesthetic characteristics.

MR. BEDDOME: Thank you for that. I appreciate that. So I gather it's subjective, it's a little bit of beauty is in the eye of the beholder would be a fair way of saying it?

MR. BOHLKEN: Again, so what we have done here is we have used methodology that breaks down the view, you know, based on a set of criteria that we could then take forth into an assessment so it is not, you know, purely just a subjective, I like what I see kind of analysis.

MR. BEDDOME: And how do you deal with differing views on aesthetics, though? Let's say, you know, one group or one segment says this is beautiful, the other one says it's hideous and vice versa, how do you balance those competing subjective preferences in your model?

MR. BOHLKEN: So first of all, the model is -- the analysis is based on a couple of things. There is extensive work done on this in British Columbia by the Ministry of Forests in their visual landscape inventory, and they developed substantive methodology to try to characterize change in views from, for example, clear-cut logging. That type of methodology which

is not, there's no equivalent in Manitoba, is based on a number of considerations, including those that came from your preference research.

MR. BEDDOME: And in terms of viewer preference research, that includes First Nations, Metis and other indigenous groups; correct?

MR. BOHLKEN: Well, that would include, you know, the viewer preference based on feedback that was brought into that development of that methodology.

MR. BEDDOME: And there will be continuing opportunities for feedback that will be incorporated into that planning with regard to aesthetics?

MR. BOHLKEN: Just excuse me a moment.

Yes. So going forward, as I mentioned yesterday in the presentation, that there are opportunities for, for example, tower spotting to make changes in placing the towers that could be informed by ongoing engagement with First Nations, Metis and the public.

MR. BEDDOME: Thank you very much.

This next one is kind of a general question for the panel, but it's probably particularly important for Mr. McLeod and

Dr. Leece, but perhaps others can respond. Ms. Pastora addressed this, the famous quote by Donald Rumsfeld. We'll see if I can do a terrible job reading it too.

> "There are known knowns, these are things we know that we know. There are known unknowns. That is to say these are things that we know we don't know, but there are also unknown unknowns. There are things we don't know we don't know."

Would you all agree with that as sort of an accurate statement of uncertainty and risk in the three categories thereof?

DR. LEECE: Yes. There certainly are uncertainties in the risk assessment process. That's why it uses what's called the precautionary principle and is deliberately designed to overestimate exposures, thereby overestimating risks. And it's designed to do that so that you don't underestimate risks. Saying you've got a problem when you don't is okay. Saying you don't have a problem when you do is not.

MR. BEDDOME: Thank you very much, Dr. Leece. Just a quick follow-up on that. But

there is also the challenges out there of the unknown unknowns, the things we don't know we don't know, and there's almost no way of controlling for that; correct?

DR. LEECE: No, that's not correct. In a risk assessment process there are ways of controlling for that. You can assume that country food consumption rates are far higher than they possibly could be. There are a number of other things that you can do to deliberately overestimate. And that's why the process is designed the way it is.

MR. BEDDOME: Okay. And Mr. McLeod, probably you'll be lucky, this is the only question I'll have for you today. I'll have more for you tomorrow, further to comments earlier today. But would you agree with that sort of statement of uncertainty and risk, as put out by Mr. Rumsfeld?

MR. MCLEOD: In my presentation I did say there is the potential for unknown heritage resources. But we have procedures in place, let's say, to address those unknown through examination of tower locations and then actually going to look at that area, and the CHRPP program that's set up

as part of the monitoring.

MR. BEDDOME: Fair enough. Thank you very much.

Dr. Leece, you have your Ph.D. from Guelph University; correct?

DR. LEECE: That's correct.

MR. BEDDOME: And bear with me. And before that you got a Bachelor in Science Honours, also at the University of Guelph?

DR. LEECE: That's correct.

MR. BEDDOME: You graduated in 1986?

DR. LEECE: Yes.

MR. BEDDOME: You had to think about that.

DR. LEECE: It was a while ago.

MR. BEDDOME: I was three years old at the time.

All right. I also note when I look at your job experience, you do have a considerable amount of job experience. The vast majority of it has been with industry, though, you have been working for mines or a variety of development proponents, generally speaking. Would that not be correct?

DR. LEECE: That would be correct for

the last several years. My first 11 years was actually spent with the Ontario Ministry of the Environment, working in what was called the Standards Development Branch, actually setting environmental criteria.

MR. BEDDOME: Thank you for that.

DR. LEECE: I have also worked extensively with government agencies while in consulting, Health Canada being one of them. We have done some tox work, toxicological support work for Health Canada over the years. So recently, yes, recently the experience has been with environmental assessments, but it doesn't categorize accurately my entire work experience.

MR. BEDDOME: Thank you very much for that.

Now, could I have you turn to page 18-34 in the EIS? And actually it might go back to 18-33 as well, but I think 18-34 is the most relevant. Do you have the page?

DR. LEECE: I believe I have the pages, yes.

MR. BEDDOME: Okay. Now, just to be clear, and some of these questions I'm going to ask are going to deal with herbicides. You are

the one who would have been responsible for doing the health and safety impacts with respect to herbicides; correct?

DR. LEECE: No, that's not correct. What we did in the Human Health Risk Assessment was evaluate the potential exposures for people, not workers, so for people who would be using the right-of-way and their exposures to herbicides as a result of the vegetation management plan. So it wasn't occupational health and safety work or health and safety.

MR. BEDDOME: Sure. Okay. But you analyzed the health risk with respect to the use of herbicides?

DR. LEECE: Yeah, for traditional users and for recreational users of the right-of-way.

MR. BEDDOME: And that's why I referred you to 18-34. And I'm going to be terrible, I'm not a toxicologist, right, so I'm going to do a terrible job, I'm sure, pronouncing some of these chemicals. But you go through the major pesticides that are expected to be used, that's Garlon XRT, as well as Aspect herbicide. You note the active ingredients in Garlon XRT as

triclopyr, I'm probably saying it wrong, and 2,4-D with respect to Aspect herbicide; is that correct?

DR. LEECE: That's correct, that's the information we had at the time.

MR. BEDDOME: That's the information you had at the time. Thank you. That's important. I do want to return to that.

Now, if we go down just above 18.5.32, there's a paragraph, where you summarize some of the health risks with respect to 2,4-D, correct?

DR. LEECE: That's correct.

MR. BEDDOME: And basically, is it fair to say that the summary of that conclusion is, Health Canada said it's safe, so we think it's safe?

DR. LEECE: That's fair. Health Canada does the evaluations and the PMRA provides the regulatory certifications for herbicide use in Canada.

MR. BEDDOME: So you entirely rely on Health Canada's studies with respect to health concerns?

DR. LEECE: That's correct. All of the federal and provincial agencies rely on Health Canada as well.

MR. BEDDOME: Now I want to kind of return back to the known unknowns. Wasn't there a time when the advertising slogan was, DDT is good for me. And then at some point we determine later down the road that, in fact, there are a lot of impacts, both to wildlife, to humans, et cetera, that we weren't aware of at the time. That would be a risk that we would be in line, you referenced the precautionary principle earlier, that would be a fair statement, would you agree with -- I didn't phrase it too well. Let me put it, in the past we have thought certain herbicides or chemicals are safe for use, and subsequently we determine on the basis of further evidence that they are not in fact safe to use.

DR. LEECE: That would be an accurate statement for how things were done in the late 1960s. It's certainly not an accurate statement for how things are done now. The PMRA goes through some very, very rigorous review of the information on herbicide environmental transport toxicology. They couple that with work that's done with the U.S. EPA. So the assessment of these things, before they are certified for use, is phenomenally more rigorous than it ever was

back in the period that you were referring to.

MR. BEDDOME: That's a fair point. But it's entirely possible that we could miss something that, you know, there's something that we failed to study or something that we failed to see, and it's entirely possible there could be impacts that we don't know about?

DR. LEECE: It's possible. It's highly unlikely, given the rigor that these things go through in terms of their certification process.

MR. BEDDOME: With respect to 2,4-D, wouldn't it be fair to say that there is some controversy in the toxicological community in terms of what the impacts of it are or aren't. I know you rely a lot on Health Canada, but there's other research out there that takes the alternative position. Is that not fair to say?

DR. LEECE: There certainly is a breadth of opinion on 2,4-D, but what's missing in a lot of that are considerations for application rate and environmental fate. So the later studies spent a lot more time looking at environmental fate and transport. And that's how PMRA comes up with their -- it's part of the deliberation

process for them.

MR. BEDDOME: And we're talking about unknown unknowns. It's fair to say Manitoba Hydro doesn't even really know how much herbicide it's going to spray, or where or when it's going to spray it? That would be a fair statement? I can refer you to IRs where you pretty much expressly say that, if you need.

MS. BRATLAND: I think we've covered that in a previous presentation, and if you'd like to pull up the IR, that would be helpful.

MR. BEDDOME: Sure, I can pull up the IR. I was just hoping to save the panel the time, but fair enough. You'll just have to bear with me. I didn't think it would be controversial because as you have said we have established it in the past.

But I think if you go to Peguis First Nations IR number 6, in there they make a reference that they're beginning to pile the sites where they wouldn't do any spraying. I think if you look at Manitoba Wildlands IR 50, they acknowledge that, or even CAC number 59 -- actually that's probably the best one, CAC IR number 59, why don't we go to that one? I was

hoping to avoid this, but --

MS. BRATLAND: Okay. We have the IR.

MR. BEDDOME: You're faster than me.

MS. BRATLAND: So in line 2 of the response?

MR. BEDDOME: Yeah. I think line 2 it says:

"Manitoba Hydro cannot predict how extensively herbicides will be used for the MMTP at this time."

It's right there in the IR. So, you know, all I'm trying to confirm is, you don't know the volume that you're going to be applying, you don't know how extensively, you're not really sure how much you're going to, in fact, apply?

MS. BRATLAND: I think the important point to remember is that whatever we do apply will be applied within the permit, the strict requirements of the permit, and that we will follow all of the conditions associated with those.

MR. BEDDOME: So as long as you follow the permit, you follow the Health Canada, it's tickety-boo, totally safe, not a concern at all; fair to say?

DR. LEECE: Yeah, that would be fair to say. While we may not know the absolute quantities, we know through the vegetation management plan how they are going to be applied. We know they are going to be applied very selectively. So we're not talking about a broad broadcast of herbicide.

MR. BEDDOME: Okay. They're going to be applied selectively, but we have also heard certain Manitoba Hydro panels make the argument that, in fact, the right-of-way could be good for traditional harvesting and gathering. Let's say we accept that as true, I'm not sure that my client will be willing to accept that as true, but if there was in fact more harvesting on the line, and I want acknowledgment Manitoba Hydro has made a commitment they are going to work with and notify First Nations, and if there is any harvesting they are not going to be applying any herbicides there, but what happens if pretty much the whole 30 per cent going through Crown lands, First Nations say that's where we're harvesting, don't spray any herbicides?

MS. BRATLAND: I really can't comment on something that we haven't heard yet. We will

work with communities to understand those locations and manage appropriately based on what's discussed.

MR. BEDDOME: Thank you. Just going back. Now, you have done a health assessment here at 18-34, but that's based on, I think it was the Aspect herbicide. But then when I cross-examined Mr. Matthewson -- and I'll note I handed out a couple of material safety data sheets just with the different herbicides that are going to be used, and I circulated them around. So you may wish to refer to them. Although, let's be honest, Dr. Leece, you're going to be more conversant in this than me. But what was interesting was, Mr. Matthewson commented that what they were currently using was ClearView. And you can find that at -- sorry, my numbering is hard to see but it's at page 7 -- trying to save paper, call it frugality, environmental concern, or the fact that we've all had to strain our eyes to save paper through these presentations. But if you go at the very top you'll see Dow AgroSciences, ClearView herbicide. And on number 3 it kind of outlines some of the composition, what's in this ClearView herbicide, and its active ingredient is not 2,4-D.

That would be correct to say; right? Halfway through down page 7, it's the start of the Dow AgroSciences material safety data sheet with respect to product name ClearView herbicide.

DR. LEECE: I have that, and you are right, 2,4-D is not listed as one of the activities.

MR. BEDDOME: Okay. In your assessment, now, triclopyr isn't also one of the active ingredients. Did I say that right, triclopyr? Am I saying that wrong? How do I say that?

DR. LEECE: That's close enough.

MR. BEDDOME: Okay. I'll take that. That's not listed as an active ingredient in this ClearView?

DR. LEECE: No, it's not.

MR. BEDDOME: I don't see any of these active ingredients being assessed or noted in this section. Can you explain why that is?

DR. LEECE: We assessed the active ingredients that we had. But the important thing to remember here is that any of the herbicides that are used by Manitoba Hydro are all approved and registered for use by the PMRA and licensed

for use by the Government of Manitoba. So whether or not these active ingredients are assessed, the basic assessment is the same, that if they're used according to their label directions, they are safe for use.

MR. BEDDOME: So your assessment didn't go into the particular active ingredient used whatsoever, you just -- if it was approved it was approved.

DR. LEECE: That's correct. We listed the active ingredients for the herbicides that we had information for at the time, but this relies on the detailed work that's done by the PMRA for licensing products for application and use in Canada.

MR. BEDDOME: Okay. Because if you go to page 1, there's the new magic formula, which is this Navius VM herbicide. Let's see how bad I can butcher this, its active ingredients are aminocyclopyrachlor and Metsulfuron-methyl. Are you familiar with those active ingredients?

DR. LEECE: Not as familiar.

MR. BEDDOME: Not as familiar?

DR. LEECE: But the response is the same, because these have all been approved by the

PMRA, the PMRA will have done all of the analysis.

MR. BEDDOME: So even though you are the toxicologist that Manitoba Hydro is putting up here, you are unable to give me any answers about the respective risk with respect to these different active ingredients that I have identified?

DR. LEECE: No. What I can tell you is what I have told you already, is that all of the underlying risk assessment work for these products is done by Health Canada, it's Health Canada's responsibility in conjunction with the U.S. EPA. They do all of that work on the proprietary information that comes from Monsanto or Bayer or DuPont or whomever, and they make the recommendations and they define the application rates. And those application rates are set so that environmental effects do not occur.

MR. BEDDOME: Fair enough. So you could comment, so if I was to say that this Navius VM herbicide was first used in 2010, would you be able to confirm or deny that?

DR. LEECE: No.

MR. BEDDOME: Okay. Do you know if it's recently registered, it's a more new product

or an older product?

DR. LEECE: I don't know.

MR. BEDDOME: Don't know. Okay. In 1834 you talk a bit about the two major ones, and in this case you are referring to Garlon and Aspect, but you say Garlon was registered in 1989 and Aspect was registered in 2014. If I was to submit to you that Navius has been more recently approved, somewhere in the 2000s rather than back in the late '80s, would that be a fair assumption?

DR. LEECE: I can't speculate on this.

MR. BEDDOME: Okay. No, fair enough. The reason I ask is just that if a product has been approved for longer, then more than likely it's been used for longer, and then it would be more likely that we would have data that would give us answers with respect to risks that may or may not materialize, and particularly, those unknown unknowns. Would that be a fair statement?

DR. LEECE: I'm not sure that I can really respond to that appropriately.

MR. BEDDOME: Okay. Fair enough. I appreciate your attempts to respond, and I appreciate you -- I'm not a toxicologist, so I really appreciate this opportunity to

cross-examine you and get some of this information into the record.

The only other question I had is, it would be quite probable that Manitoba Hydro may change the herbicide of choice, or that it uses in other situations, at some point in the future; right? I mean, you assessed it on one product and they have since changed between 2015 and 2016. So it would be a fair assumption that the product type might change again; correct?

MS. BRATLAND: I don't think Dr. Leece can comment on the herbicide choice of Manitoba Hydro. If changes were to be made to the products that we use, as Dr. Leece has stated, it would be only to the use of those products that are permitted to be applied in Manitoba.

MR. BEDDOME: So if you change the chemical or the active ingredients you use, there's no need to do a new health assessment?

MS. BRATLAND: That's not what I said.

MR. BEDDOME: Okay. Now, maybe this isn't the right panel. So if it is, then fair enough. But does Manitoba Hydro use the same chemical formulas or herbicides on right-of-ways that are in the City of Winnipeg that they use

elsewhere?

MS. BRATLAND: I'm sorry, I think that question is out of scope for this project. We are not constructing within the City of Winnipeg.

MR. BEDDOME: Okay. Well, how about the ones on the edge of the City of Winnipeg, corridors running sort of around the perimeter?

MS. BRATLAND: In those areas, herbicide application shouldn't be required because it's primarily agricultural landscape.

MR. BEDDOME: And I think you might say that I'm out of scope but I'll ask it anyway. What if you're using herbicides near schools, daycare centres, senior residences, do you change your practices?

MS. BRATLAND: There are no schools or daycare centres within the final preferred route. And if there is a sensitive site identified, we have outlined our practices associated with those.

MR. BEDDOME: It would be the same for villages, towns, residences, shopping malls, you have the same answer for that?

MS. BRATLAND: None of those occur within the final preferred route for the project.

MR. BEDDOME: That's all my questions.

I thank you very much for your time, thank you very much to the panel, thank you very much Mr. Chairman and the rest of the panel.

THE CHAIRMAN: Thank you for those questions and the responses. Give me a minute here on the order. Is Peguis First Nation ready to go? All right. That will be Mr. Dennis Valdron.

MR. VALDRON: Well, good morning. All right. First up I note that it's 12:10. Typically we break about 12:20. I suspect I'm not going to finish my cross-examination by 12:20, so we'll either split my cross-examination, or we'll go long, or we could possibly just break for lunch now and come back?

THE CHAIRMAN: Normally we break at 12:30, and my watch, it's just a couple of minutes after 12:00. So why don't we start and we'll go as far as we can. Somewhere near 12:30 I'll ask you roughly how much you've got, and if there's still significant questioning, we'll delay it until after lunch.

MR. VALDRON: All right. Sounds good.

All right. Good morning. For the monitor, my name is Den Valdron representing

Peguis First Nation. And I've got very few questions. They should be simple, straightforward, you should have no difficulty answering them. And hopefully, we'll be able to get this all wrapped up.

Now, just fair warning, I've been working a bit on the cross-examination, it may be that some of my questions relate to biophysical rather than this category. If they relate to biophysical, you feel it should be dealt with in the next panel, you just say so, we'll move on, I'll go to town on that one tomorrow.

Are we ready? All right. First up, I'm curious, I have seen regional RAA, regional assessment area. I've also seen PDA. What's the difference? Is it just the same thing used in different context? Easy question I thought, you know.

MR. BOHLKEN: So the project development area is the area that the project, basically would be the project's footprint, the area of clearing and construction. The regional assessment area, there's three spatial areas, the local assessment area is the area to which there would be a reasonable expectation that there could

be direct project effects. The regional assessment area is used for two purposes. One, it establishes context, broader context for which to assess significance; and two, is the area within which cumulative effects are likely to occur.

MR. VALDRON: All right. I have also noticed, when going through the various powerpoint presentations, there seemed to be different depictions of the RAA on maps. For instance, we've got that one up there, but I've also seen maps which seem to depict the RAA as 15 kilometre corridor on either side. Is the RAA different for different purposes? I looked at Heritage Resources -- seemed to cover the whole area.

MR. BOHLKEN: Okay. So the RAA may be different between the different valued components. Again, it's going back to the area within which cumulative effects are likely to occur, as well as an area that could be used to establish context for significance determination. And that can vary between valued components.

MR. VALDRON: All right. Thank you. Okay. Now, moving on a little bit, I found myself interested in some discussion of, some mentions of shelterbelts. So I hadn't come across the

references to shelterbelts there. Can you tell me a little bit more about this, just trying to frame it out for me? Where are these shelterbelts going to be? What are you going to be planting? Will this have possible effects on wildlife or traditional use?

MS. BRATLAND: It would help us in answering your question if you could tell us which presentation it refers to?

MR. VALDRON: Land and resource use, it comes up at box 18.

MR. BOHLKEN: Okay. So the questions were where the shelterbelts would be, what would be planted, and how that could affect wildlife? Is that correct?

MR. VALDRON: Yeah. Well, you know what, start with the first one and we'll go down to the rest.

MR. BOHLKEN: Okay. So shelterbelts are located, for example, around the borders of agricultural property to protect it from the wind or for aesthetic values. That's an example of where they may be found. If the project is going across the shelterbelt, it would -- because there are trees, the shelterbelt would need to be

removed.

The second question was on planting?

MR. VALDRON: Yeah, what are you going to be planting in the shelterbelts?

MR. BOHLKEN: Okay. Yeah, that would be discussed with landowners and, of course, with consideration of what could be planted, depending on where the shelterbelt is. If it's in the right-of-way, that would not include, for example, tall growing vegetation.

MR. VALDRON: All right. Would there be shelterbelts planted in or around Crown lands or traditional use lands?

MS. BRATLAND: The discussion around shelterbelts pertains to private lands. So if clearing of shelterbelts on private agricultural lands occurs because of the location of the right-of-way, we would work with landowners to replace those shelterbelts in an area where it wouldn't cause interaction with a power line. So, no, that discussion does not refer to Crown lands.

MR. VALDRON: Okay. Now, on land and resources in box 22, if you're looking at it, it says there's a small area for hunting and trapping affected overall. Now, I note that small can have

different meanings. This is a substantially diminished area of Crown lands already, historically. That's been established. So a little bit here, a little bit there. I think eventually we might be coming up to a threshold for various species, for traditional activities. Has this been evaluated? Have there been studies as to the viability of activities like hunting, fishing, trapping, in these areas, and gathering? Has there been assessment of the impacts of fragmentation? It's one thing to say, well, small areas, but sometimes small changes have big impacts.

MR. BOHLKEN: So I think that, part of your questions here, I think, would be more appropriately deferred to the biophysical panel, where they will be speaking specifically on issues related to habitat, direct effects on vegetation and wildlife.

MR. VALDRON: All right. Then we'll move this one over to biophysical.

Now, in terms of the small area affected, what's your understanding of land use through the ATKs? Do Aboriginal or Metis families have specific preferred areas? Is there a lot of

specificity in where they choose to practice? I mean, because sometimes, you know, we look at agricultural land, it's all the one thing. And then we look at say Crown lands or wildlands, and there's a tendency, maybe by default, sort of like looking in as a block of cheese, it's all that one big thing, but actually there's a quite a lot of diversity within. And one plot of land or one patch is not necessarily the same as another. So in terms of families' resource use, in terms of indigenous resource use, are there areas of preference? How does this get divided up? Does everybody just go to the same berry patches, or is it allocated, informally or formally, by families, by groups? That seems that that would have an impact.

MR. AMUNDSON: My understanding from the Aboriginal traditional knowledge studies example, would be the Peguis study, is that there's been a very good job done there of mapping locations of traditional land use, specific activities, plus areas of preferred activity.

MR. VALDRON: Okay. Does that break down in terms of what constituencies use specific areas, or is it just we're identifying areas that

are being used, but we don't know if, for instance, particular families or particular lineages use certain areas? How specific does it get?

MR. AMUNDSON: The ATK studies that we have access to don't get to that level of specificity.

MR. VALDRON: Okay. So, for instance, if you're going through a particular area and you're affecting a fishing ground or a gathering ground, you don't necessarily know which specific groups within a community will be affected by that?

MR. AMUNDSON: At this point we wouldn't know who in the community.

MR. VALDRON: Okay. Now, with respect to the land use and lands and resources, after the project, what are the monitoring of expectations in mitigation? I mean, what kind of monitoring is going to be done with respect to traditional land use in those areas that are affected by the Hydro project?

MS. BRATLAND: I think that's a question to defer to the monitoring panel, and after the traditional land and resource use

presentation that will be tomorrow.

MR. VALDRON: Thank you. Has there been any discussions with the government about replacement habitat for lands being affected or lost due to the project?

MS. BRATLAND: No, there has not.

MR. VALDRON: Okay. My next question was going to be biophysical so I'm just skipping past that. So you'll excuse me if sometimes I seem distracted.

All right. Now, moving onto agriculture. I recognize the presentation was entirely on the subject of agriculture, which by definition excludes traditional land resource use. But there were some things that came out of that that I found interesting and I wanted to ask about in context of Crown lands and wildlands. And in particular, I was interested in the issue of soil compaction that had been discussed with respect to agriculture, soil compaction, Rutting, which had the effect of compacting local soils and making them unusable.

So I wonder if there was any examination of the impacts of soil compaction or rutting in areas of traditional land use?

MR. WHETTER: As part of the agriculture VC, we did not specifically examine that issue in terms of compaction on traditional lands.

MR. VALDRON: In the context of lands and resources, was there any discussion or examination of the impact of rutting or soil compaction?

MR. BOHLKEN: No.

MS. BRATLAND: Just to build on that and pull in some information from the mitigation presentations earlier, the type of mitigation that we'd be using when constructing on natural landscapes would be a way to mitigate concerns around soil compaction and impact in those landscapes, such as considering construction in wintertime periods in wetlands or areas with wet soils, and timing windows.

MR. VALDRON: So you've ruled out soil compaction and rutting altogether in these areas?

MS. BRATLAND: No, that's not what I said.

MR. VALDRON: Okay.

MS. BRATLAND: I just said that the mitigation measures that we would be applying, if

soil compaction or rutting were a concern to the ability of those landscapes to thrive, that would be one way to manage that. And if you'd like further information about that, stay tuned tomorrow.

MR. VALDRON: So that's also biophysical, you figure? All right. So I'll just make a note and cross-examine on that then.

Now, box 18 of agriculture noted compaction risk is an important consideration, 67 per cent of the PDA is rated as high. Is that correct? It's not a typo or anything?

MR. WHETTER: We'll just wait for Ms. Bratland to pull that up.

MR. VALDRON: There it is right there at the bottom.

MR. WHETTER: Yeah, that number is correct, it considers the PDA.

MR. VALDRON: Okay. And just remind me again, because I'm vague this morning, PDA is project...

MR. WHETTER: PDA is the project development area. In this instance it includes the right-of-way for the existing corridor and the new right-of-way.

MR. VALDRON: Okay. That 67 per cent basically includes only the agricultural land?

MR. WHETTER: No. Actually, just to clarify -- that's a good question -- the 67 per cent in this case actually refers to the entire right-of-way. So that includes, that is baseline information on both agricultural and non-agricultural areas.

MR. VALDRON: So the whole thing, 67 per cent, that includes the Crown land as well?

MR. WHETTER: That is correct, yeah.

MR. VALDRON: Okay.

Now, I was interested to hear about the discussion of EMF and audible noise with respect to livestock. And I thought, well, obviously I'm representing Peguis, so I sort of tried to apply these thoughts to the traditional land use areas. You indicated noise was about 22 decibels and that it didn't seem to be discouraging livestock. The thing I notice about livestock is they don't have a lot of choice on where they want to go. They are sort of, you know, there in the farmer's field and it's not like, if it's too loud or too annoying, they can just, you know, move to fields on the other side

of the town.

So with respect to the lands and resources, has there been any consideration of the impact of audible noise on game and birds and hunting activities in those areas?

MS. BRATLAND: Mr. Bailey, in his presentation to us yesterday, indicated that there was no demonstrable effect on wildlife, I believe. And the question of effects on wildlife from the project is best put to the biophysical panel tomorrow.

MR. VALDRON: All right.

And what about gathering activities in the region? I've heard some people say they would rather not gather blueberries, for instance, in an area where the transmission lines are just humming away. Has there been any assessment of that?

MR. AMUNDSON: In the traditional land and resource use assessment, we acknowledge that there could be an alteration of the experience of traditional activities and that might result in people avoiding the PDA, and that could extend into the LAA.

MR. VALDRON: All right.

Now, I believe box 27 said the route

avoids the elk area in Manitoba. How do you determine the elk area?

MS. BRATLAND: Okay. With the help of our biophysical team.

MR. VALDRON: And was that in conjunction with the Province of Manitoba?

MS. BRATLAND: Absolutely.

MR. VALDRON: All right. Was this in consultation with First Nation hunters about elk?

MS. BRATLAND: Again, we are delving into the biophysical team's territory here, but I will say that we did have First Nation-Metis engagement programs. And if information was received about elk, that would have been included and considered.

MR. VALDRON: All right. I've got a whole bunch more questions about elk, but if you'd prefer to deal with it biophysical, I'll just kind of move on there. I will come back to it.

Okay. Moving onto the visual aspect. Box 24 referred to ongoing engagement with First Nations, Metis and the public. So what exactly was the engagement on visual quality with First Nations? What was the impact on visual quality in traditional land use resource areas? Yeah, I

butchered that acronym, sorry.

MS. BRATLAND: That's okay, there's a lot of them.

Throughout our public and First Nation and Metis engagement processes, we held discussions and received feedback about what those communities and individuals valued. If values were shared related to the visual quality of an area, that was communicated back to our assessment team and considered. One of the things that we have heard on this and past projects is the importance of the character of the area, the overall landscape character that they experienced.

MR. VALDRON: Yeah. Thank you.

I noticed, reading through the powerpoints and listening, that although there was a lot of photographs and a lot of discussion dealing with impacts on developed areas, there was no discussion of impacts on the undeveloped areas, the Crown lands and the traditional resource areas.

Now, I believe somewhere in the EIS statement it did say, humans prefer natural views. I would assume that people out in the state of nature, in traditional activities, would prefer

natural views. What are the specifics of the visual impacts in Crown lands areas? I'm assuming towers, lines, there's removal of vegetation in an unnatural fashion, change of contours and change of vegetation. Would that be correct?

MR. BOHLKEN: Well, I agree that there would be removal of vegetation. I am not sure that there would be change of contours.

MR. VALDRON: Well, you are just kind of like driving a swath through the transmission line area, so I think that would cut across the natural contours of the biology, wouldn't it?

MR. BOHLKEN: I'm really not familiar with the term natural contours of biology.

MR. VALDRON: Okay. I just made that up.

Well, I'm assuming that when you're out in the state of nature and Crown lands, there's trees, there's different types of trees, there's meadows, there's hills, there's streams and all of that, and all of it tends to go, you know, its own direction. But if you're driving a transmission line through that, it leaves a pretty noticeable mark. Would you agree with that?

MR. BOHLKEN: So I believe you're

talking about, correct me if I'm wrong, clearing a right-of-way in a forest, and that because there's a change of vegetation patterns, depending on your orientation to that right-of-way, looking down the right-of-way you would see a change in vegetation patterns. Is that what you're asking about?

MR. VALDRON: Or coming across it in your wanderings? I mean, once you are in and around it, I would say it would become pretty visible, wouldn't it?

MR. BOHLKEN: Yes. If you're in a forest that, as you leave a forest and enter into a right-of-way, it would no longer look like a forest.

MR. VALDRON: Okay. And what's the aesthetic reaction to that? Is this negative? Do people find this troublesome? Do First Nations people find this troublesome?

MR. BOHLKEN: So, we talked a little bit earlier about preference research and how that informs like visual sensitivity class. And preference research that I've seen that is reflected in those visual sensitivity scorings is that people tend to prefer natural environments. That's not excluding the possibility there are

attractive environments that have built features. But yes, the preference research has demonstrated a preference for natural environments, natural view-scapes I should say.

MR. VALDRON: All right. And did this preference research extend to First Nations people with respect to their specific traditional resource areas?

MS. BRATLAND: I believe that question was asked and answered by a previous intervenor.

MR. VALDRON: Okay. Must have missed that one, sorry. I was so busy making my notes.

Getting close to the end here. With respect to human health risk, was there any assessment of mental health effects of the impacts on traditional land resource use?

MR. BOHLKEN: Would you please repeat the question?

MR. VALDRON: Any assessment of mental health impacts with respect to First Nations and impacts of the project on traditional land resource use?

MR. BOHLKEN: Okay. So effects on traditional resources will be discussed tomorrow in that panel. The effects on mental health

generally with respect to -- is addressed in the assessment of potential effects on stress and annoyance.

MR. VALDRON: All right. Well, thank you, I think that's about it for me.

As I have noted, I'm probably going to be asking a bunch of questions on biophysical and environment mitigation based on this, but I don't want to take up too much of your time today so I thank you.

MS. BRATLAND: Thank you.

MR. VALDRON: And I was right on time.

THE CHAIRMAN: You were exactly on time. Thank you very much. We are now going to break for lunch and we'll be back here at 1:30. Are there any miscellaneous or filings to do? No? Okay. Back here at 1:30. Thank you.

(Recessed at 12:30 p.m. to 1:30 p.m.)

THE CHAIRMAN: All right. Good afternoon, everyone.

I just wanted to make one small remark before we start here. I've been reminded, again, that I should be referring to all the groups at the table here as "participants". I think I've

used interchangeably three or four different words to describe the -- all positive, I hope.

The next participant, or the continuing participant, although you might notice a difference at the table, but anyhow, we are now on to the continuation of the participants, plural, and we are on to the Consumers' Association of Canada.

MR. WILLIAMS: Yes, and good afternoon, members of the panel. I'm the newbie to the hearing; my name is Byron Williams. It is a pleasure to be back before the Commission.

Just with, hopefully, the permission of the Chairperson, on behalf of our clients, we did want to acknowledge the passing of former board member Yee, Edwin Yee, who we had the great pleasure to appear before on a number of proceedings related to Manitoba Hydro. It was always nerve-wracking because he asked some pressing questions and brought a gifted insight into science to the regulatory process. So we do wish to acknowledge his passing and his loss.

THE CHAIRMAN: Thank you for that.

MR. WILLIAMS: To the Manitoba Hydro panel -- and most of my questions probably will be

directed both to -- Mr. Bohlken?

MR. BOLHKEN: That's right.

THE CHAIRMAN: And perhaps to Ms. Bratland, one or two. I'm going to focus on economic impact assessment and the modeling associated with it, just for a few minutes. But before we do, I just want to get a bit more certainty in terms of the costs of the project, the estimated costs, and I want to direct your attention to the response to SCO IR 28(e).

And we are hoping it is a typo, but we see that response suggesting that the updated total project cost estimate is $453.2 million.

Does the Hydro panel see that reference?

MS. BRATLAND: I see it.

MR. WILLIAMS: And is that your panel's understanding of the updated cost estimates?

MS. MAYOR: I believe project cost was covered in another -- at the beginning -- panel, but I believe this is the correct answer.

MR. WILLIAMS: And the reason we are asking, of course, this is from your response in April of 2017; agreed?

MS. BRATLAND: Yes, the date is April 12th, 2017.

MR. WILLIAMS: And you will recall that when Manitoba Hydro submitted its application for approval in September of 2015, the estimated project cost was in the range of $350 million; agreed?

MS. BRATLAND: Agreed.

MR. WILLIAMS: So in the time period between September 2015 and April 2017, the estimated costs have risen by $100 million, give or take a couple of mill?

MS. BRATLAND: The estimate provided in the response to this IR is roughly $100 million more.

MR. WILLIAMS: And percentagewise, if you can accept this -- subject to check; my math is usually pretty good -- if we took that $100 million and divided it by the base of 350 million, you will accept, subject to check, that is roughly a 28 per cent increase in the last -- since September 2015; agreed?

MS. BRATLAND: Subject to check, yes. The time period, however, I would just say that the estimate was provided in this IR response on

that date.

MR. WILLIAMS: Are you suggesting it has changed upwards or downwards since that date?

MS. BRATLAND: No, I just can't comment on time period associated when estimates are made, as this team is not involved in estimating project costs.

MR. WILLIAMS: Mr. Bohlken, in terms of the -- we will get into the nuts and bolts in a bit about the economic impact analysis, but in undertaking that analysis, Manitoba Hydro is using as an input the direct expenditures associated with on-site construction. Agreed?

MR. BOLHKEN: So, yeah, they would be using expenditures for construction, if you are looking -- if we are talking about construction economic impacts.

MR. WILLIAMS: Exactly. And if you need a reference, sir, it would be in your Economic Impact Paper V, but we can work through it without that.

Let's leave aside the cost inflation up to $450 million for a second; let's just start with that $350 million. For the purposes of your economic analysis, it was estimated that direct

project expenditures for materials and services during construction phase were estimated to be about $211.8 million. Agreed? That's in 2014 dollars?

MR. BOHLKEN: What page are we referring to? So that we can just ...

MR. WILLIAMS: Sir, if you go to your economic impact analysis, Roman numeral five, it would certainly appear on that page.

MR. BOLHKEN: Bear with us. We are going to look at that.

MR. WILLIAMS: Just so you are clear what I'm suggesting to you, we are not looking at the 450 yet; we are focusing on the 350.

MR. BOLHKEN: Right. And we've already agreed --

MR. WILLIAMS: Well, we will take a look. But we are talking about the breakdown of expenditures.

MR. WILLIAMS: Exactly. And I'm looking at the direct expenditures related to construction, because that's what you put into your input/output model. Correct?

MR. BOLHKEN: That's what would have been put into the input/output model, yes.

MR. WILLIAMS: Are we still waiting for someone to join you, or ... ?

MS. BRATLAND: We are just waiting for the reference document. You're welcome to continue with your questions until we get it.

THE CHAIRMAN: Serge Scrafield, the Chair.

Just by way of explanation, Mr. Williams, I have asked -- to keep us moving, I've asked if Hydro, when it takes longer to produce an answer, if we could move on with the questions; and then when the answer's ready, they will bring it, and then you are free to go back to it, of course.

MR. WILLIAMS: I am always happy to do that, sir. I would have expected these were pretty straightforward answers, and there is a logic to the --

THE CHAIRMAN: Fine.

MR. WILLIAMS: So I will be mindful of that advice, but if we could -- I see they have the document near them, so if we could ...

THE CHAIRMAN: I assume they are close to finding it?

MS. BRATLAND: Just finding the

correct page.

You said it was Roman numeral five?

MR. WILLIAMS: If you look towards the second-last paragraph in Roman numeral five, Mr. Bohlken.

Do you have that, sir?

MR. BOLHKEN: Okay. So for clarity, I think we are talking about the third paragraph, Roman numeral five. And in here, the economic impact assessment was based on the direct expenditures; it is not including expenditures to date. It doesn't include interest or some other items which would make up the $350 million.

I think that's what is stated in that paragraph.

MR. WILLIAMS: So let's just back up for a second.

So of the 350 million, roughly 211.8 million are associated with direct project expenditures. Agreed? For construction.

MR. BOLHKEN: 211.8 million are on-site construction costs.

MR. WILLIAMS: Exactly. And that's what goes into your input/output analysis. Agreed?

MR. BOLHKEN: That's correct.

MR. WILLIAMS: And of the remainder, roughly 138 million, sir, that's associated with costs such as interest and escalation, contingency, and planning and design. Agreed?

MR. BOLHKEN: Well, some of those items are mentioned in the bottom of the paragraph. I don't believe it states "contingency", although that could be a category.

MR. WILLIAMS: I'm confident it is, but we will move on; it is not material.

So just, sir, recognizing what appears to be a 20 per cent cost overrun with the project, as compared to the $350 million estimate, have you done any subsequent analysis in terms of the direct project expenditures for materials and services during construction?

MR. BOLHKEN: No.

MR. WILLIAMS: So that analysis wasn't undertaken?

MR. BOLHKEN: That's correct.

MR. WILLIAMS: Okay. Let's go to the economic impact analysis, which you will agree with me, sir, is canvassed extensively both in the impact -- economic impact paper as well as

chapter 14 of your -- of the Hydro EIS filing?

MR. BOLHKEN: That's correct.

MR. WILLIAMS: And if we are thinking big picture in terms of economic impact analysis, one of the objectives is to achieve an estimate of the total employment impacts of the project. Agreed?

MR. BOLHKEN: That would be one of the outputs of the Manitoba Bureau of Statistics, the input/output model which was used.

MR. WILLIAMS: And that would give us a sense to the employment impacts both in Manitoba and the rest Canada. Correct?

MR. BOLHKEN: Yeah, that's right.

MR. WILLIAMS: And another output of the model would be an estimate of the total gross domestic product associated with the project expenditure. Agreed?

MR. BOLHKEN: That's correct.

MR. WILLIAMS: And others would be tax revenue impacts and labour income. Correct?

MR. BOLHKEN: Also correct.

MR. WILLIAMS: So what you are trying to do is estimate the impacts of construction and operation of the project, estimating both direct

expenditures that would be made within Canada and Manitoba as well as the secondary impacts from those expenditures?

MR. BOLHKEN: That's right. The way that an input/output model works is that it takes statistical information, and it produces, based on -- again, basically a statistical breakdown of the economy. It will estimate direct effects, which is the actual expenditures, broken down by those expenditure categories; it also estimates indirect effects, which are effects from suppliers to the -- you know, the primary expenditures, and also induced effects. Induced effects are the effects related to household consumption associated with employment income.

MR. WILLIAMS: Thank you.

And you mentioned already that the model employed is the Manitoba Bureau of Statistics input/output model. Agreed?

MR. BOLHKEN: Yes.

MR. WILLIAMS: And basically that model is based on statistical information about the flow of goods and services among various sectors of the economy. Correct?

MR. BOLHKEN: Correct.

MR. WILLIAMS: It allows you to trace the demand placed on one industry resulting from increased activity in another. Agreed?

MR. BOLHKEN: Yes.

I wouldn't say "demand", really. I would say -- because it's not -- sorry, I want to clarify my answer.

It is not -- it is not deriving demand. What it is doing is deriving the economic impact of the expenditure.

MR. WILLIAMS: So in essence, you're looking in this case at the injection of funds into the transmission project?

MR. BOLHKEN: Well, it is called an economic -- yeah, it would be an exogenous input into the economy.

MR. WILLIAMS: Yeah, and that exogenous input is the direct construction expenditure and how that feeds into the overall implications for goods and services in the economy. Correct?

MR. BOLHKEN: Well, I'm not sure that "implications", again, is the right term. But it does produce the economic impact based on those parameters that you just identified.

MR. WILLIAMS: Okay, thanks.

In terms of the data, the exogenous data that you fed into the model, sir, one element of that would be an estimate of the number of person-years of employment expressed in full-time job equivalents. Agreed?

MR. BOLHKEN: Those would be outputs of the model.

MR. WILLIAMS: Outputs; okay. And other outputs would include the income earned by workers as a result of the project? That would be another one?

MR. BOLHKEN: That's correct.

MR. WILLIAMS: Now, we shared with you, prior to this examination, an excerpt from the transcript, sir, from the opening statement of Manitoba Hydro on or about May 8th.

Sir, that was shared with you?

MR. BOLHKEN: Yes. I have it in front of me.

MR. WILLIAMS: Just for the panel's reference, it is transcript page 25, lines 12 to 18. My friend -- my learned friend, Mr. Bedford.

And without going into the

line-by-line repetition of that, Mr. Bohlken, you will agree with me that Mr. Bedford was outlining here the challenging times at Manitoba Hydro, including job eliminations, challenges in managing the costs of projects underway, and also having to ask for significant rate increases.

Ms. Bratland, you were there for that; you are familiar with that testimony?

MS. BRATLAND: Yes, we were here for that moment. Mr. Bedford as well.

MR. WILLIAMS: Sorry, and I withdraw the word "testimony", although it kind of sounded like it. I will -- I believe my learned friend was asking the panel to take judicial notice of the reality.

And Ms. Bratland, as an employee of Manitoba Hydro, without meaning to dig into details, you are aware that it is up to 900 positions that are estimated to be lost?

MS. BRATLAND: I am aware.

MR. WILLIAMS: And in terms of rate increases, you are aware the corporation has indicated that it intends to seek 7.9 per cent annual rate increases for each of the next five years?

MS. BRATLAND: I'm aware we have an application that has been submitted. I'm not fully aware of the details of the application.

MR. WILLIAMS: You are aware that the corporation has asked for very significant rate increases, and had projected significant rate increases out five years. Correct?

MS. BRATLAND: I'm aware that they are rate increases.

MR. WILLIAMS: Mr. Bohlken, just in terms of your input/output analysis, it would not have addressed or considered the impact, if any, of higher Hydro rates on Provincial gross domestic product?

MR. BOHLKEN: No.

MR. WILLIAMS: And again, not in any way intending to be pejorative about your analysis, you simply looked at the injection of funds into the transmission line and how those feed into goods and services in the economy using the Bureau of Statistics model?

MR. BOLHKEN: Yes, that's correct.

MR. WILLIAMS: And, sir, if memory serves me right, when you earned your master's degree in natural resources management at Simon

Fraser, you had a specialization in energy economics. Correct?

MR. BOLHKEN: Yes, that's correct.

MR. WILLIAMS: And without stressing to too much degree either your expertise or mine, you would agree that standard or neoclassical economic theory would suggest that all other things being equal, price increases would tend to dampen demand for a commodity?

MR. BOLHKEN: Well, that was the conclusion of Adam Smith.

MR. WILLIAMS: And Mr. Smith, being a pretty smart fellow, would have also suggested, as would modern neoclassical economic theory, that dramatically higher prices, in the rate-shock range, over a extended five-year period, would tend to have a sharper impact on consumption of a commodity. Agreed?

MR. BOLHKEN: That would depend on the price elasticity of the commodity in question.

MR. WILLIAMS: All of that being said, sir, if there are higher rate increases, and over an extended period of time, we would expect a price demand response. Agreed?

MR. BOLHKEN: Again, this is really

out of scope of the economic assessment that was undertaken for the project, so -- and again, it really depends, as I mentioned, on the specific commodity that we are talking about, the price elasticities and so forth. It is not a simple answer that I can give you.

MR. WILLIAMS: Sir, your point being that the assessment itself didn't look at the chilling or dampening effect on the economy of price increases?

MR. BOLHKEN: That's correct.

MR. WILLIAMS: Thank you, Mr. Chair, and members of the panel. I have no further questions.

THE CHAIRMAN: Does that conclude the questions for CAC?

MR. WILLIAMS: Yes, it does.

THE CHAIRMAN: I believe now, just before you start, there was a switch between the Consumers' Association -- I've got this right -- and the MMF. So that's all been -- that's all happened. So then we are on to -- yes, Southeast Stakeholders Coalition.

Mr. Toyne.

MR. TOYNE: Thank you, Mr. Chair.

Mr. Toyne for the Coalition. And I apologize in advance if I'm not quite as entertaining as the friend of mine that just concluded his questioning.

All right. So I've tried to organize my questions in the order of the different presentations that were done.

So, Mr. Bohlken, I apologize; I will come back and forth to you a couple of times. But I promise, no questions about Adam Smith.

So we can start off with your land and resource use presentation.

So when you were talking about the content of your Slide Number 12, that's the one that talks about development potential -- that's the one. Yep, that's the one there.

You had made a comment, and I made a note of it, and I didn't think to check the transcript, but at least my note indicates that you said that one thing that could impact development potential would be a loss of interest in buying properties near the proposed right-of-way. And I'm wondering if you could talk about -- at least, based on your knowledge and experience -- what would cause that loss of

interest.

MR. BOLHKEN: From a development potential, it could be that if there was a potential for -- for example, you wanted to build a larger subdivision, and you didn't want it to be transected by, for example, a transmission line, that might be a factor in your consideration.

MR. TOYNE: All right. So it would be more an issue of larger -- sort of property developers buying large plots of land to turn into subdivisions that would lose interest, as opposed to individual home buyers?

MR. BOLHKEN: Right. This topic is development potential, so that's the context that we were using it in.

MR. TOYNE: All right. But you would agree with me that individual home buyers may also lose interest in buying properties near a right-of-way for a hydro transmission line?

MR. BOLHKEN: I couldn't tell you, honestly. I don't have information to support an answer on that one.

MR. TOYNE: If you could go to the second set of the slides that you had, the ones with the different maps and the geospatial data on

them. And if you could go to Slide 14, this is the one about productive forest land.

All right. So I've got two questions about this. The first is, could you provide a little bit more detail about what exactly productive forest land means in this context?

And then there is a particular spot on the map I'm going to ask you a question about.

MR. BOLHKEN: Okay, just a second.

On the first question, we are going to -- we are just going to do a little bit of digging to make sure we get a clear answer as to what is being specifically referred as productive forest land, combination of, say, private and Crown. We just want to get accurate and then answer.

MR. TOYNE: All right. So while someone is digging that up, the part of the map I want to ask you a question about -- and we'll see how well I can do describing it.

Right -- so it looks like there is one of those purple boxes just to the east of the Watson Davidson Wildlife Management Area. So it would be sort of -- yeah, that one right there.

So the map isn't at quite the right

scale to show exactly where it is, but can you confirm that that particular box there represents productive forest lands -- whatever that phrase may mean -- immediately to the east of that particular wildlife management area?

MS. BRATLAND: I think that's going to fall into the same category as -- we will look that up and confirm for you.

MR. BOLHKEN: We should have a larger-scale map that we can look at, so we will be able to answer that question once we've opened that up.

MR. TOYNE: If it turns out that's one of the maps that's already in the EIS, I'm very sorry. But why don't we move on.

So maybe I will give Mr. Bohlken and his back-row colleagues a break and ask a couple of questions about the agriculture part of the presentation of Mr. Whetter.

Sir, one of the items that you talked about was a buffer around hog barn operations. And this one I did go back and check, and the transcript discloses that you had made reference to a -- was it a -- a three-mile buffer from hog barns?

And I just wanted to confirm what the precise buffer is, because typically, A, we have been using the metric system; but also, just given some of the maps I've seen, I would be surprised if it was a three-kilometre or a three-mile buffer.

MR. WHETTER: No, the reference you mention is correct. It was a three-mile buffer that was applied to hog operations as part the alternate route evaluation model. Miles are often used as the distance measurement standard in agriculture, hence that reference.

MR. TOYNE: All right. Do you know if a similar buffer to that was used in the Bipole III project? I don't recall if you actually said that you were involved in that, so you may not know the answer.

MR. WHETTER: No, I wasn't involved in --

MR. TOYNE: Okay.

MR. WHETTER: -- the Bipole III, so I can't comment on that. I should just add that that three-mile buffer was applied to hog operations related to liquid manure application by dragline.

MR. TOYNE: Right. And was the three-mile buffer with respect to all different types of hog barns, or was it just, say, for finishing, or other ones along the production cycle?

MR. WHETTER: The three-mile buffer was applied to any hog operations identified by Manitoba Pork, which is the agency whose data we relied upon for that criteria.

MR. TOYNE: And were buffers used for any type of animal operations, say cattle, chickens, anything else, to your knowledge?

MR. WHETTER: Are we still speaking about the alternate route evaluation model?

MR. TOYNE: If that's what you were referring to during your presentation, then yes.

MR. WHETTER: I guess the -- all livestock operations were considered under the alternate route evaluation model, if that's what we are speaking about. They were included under the buildings layer, and I would have to confer on that buffer on those.

MR. TOYNE: Okay.

And then when you were talking about -- or when you were referring to Slide 25 in

your presentation, and Slide 26, this is conflict and mitigation with respect to livestock health.

There was reference made to stray voltage effects on dairy cows, and a reference to ongoing engagement with producers. Can you provide a little bit more detail about the ongoing engagement with producers about stray voltage concerns?

MS. BRATLAND: I think I would be better suited to answer that question, as I'm involved in this ongoing engagement.

The concern around stray voltage is something that we hear quite often from dairy producers, and we work with them to understand what those concerns are, and can help work with them to study what the sources of that stray voltage would be, and provide advice on how to correct that.

So it is an individual engagement with landowners, based on what specific concerns they may have.

MR. TOYNE: All right. And the corrective steps that can be taken to address that, are those steps taken by Hydro? Or are those steps that are then taken by the landowners

themselves?

MS. BRATLAND: It really depends on what is causing the issue. Generally, stray voltage or tingle voltage isn't caused by a high-voltage transmission line; it is usually related to grounding in the barn itself.

So Manitoba Hydro can work with the producer to understand what the issue is, and if it is something related to a Manitoba Hydro piece of infrastructure or faulty equipment, we would certainly rectify that.

MR. TOYNE: All right. Just so I'm clear, the protocol is, if a cattle operation has concerns about stray voltage, they will raise those concerns with Manitoba Hydro; Manitoba Hydro will work with them to try to identify the source of the concern and to try to identify corrective steps that can be taken to address the concern?

MS. BRATLAND: Yes.

MR. TOYNE: And if those corrective steps require Hydro to take action, I take it, then, Hydro will consider what actions can be taken within some range of appropriateness and cost?

MS. BRATLAND: Yes.

MR. TOYNE: Okay.

So I have a question on visual quality for Mr. Bohlken.

Do you have a update on the forest questions yet, before we ask about visual quality?

MR. BOLHKEN: Yes. So you asked what the green polygons were in the map that we showed, and these are productive forest lands in Forest Management Units 1 and 24.

MR. TOYNE: All right. Can we bring that map back up, if that's possible, whoever is controlling the maps? It was Slide 14, I think.

MR. BOLHKEN: We might be able to do better than that. The map that the PowerPoint figure came out from, that was map series 16-100. Map 16-104 zooms into the area of interest that you've ...

MR. TOYNE: All right. So the green areas are productive forest land. Is that forest land that is capable of being used for commercial purposes, or land that is actually being used for commercial purposes?

MR. BOLHKEN: So it would be capable of being used for forestry purposes.

MR. TOYNE: Do you know what extent

the green area that's to the east of the Watson Davidson Wildlife Management Area is actually being used for commercial forestry purposes? Or is that something that the next panel can answer?

MR. BOLHKEN: I think this is the right panel, but we do not have that information. So if that is being sought, we would have to have an undertaking to try to find that information, if it is available.

MR. TOYNE: Do you know if that type of information is generally available? I don't like asking people to agree to get an answer that may not be possible to get; it is wasteful.

MR. BOLHKEN: Yeah, I think we might be able to provide partial information, but I think it would be better if, again, if we took that as an undertaking so that we could get that information back to you.

(UNDERTAKING # MH-7: Advise if east of the Watson Davidson Wildlife Management Area is being used for commercial forestry purposes)

MR. TOYNE: If you are going to offer to do it, I won't say no.

MR. BOLHKEN: It is not a -- because you are asking for a specific area, so we don't

have that, you know, at hand.

MR. TOYNE: Okay.

MS. BRATLAND: Just give us two seconds; I will see ...

MR. TOYNE: Yep. Sure.

MR. BOLHKEN: Okay. So the purple boxes, the purple polygons that we are seeing on the -- well, both screens here, those are timber sales under the 2010-to-2015 timber sales plan.

MR. TOYNE: All right. And I take it, then, that what those boxes represent are areas where commercial forestry neither has, is, or can occur?

MR. BOLHKEN: That's correct.

MR. TOYNE: All right. And on the right-hand screen, the purple box that's visible in the upper left-hand corner of the map, that's immediately adjacent to the eastern boundary of the Watson Davidson Wildlife Management Area?

MR. BOLHKEN: Okay. Yeah, I see that one, right beside -- yep.

MR. TOYNE: All right.

You know what, I've got another question or two about that particular area, but I think they relate to other aspects of the

presentation, so I will come back to that, sir.

MR. BOLHKEN: Okay.

MR. TOYNE: So just to go back to the visual quality part of the presentation, we've heard a little bit of talk about coronas, and I'm wondering if there is any visual impact if a -- and I'm not sure if it is the line that goes corona, or the tower that goes corona, but if that happens, is there any visual impact that you are aware of?

MR. BOLHKEN: I'm not aware of any corona impact. But also I'm not informed on whether there may or may not be.

MR. TOYNE: All right. So if there is, it is not something that you took into account in the visual quality aspect of your analysis?

MR. BOLHKEN: That's correct.

MR. TOYNE: Okay.

Does anyone else on the panel know if there is a visual aspect of corona?

MS. BRATLAND: No, we are not technical engineers.

MR. TOYNE: All right.

So now I've got a small number of questions for Dr. Leece.

Sir, in your presentation, you had -- just let me find it here.

Slide 31 on your presentation, sir, the one about ongoing engagement. Do you have that there?

MR. LEECE: Yes, I do.

MR. TOYNE: All right. So the second part of the slide -- and I don't know if anyone is able to pull it up, but the second part of the slide says:

"With respect to EMF, Manitoba Hydro will continue to monitor EMF studies and will make the information available to the public."

Now, the question I've got about this, sir, is: There was a reference in some of the materials to something called perceived health effects. You are familiar with that term?

MR. LEECE: Yes.

MR. TOYNE: All right. And one of the -- I'm going to suggest to you that one of the reasons why Manitoba Hydro is doing this is because of the perceived health effects of electromagnetic fields. Is that a fair statement?

MS. BRATLAND: I think I will answer that, speaking on behalf Manitoba Hydro.

The reason that we continue to study electromagnetic fields and provide information on that study is multifaceted. Part of it is the concerns that we hear from residents that live in and around, or work in around electromagnetic devices, such as transmission lines. Part of that is to maintain abreast on the science. And due-diligence stuff, as a utility.

MR. TOYNE: All right. And with respect to making the information available to the public from Manitoba Hydro's EMF study-monitoring activities, how is Hydro going to make that information available to the public?

MS. BRATLAND: We have various mechanisms in which we make it available. We make research available on our website, links to those sources of information, such as the World Health Organization and Health Canada. We also do individual communication with groups or individuals who are concerned. Hold public information sessions.

Really, in our adaptive ongoing engagement, we try to make it available in the most useful way possible.

MR. TOYNE: Is there any impediment,

either technical or financial, to Manitoba Hydro directly providing that information to individuals who reside along or near the right-of-way? Directly providing it to them?

MS. BRATLAND: Could you clarify what you mean by "directly providing"?

MR. TOYNE: Say, sending it to them by mail, by email, as opposed to some sort of an open house; actually -- the same type of contacts you are doing to -- say, for example, get easement agreements signed.

MS. BRATLAND: We certainly let individuals know what that material is, and we can certainly provide it directly, if it is requested.

MR. TOYNE: All right. So taking the question a little bit further, there would be no technical or financial impediment to Manitoba Hydro complying with a licence condition that would require information about the ongoing monitoring of the EMF studies being directly provided to landowners along or near the right-of-way?

MS. BRATLAND: If Manitoba Hydro is directed to do so, we would certainly carry it out.

MR. TOYNE: So if I can go back to Dr. Leece.

So the perceived health effects with respect to EMFs, the reason they are called "perceived health effects" is because they are inconsistent with the scientific consensus on the safety of EMFs. Is that a fair statement?

MR. LEECE: I think they are called "perceived risks" because, as Dr. Bailey made clear yesterday in his presentation, at this point there is no causal link between exposure to EMF and health effects. There is a perception that that link is there, and it is certainly being investigated, which is part of the ongoing studies that Ms. Bratland was talking about.

MR. TOYNE: Right. And earlier you had made reference to the precautionary principle. So, given the possibility that the current scientific consensus on EMFs may be similar to the scientific consensus that existed a number of decades ago that smoking doesn't cause lung cancer, shouldn't we be perhaps doing a little bit more to keep transmission lines further away from residences and people than we currently are?

MS. BRATLAND: Mr. Bailey's

presentation yesterday outlined extensive research that has been undertaken and has established that there is currently no causal link between health and the low-frequency electromagnetic fields associated with transmission lines of this nature.

Manitoba Hydro, and many utilities around the world, have developed transmission lines in populated areas for the purpose that they serve those populated areas, and there really is no need to take extra steps beyond the current design, and meeting the guidelines that exist that Mr. Bailey outlined.

MR. TOYNE: Right. I take your point. But if it turns out that this scientific consensus is similar to the one that supported statements like "Smoking is good for you", wouldn't the precautionary principle tell us that we should be putting these transmission lines further away from residences and people than we currently are?

MR. LEECE: I'm not aware of any scientific statements that have ever said smoking is good for you; I would be very interested to see them. There certainly were statements in the past that it is not a health problem; there has never been anything that said it is good for you.

MR. TOYNE: All right. So, with that proviso to the question that I asked, would you agree with me that the precautionary principle suggests that these lines should be further away from people and residences than they currently are?

MR. LEECE: No. I don't agree that that would in fact would be the case.

MR. TOYNE: So then the review and analysis that you've done doesn't take into account the possibility that the current scientific consensus may be wrong, and dramatically so?

MR. LEECE: The amount of evidence that's available now suggests that while it might change, there would not be a dramatic change in that interpretation.

So no, I don't agree with that.

MR. TOYNE: All right.

Is there any way to pull up that picture that Mr. Mills had referred to earlier? Or has it disappeared?

MS. BRATLAND: I will see if it is still in the computer.

MR. TOYNE: All right.

So just to build a little bit on the line of questioning, sir, that Mr. Mills had for you, so my understanding of your evidence was -- is that you didn't take the potential health risks of this type of scenario into account during your analysis. Is that a correct sort of understanding of what you said earlier?

MR. LEECE: The air quality assessment did not include an assessment of potential changes that related to slash burning. That's correct.

MR. TOYNE: And you would agree with me that individuals who are in the vicinity of slash burning could experience health impacts, whether short, medium, or long term?

MR. LEECE: Individuals in the close vicinity of this would be expected to experience short-term health effects if they were in very close proximity. But those would be short, and they would not be medium or long term.

MR. TOYNE: All right. To your knowledge, is there anything that's present in the vegetation along the part of the proposed right-of-way that would require or potentially require this type of clearing that could pose an additional health risk to an individual who is

exposed to these conditions?

MS. BRATLAND: Is that -- sorry, are you asking him what type of vegetation would be cleared, and whether the burning of that different type of vegetation could have an effect?

MR. TOYNE: That's not quite what I'm asking him. But that's what I will ask him now.

MS. BRATLAND: Then I will say that he is not the appropriate person to answer the specific types of vegetation that would be cleared, as he did not conduct the vegetation analysis of the right-of-way.

MR. TOYNE: Maybe a different way to ask it then, sir, is: To your knowledge, is there any particular type of vegetation that, when burned, can be particularly problematic from a human health perspective?

MR. LEECE: I'm not aware of any particular vegetation that would generate that kind of concern.

MR. TOYNE: Is that something that you've investigated or studied before?

MR. LEECE: Not in detail, but we certainly have looked at inhalation health risks associated with burning.

MR. TOYNE: And are there precautions that -- say, for example, the workers who would be involved in this would take to protect themselves from those short-term health risks?

MR. LEECE: That really is related to occupational health and and safety, which is not something that I was involved with.

MR. TOYNE: But just in general, are there precautions that someone can take to avoid the health impacts of being exposed to this type of smoke?

MR. LEECE: I think the simplest answer to that is, don't stand in the plume.

MR. TOYNE: What happens if the government doesn't give you that choice?

So, for example, the government allows Manitoba Hydro to expropriate your property, and this is what happens on the land that's been expropriated? You don't have that choice, do you, sir? So then what?

MS. BRATLAND: I think we are speaking in a hypothetical. I believe we've established that Manitoba Hydro, in ongoing communication with landowners, would be working with them to understand what steps and -- operational steps or

construction steps we are undertaking, and ensure that those are done in sensitivity to any specific concerns of the landowner.

MR. TOYNE: And, sir, you would agree with me that there are certain individuals that can be particularly sensitive to the health impacts of smoke like this?

MR. LEECE: In any population, there are variations in sensitivity to chemical exposures, yes. Right.

MR. TOYNE: And does Manitoba Hydro take any particular precautions to ensure that those individuals who may be particularly susceptible to this type of health risk get additional notice? There's extra precautions taken, anything like that?

MS. BRATLAND: As I just noted if we are aware of any additional sensitivity to someone in proximity to one of these activities, we would certainly seek to undertake our activities with due sensitivity to that.

MR. TOYNE: Is that something that Manitoba Hydro actively seeks out? You know, for example, all of the time and effort you put into, say, getting easement agreements, do you put that

same time and effort into finding out how many people along the proposed right-of-way may have respiratory issues? Or is this something where they have to come to you to make sure that you don't harm them?

MS. BRATLAND: We are working actively through our ongoing engagement program, and with the efforts of our dedicated liaisons, to understand all of the interests and concerns of our landowners that are traversed by this project.

So I would say that we are actively engaged in relationships to understand any concern that they might bring forward.

MR. TOYNE: So the liaisons, like Mr. Joyal, they are informing landowners along the route that they may be exposed to situations like this, so that they can then disclose to you what their health issues might be?

MS. BRATLAND: The liaisons are engaged with conversations with landowners to help them keep abreast in terms of where the project is at, which includes the regulatory process; and as we move into the construction period, it will include steps that we are undertaking for construction.

Those liaisons have the opportunity, through those discussions, to identify any sensitivities or specific concerns related to the land holdings or the people using those land holdings.

MR. TOYNE: So maybe another way to ask it is: Risks like this aren't disclosed to landowners when you are trying to get them to sign easement agreements, but they are disclosed after you have already got the right to do something like this in close proximity to their homes?

MS. BRATLAND: Manitoba Hydro seeks to openly share information about the project with all interested individuals, including landowners. Project activities are characterized to the best of our ability. We answer any questions that are brought forward, and try to help and work with landowners to understand the activities that will be undertaken on the project and in proximity to them.

MR. TOYNE: Of the 126 landowners that have private holdings on the current proposed right-of-way, how many have been informed by these project liaisons that they may be exposed to smoke from slash burning like this in close proximity to

their residences?

MS. BRATLAND: I'm not privy to the specific details of all the conversations that have been held.

MR. TOYNE: Right. I'm going to suggest to you that even if you were, the answer is zero. Do you agree?

MS. BRATLAND: No, I do not, because I do not know.

MR. TOYNE: And would you agree with me that if Manitoba Hydro was disclosing the -- a prospect of this type of activity in the vicinity of people's homes, the number of people that were signing easement agreements would be significantly less than it is right now?

MS. BRATLAND: I would like to correct the premise of part of your statement. You are assuming that this specific activity will be occurring close to people's homes, and I believe we've established that it would not.

MR. TOYNE: So back to Mr. Bohlken for a minute or two.

During your community health presentation, you had talked about -- on Slide 13, if we can pull that up.

You had talked a bit about the impact that the -- impacts that projects like this can have on Crown land, can have impacts on traditional land users. Is there a metric that's available to measure these impacts, so that for example, for every hectare of land that's affected or every hectare of land that's cleared for the right-of-way, that there is a measurable impact? Or is it something that's really site-specific and difficult to measure, in the way that I initially described?

MR. BOLHKEN: So the metric that we used was the area of clearing. I would suggest that that's a conservative metric, because that's again assuming that that area is going to be affected for harvesting activities, which may or may not be the case.

MR. TOYNE: Is there a way to measure the impact based on the area that's going to be cleared? Or does it really depend on the actual specific area itself that's being cleared?

MR. BOLHKEN: We can provide a broader context tomorrow in --

MR. TOYNE: Okay.

MR. BOLHKEN: -- our presentation

on --

MR. TOYNE: All right.

MR. BOLHKEN: -- traditional land resource use.

MR. TOYNE: I will ask them.

Just one final series of questions, Mr. Chair, to take us into the break.

So last, and definitely not least, some questions for Mr. McLeod.

So, sir, you had talked about the Centennial Farm during your presentation?

MR. MCLEOD: That is correct.

MR. TOYNE: And that's what I've referred to earlier in these proceedings as the Fournier farm, named after the family that owns it.

MR. MCLEOD: Correct.

MR. TOYNE: Just so my series of questions is in perspective, you will agree with me, sitting here today, that the Fournier farm is a Centennial Farm?

MR. MCLEOD: That is correct.

MR. TOYNE: You will also agree with me that from at least April 2016 until mid-April 2017, Manitoba Hydro took the position that it was

not a Centennial Farm?

MR. MCLEOD: They came back to me with that question. I went to my original database, and I've already said that that data point was missing. So that is the answer that I supplied back to Manitoba Hydro.

MR. TOYNE: All right. I want to unpack that a little bit.

So you were the one who was originally responsible for reviewing that data from the Province and saying that the Fournier farm was not a Centennial Farm?

MR. MCLEOD: I was the one that was analyzing the data I received, and since it wasn't in that data package, that was what my answer was based on.

MR. TOYNE: Okay. So the data package you received from the Province does not include the Fournier farm as a Centennial Farm?

MR. MCLEOD: At that point in time, yes.

MR. TOYNE: And that was sometime in 2014, 2015, when you received that information? 2016?

MR. MCLEOD: 2014 is when I began

amassing the database.

MR. TOYNE: Okay. And then at some point after you began working with that database, it came to Manitoba Hydro's attention that the Fourniers were saying that it was a Centennial Farm?

MR. MCLEOD: That is correct.

MR. TOYNE: And were you immediately informed of that?

MR. MCLEOD: They informed me that there was a question about whether that was a Centennial Farm. So yes, I was informed.

MR. TOYNE: All right. And do you remember approximately when that was?

MR. MCLEOD: That would be -- I would have to defer to Ms. Bratland, who was in on the original consultation.

MS. BRATLAND: I can get back to you with a specific date, but I was involved in that discussion myself.

MR. TOYNE: All right.

So there was a document that is referenced in SSC IR 217, and it looks like it is an earlier form of IR, from The Ministry of Conservation and Water Stewardship, from late

April 2016. Is that the time frame that we are talking here?

MR. MCLEOD: Could you give that IR reference again, please?

MR. TOYNE: So the IR reference in this proceeding is Coalition IR 217, and it refers to an earlier document that's posted -- I think on the public registry -- from late April 2016 about the Fournier farm.

MS. BRATLAND: Mr. Toyne, are you following up on your question to me about timing? Because I will get back to you with the time that we heard about the Centennial Farm. The IR that you are referring to, MCWSMHI-007?

MR. TOYNE: Yes.

MS. BRATLAND: So that would have been filed on April 29, 2016?

MR. TOYNE: Yes.

So while we wait to hear back from Ms. Bratland on her information, I will keep asking Mr. McLeod about his.

Sir, does that help refresh your memory on when you became aware that there was an issue with the Fournier farm's characterization?

MR. MCLEOD: That is correct.

MR. TOYNE: Okay. So when you were told that there was an issue with how that farm had been characterized, what did you do?

MR. MCLEOD: I went back to my original data set, as I had mentioned, to see if I had missed it in that data set. So I re-examined the data set. It wasn't there.

MR. TOYNE: All right. And then I take it, after you went back and looked at the data set, you reached out to the family to get their information?

MR. MCLEOD: I initially went back to Manitoba Hydro, because they were doing a consultation to check to see if maybe it wasn't a Century Farm. But then the response was no, it is a Centennial Farm.

MR. TOYNE: That was Manitoba Hydro's response? Or that was the family's response, relayed to you by Manitoba Hydro?

MS. BRATLAND: In my conversation with the family, they indicated that they had documentation indicating that it was a Centennial Farm. Our subsequent steps were to make it known to the person who undertook that assessment. So we went back to the data source, clarified that

there was a data point missing, and we confirmed that as per what the Fourniers indicated was the status of their farm, that it is indeed a Centennial Farm.

MR. TOYNE: I understand that you've just described a process that took Manitoba Hydro a year. What I'm trying to do is find out when during that year these different steps occurred.

MS. BRATLAND: I didn't indicate that that process took a year. We had -- I had a meeting with the Fourniers in early 2016.

MR. TOYNE: All right. At what point did Manitoba Hydro officially confirm or acknowledge that this particular property was a Centennial Farm?

MS. BRATLAND: I don't want to say that I didn't acknowledge, because when the Fourniers showed me their paperwork and it clearly indicated it was a Centennial Farm, we acknowledged that there appeared to be a discrepancy with the data that we were provided by Heritage Resources Branch and what they were clearly indicating to us was the status of their land.

So we acknowledged it to them, in that

moment, and committed to follow up on that information. Then that was brought back to then investigate further, to make sure that the HRB data could accurately reflect the status of that farm, and to find out where that data anomaly happened.

MR. TOYNE: All right.

And, sir, you are aware that there is a publicly accessible list of Centennial Farms on the Internet?

MR. MCLEOD: Through the Manitoba Historical Society.

MR. TOYNE: Yes.

MR. MCLEOD: The Manitoba Historical Society sends that data to the Heritage -- Historic Resources Branch. The Historic Resources Branch then has a data point, so that's the information that I relied on from the Branch, to get a georeference point.

MR. TOYNE: Right. So the Historical Society gives data to the Province; the Province gives data to you. Somewhere between the Historical Society giving it to the Province and you getting it from the Province, that data point goes missing, gets deleted, something happens to

it, and you don't get it?

MR. MCLEOD: That is correct.

MR. TOYNE: And when this issue first came up -- whenever it was, 2015, 2016 -- you would agree with me that it would have been relatively easy for you to check that list on the Historical Society's website?

MR. MCLEOD: I went back to my original data set that I had acquired from the Historic Resources Branch.

MR. TOYNE: Right. You've already said that. The question I asked was a little bit different.

It would have been easy for you to go and check the publicly available list on the Historical Society's website?

MR. MCLEOD: Yes.

MR. TOYNE: All right. And that's something that you did not do?

MR. MCLEOD: That is correct, because I was again relying on the georeference data.

MR. TOYNE: Now, this is a slightly broader question. But if a concern or a question is raised about some of the data that you've been provided with, and particularly that some of the

data may not be accurate, is it standard practice for you to simply go back and look at the data, without doing any other verification? Or in the normal course, do you take steps to try to verify what the issue might be with other sources?

MR. MCLEOD: I generally go back to my original data set and re-examine it.

MR. TOYNE: All right. So if someone tells you that there is an issue with your data set, the way that you check to see if there is an issue is to look at your data set?

MR. MCLEOD: If someone tells me that there is the potential for something missing, yes, I do go back to the original data set.

MR. TOYNE: Now, the Centennial Farm designation, that's for the building and for the property that's farmed; correct?

MR. MCLEOD: It was explained to me by Historic Resources is they make a point in the centre of the buildings, and that is the reference point.

MR. TOYNE: Interesting. I will ask my question again: So the Centennial Farm designation, that's the buildings and the land. Correct?

MR. MCLEOD: No, it is just a point on the map where the buildings are located. I have no control over how they mark where it is. So I'm as much at sea on how that is determined as you.

MR. TOYNE: So your understanding is that what this designation is is a dot on a map?

MR. MCLEOD: Actually, if we want to get technical, it is really not a designation. A designated site is something that's legally protected under the Heritage Resources Act.

MR. TOYNE: Right. And given what we know about the right-of-way, this site is definitely not protected. So what I'm trying to establish is whether or not, if something is a Centennial Farm, if it is just the buildings, or if it is the buildings and the land. And from what you are telling me is you don't know.

MR. MCLEOD: That is correct.

MR. TOYNE: Okay.

MR. MCLEOD: I should point out, just to -- not to flog a dead horse here, but to point out that our assessment recognized change to the number of heritage sites. That Centennial Farm will remain a Centennial Farm. If this project is approved, and the final preferred route goes

through, it will still be a Centennial Farm.

MR. TOYNE: Right. No, I understand that point.

So there's some statements in the EIS that relate to the absence of Centennial Farms along the proposed right-of-way. Are you familiar with those statements? Were you the author of them?

MR. MCLEOD: Is this in chapter 12?

MR. TOYNE: Yes, there is one in chapter 6 and there is one in chapter 12. They both say basically the same thing, that there is no Centennial Farms within the proposed right-of-way or the local assessment area.

MR. MCLEOD: That is correct. That is true.

MR. TOYNE: And this goes back to the question I had. So this particular location, the Fournier Centennial Farm, the farm buildings themselves, you will agree with me, are just to the west of the local assessment area for the right-of-way?

MR. MCLEOD: Correct. They are outside or west of the local assessment area.

MR. TOYNE: Right. But the actual --

but some of the actual farm property of the Fournier Centennial Farm does fall within the local assessment area?

MR. MCLEOD: Not according to the way the data was presented to me by Historic Resources Branch, in terms of how they look at where that data point is.

MR. TOYNE: Right. So I take your point that the information you were provided with, there is some sort of a dot in the middle of the buildings that tells you where this property might be. But I'm asking you, in the real world, the buildings are just outside the local assessment area, but the land that's being farmed on that Centennial Farm is within the local assessment area. Correct?

MR. MCLEOD: The land that is being farmed, yes. And I also said in my presentation for mitigation, if there is a tower that is going to be placed on that property, it can be examined to make sure that there is no heritage resources relating to that Fournier farm present.

MR. TOYNE: Right. So the statement in section 12.4 of the EIS is that no Centennial Farms are located within the existing corridor,

and the final preferred route PDA or local assessment area. So, sir, given that some of the Centennial Farm property falls squarely within the local assessment area, you'd agree with me that that statement is just not true?

MR. MCLEOD: No, I would disagree, based on how the Historic Resources Branch deals with the data that the Manitoba Historical Society forwards to them, and how that data is in turn sent to archeologists.

MR. TOYNE: Mr. Whetter, given your extensive experience with agriculture, is a farm just buildings, or does a farm also include land?

MR. WHETTER: I guess we don't have a definition, to begin with, of a farm, per se. We define, in the agricultural value component, things like livestock operations.

Farmyard -- or a farm consists of different components, generally speaking. A typical farm in Southern Manitoba would consist of buildings -- you know, that will be buildings to support the farming operation. And depending on the type of operation, there may be additional land associated with that operation for things like cropping. It could be additional land for

things like supporting a livestock operation. In some cases, there is a residence associated with that farming operation; in other cases not.

MR. TOYNE: All right. So it is fair to say that for all farms in Manitoba that you are familiar with, they consist of land and buildings? Or is that stating the proposition too generally?

MR. WHETTER: It is stating it fairly generally, I guess, even when you have -- to have a farming operation, there has to be something on the landscape. Even if you have a barn, there is land, I guess, technically, under that barn.

So I guess, in that regard, there is always land associated with a farming operation.

MR. TOYNE: All right. So back to you, Mr. McLeod.

Given Mr. Whetter's views that more often than not, farms tend to include land, would you agree with me that the statement "No Centennial farms are located within the existing corridor on the final preferred route, PDA, or LAA" -- that that statement, sir, is incorrect?

MR. MCLEOD: No, I'm still saying that's correct.

MR. TOYNE: All right. And the reason

you are saying it is correct is because the farm buildings are outside of the LAA?

MR. MCLEOD: That is correct.

MR. TOYNE: And I take it that if the farm buildings were inside the LAA, you would agree with me that that statement is incorrect?

MR. MCLEOD: If the farm buildings were inside, then yes, they would be inside the LAA.

MR. TOYNE: Now, for the rest of the analysis that you did, did you take this sort of narrow, technical, restrictive approach? Because if you did, it strikes me that a lot of the work that you did has really been undermined and not particularly useful. Or is this just the one time that you did this?

MS. BRATLAND: I think Mr. McLeod covered in a fair bit of detail in his presentation the nature of his analysis, the predictive modeling that was undertaken and the considerations that went into his analysis. So I believe that was plainly put forward.

MR. TOYNE: Right. So I'm not questioning the methodology; I'm questioning, I guess, the way different factors and impacts are

actually labeled and defined.

So were there any other aspects of your assessment where you applied such a technical, narrow, restrictive approach to define something, so that the obvious risks and effects and impacts are intentionally excluded from your analysis? Or again, was this just the one time you did that?

MR. MCLEOD: No.

MR. TOYNE: Okay.

And for the rest of the members on the panel, did any of you employ this sort of a narrow, restrictive, technical approach to intentionally exclude risks and impacts from your analysis, to make it seem like there is no impacts from this particular development? Or is this a one-off?

MS. BRATLAND: I believe the panel has established that a conservative approach was generally taken in our assessment, both in the consideration of risk and in the overall approach to assessment.

MR. TOYNE: Mr. McLeod, would you agree with me that the approach you took here, this narrow, technical, restrictive approach, that

that's representative of the rest of the work that you and the other Stantec consultants did?

MR. AMUNDSON: I would like to build on what my colleague has been saying. The effect of a project on a heritage resource is solely on the footprint of the disturbance of the ground. And so that's what our concerns are, is that objects, structures, and features don't get disturbed by the ground disturbance of any kind of project.

In the case of a transmission line, it would be the installation of a tower. And there is no towers being built outside the LAA.

MR. TOYNE: Well, I guess that depends on how you define "LAA", and "towers".

No further questions for this panel, Mr. Chair. Thank you.

THE CHAIRMAN: Thank you, Mr. Toyne. Thank you for the answers, panel.

Okay. Given my chart, all participants have had their opportunity to question, so thank you all.

So we are at 10 to 3:00. Normally we would break at 3:00. Is it more logical to break now and then start the next presentation?

MS. MAYOR: Yes, if there is no further questions from the Commission for this panel, we will dismiss them, and we'll bring up the biophysical panel right now.

THE CHAIRMAN: Okay.

So, I'm sorry, I should have gone to that first; we do have one question. Thanks for helping me with my job.

MR. GILLIES: This is Ian Gillies. I have a question just to kind of gauge the capacity of local health services to handle any demand created by the Manitoba-Minnesota Project.

Can you give us a rough estimate of how many health incidents were referred to local regional health authorities in the Bipole III project?

MR. BOLHKEN: That would require an undertaking, if you need to have that information. We don't have that at hand.

MR. GILLIES: Would you accept it as an undertaking?

MS. MAYOR: We will certainly make the inquiries and see if we can look at that information for you.

MR. GILLIES: Thank you.

(UNDERTAKING # MH-8: Provide a rough estimate of how many health incidents were referred to local regional health authorities in the Bipole III project)

THE CHAIRMAN: All right. Any more questions from the panel?

All right. We will reconvene at 10 after 3:00 with the next presentation. Thank you.

(Recessed at 2:55 p.m. to 3:10 p.m.)

THE CHAIRMAN: We'll move on to the next presentation from Manitoba Hydro. And according to my schedule, that should be the biophysical component.

I should add one more thing, and that is that we will go until 5:00 o'clock today. Thank you.

MS. JOHNSON: Could you please state your names for the record. I know, Ms. Coughlin, you've already been sworn in.

MS. COUGHLIN: My name is Sarah Coughlin.

MR. BLOCK: My name is Dave Block.

MR. DE CARLO: My name is Nick De Carlo.

MR. GAHBAUER: My name is Marcel

Gahbauer.

MR. AMUNDSON: My name is Leslie Butch Amundson.

(Biophysical Panel sworn)

MS. COUGHLIN: Hello.

So I notice, on our list of presentations, we are second-last on the list here, so I don't know if that's good news for some or sad for others, but today this panel is going to present the biophysical environment.

And joining me today on my panel is David Block. He is a fisheries biologist; he works for Manitoba Hydro.

We have Nick De Carlo. Nick is a senior vegetation ecologist, and he works for Stantec.

We have Marcel Gahbauer. He is a senior wildlife biologist and regional technical lead in wildlife and wildlife habitat at Stantec.

We have Butch Amundson. He is principal and technical lead of Aboriginal affairs and heritage resources at Stantec.

And myself. And in the back row, we have Leanne Weinberg, she is senior wildlife biologist at Stantec.

And Mike Shaw; he is a greenhouse gas analysis engineer at Manitoba Hydro.

And Kristina Koenig; she is the section head of hydrological and hydroclimate studies here at Manitoba Hydro.

So the biophysical team also includes a group of specialists who prepared reports on specific physical environment topics, including air, groundwater, noise, terrain, and soils.

The biophysical chapters drew upon information provided in self-directed studies prepared by Swan Lake, Long Plain, Black River, and Roseau River Anishinabe First Nations, and a draft report prepared by Peguis First Nation, as well as understandings shared during engagement activities.

So I would like to provide some context to the environment we are working within. The biophysical context is quite different, depending on where you are in the existing transmission corridor or the new right-of-way.

As the project leaves the Dorsey Station and extends through the RMs of Rosser and Headingley, and through the South Loop Transmission Corridor and the Riel-to-Vivian

Corridor, it traverses primarily developed agricultural lands.

Much of this portion of the project, or approximately 92 kilometres, will be located within an existing or planned transmission corridor.

So as the project extends south of the Anola area and traverses an area characterized by some hay land and rural residential land, and areas dotted with aspen stands. Then, as the project heads further south, it traverses more intact areas of forested lands, as well as peatland bogs closer to the U.S. border. So in fact, much of the forested landscape exists in the new right-of-way portion of the project.

Because of this varying landscape, wildlife habitat varies across the project region. So grasslands, pastures, and croplands provide staging areas for large numbers of waterfowl, gulls, shore birds, and cranes, during migration periods. And wetlands support a diversity and abundance of wildlife, including amphibians and water birds. The project also crosses 75 watercourses, including such rivers as the Assiniboine, LaSalle, the Red, the Seine, and the

Rat Rivers.

Overall, the southeast portion of the project area supports a greater concentration of undeveloped land, intact forest, and wetlands, supporting a variety of species which also support traditional and culturally important activities. Many of the biophysical effects that will be described today will be occurring in this area, due to these natural conditions.

This project is also located within Treaty 1 territory, and is in the traditional territories of the Anishinabe, Cree, and Dakota people, and is within the homeland of the Metis Nation. So there is historical and current day use of the area. And the southeast part of the province is understood to be important to First Nations and Dakota people and the Metis people, as it is one of the few remaining portions of Crown land in this part of the province.

One of the recommendations from the Bipole III CEC hearing panel report were concerns related to valued component selection. So a concern about both the type and the number of VCs, or valued components, was shared. So in this assessment, higher-level VCs were selected, such

as vegetation and wetlands, where ecosystem level metrics such as intactness and fragmentation could be considered.

Focal species included represent species of concern, and species that were particularly sensitive to linear developments, like transmission lines.

Manitoba Hydro has had recent experience building other projects recently in a very similar landscape type. So lessons learned and relationships formed from these experiences have helped in planning relevant, effective mitigation measures for MMTP.

And we are also lucky enough to have a similarly sized transmission line in relatively close proximity to the final preferred route, so this allowed us to set up field programs aimed at understanding how a right-of-way in this particular landscape may be used by local wildlife.

So, for example, we set up wildlife cameras along M602F and R49R to gather information about the abundance and distribution of white-tailed deer and black bear, and about other fur-bearers along the alternative route segments

and aerial track surveys, as well as bird mortality monitoring surveys.

So some of the key engagement feedback that we've received, and some of what you've heard in earlier presentations during this hearing, is that everything is connected. And we've heard that phrased in different ways throughout this hearing.

As you move further east, there is more potential for heritage and cultural impacts. There are few areas to practice traditional use in Southern Manitoba, and there is value to fish and wildlife and the habitat that supports them. And that's been expressed substantially in self-directed studies that we have received for this project.

So the nature of the route is such that the areas of traditional importance to First Nations located around the Marchand area are avoided. Tall-grass and mixed-grass prairie are avoided; grouse leks and the Vita elk herd core are essentially avoided.

Some key mitigation measures that are relevant to this panel. So detailed mitigation measures will be shared by each discipline lead,

but overall, key measures include routing, so by making use of 92 kilometres of existing -- Manitoba Hydro existing transmission corridor, effects to the biophysical environment are reduced.

Construction in sensitive areas, such as wetlands and stream crossings, will be done in frozen-ground conditions, when there is less potential for rutting and many species have migrated south.

Existing access will be used wherever possible. There is also going to be a detailed environmental protection plan created, which will map environmentally sensitive sites and have information describing buffers around sensitive areas, and a closely managed access management plan.

So, the value components discussed today include fish and fish habitat, vegetation and wetlands, wildlife and wildlife habitat, traditional lands and resource use.

Fish and fish habitat was selected as a valued component, as fish play a fundamental role in the functioning ecosystem, and are a key indicator of aquatic health. Fish are

economically and recreationally important to Manitobans, and are valued by First Nations and Metis and the Dakota people.

Vegetation and wetlands was selected as a VC, as vegetation is important to a natural functioning ecosystem, and vegetation and wetlands help maintain biodiversity, provide wildlife habitat, and support a variety of human activities, from recreational to medicinal.

Wildlife and wildlife habitat are a critical part of a functioning ecosystem as well. Wildlife plays a vital role in ecological and biological processes, and are indicators of a healthy ecosystem, as key biological processes must be in place for some key species to exist. Wildlife is also important for recreational, social, cultural, and sustenance reasons for people in Manitoba.

Traditional land and resource use is included as VCs in the project because it potentially affects valued traditional activities and practices and sites and resources that are of cultural importance to First Nations and Metis.

I'm just going to talk a little bit about this roadmap each of the discipline leads

will be sharing as they go through their presentation. Each one will provide an overview. They will describe what they've heard through engagement, what they assessed, their key findings. They will describe mitigation monitoring and followup, as well as conclusions that they've reached in the assessment.

I'm going to pass it on to Dave Block next.

MR. BLOCK: Okay, good afternoon. As Sarah mentioned, my name is Dave Block, and I'll be presenting on the environmental assessment of fish and fish habitat.

So the first thing I want to cover is the placement of the final infrastructure when we are done.

So if you can go to the next one.

So on -- sorry, on the left-hand screen, we've got -- that's the Assiniboine River crossing, an overhead view of the Assiniboine River crossing. That's the South Loop Transmission Corridor, so the two existing towers are shown there. And we have kind of graphically superimposed the towers for this project.

Now, this is not to scale, and all of

those disclaimers on that; this is just for an idea of where the final towers are going to be.

And the other one just shows the planned view of that. So this tower is going to be 42 metres from the ordinary high-water mark of the Assiniboine River, and this is the closest that any permanent infrastructure will be to any water body along the project route. So please keep that in mind as I move along here.

For regulatory guidance, we have the Fisheries Act, which prohibits serious harm to fish, as well as the deposit of deleterious substances, and that's kind of our benchmark when we're doing the assessment; any project activity that would cause serious harm to fish or cause the deposit of deleterious substance could be considered an effect.

We also considered the Species at Risk Act, which protects species at risk and their habitat, and of course we used the National Energy Board Electricity Filing Manual, as well as various other documents.

So the key issue in the assessments,, as well as the key issue that I'm going to discuss in my presentation today, is a change in fish

habitat, and that's mainly through the clearing of the right right-of-way, the clearing of riparian vegetation.

We also considered some other aspects, and I will go over those briefly, but this will be the key issue that I will cover today, because that was the main issue with respect to this project.

So during the public engagement and First Nation and Metis engagement processes, we had various input on fish and fish habitat, and the main concerns were related to clearing of riparian vegetation, as well as the use of herbicides. And we did consider both of those during the assessment, and I will discuss each of those later, relating to the assessment of effects on fish and fish habitat.

Hopefully these acronyms were familiar; I believe they were covered yesterday, as a general description, so I'm going to go over these in relation to fish and fish habitat.

The regional assessment area is shown on the left screen there; that's the seven sub-watersheds that were crossed by the project.

The local assessment area for the Red

and Assiniboine Rivers was 200 metres upstream, 600 metres downstream, and 30 metres up-bank from the right-of-way. And for all other crossings, it was 100 metres upstream, 300 metres downstream, and 30 metres up-bank. And this was based on information related to the -- kind of flow of water and sediment, should it enter the stream; it was based on how far this could potentially travel downstream, and potential extent of local effects. And of course the project development area is the project footprint, the right-of-way width.

We also had temporal scope, which included construction, which is scheduled for two years. So the potential effects during construction were considered, as well as potential effects during operation, which was assumed at around 100 years as the expected life span of the project.

We also considered different life cycles of fish species, as potential effects could change, depending on the life cycle. Short-lived species' reproduction rates, effects could be different, compared to longer-lived fish species who maybe don't reproduce as often, so the potential effects could change, depending on the

fish species present. So we did consider that as well.

Okay. So the final preferred route crosses 75 watercourses, and that included some major water bodies, like the Assiniboine River and the LaSalle and Red River south of the city, as well as the Rat River, and further south, Pine Creek, which is actually just north of the border.

And we also have a potential for 75 fish species within those 75 watercourses, and those include many of the sport fish that many people probably recognize, pike and walleye, as well as some small-bodied species, such as the brook stickleback and -- obviously many others. There are 75; I didn't want to run through the whole list, but a few examples of what we looked at.

The 75 watercourses were initially categorized based on Fisheries and Oceans Canada information. We had 29 that were direct fish habitat and 46 that were indirect fish habitat. I will go into the definition of those in just a second.

So the 29 that were direct fish habitat were carried forward to the assessment,

and the other 46 were not. However, standard mitigation -- actually, flip to the next one.

Standard mitigation, which will be discussed tomorrow in the environmental protection plan, there is a fair number of mitigation measures that will apply to these crossings that are covered in the environmental protection plan; we still consider those, but as far as potential effects, we just looked at the 29 that are direct fish habitat.

Switch to the next one.

So, a quick definition of what we mean by direct and indirect fish habitat. On the left screen there, the red line is the Rat River. So direct fish habitat refers to areas where fish actually exist, so areas that have enough water that they can carry out some part of their life cycle. That's direct fish habitat.

So indirect is a little more -- maybe a little more unfamiliar. So the green lines on this map are indirect fish habitat. So those are swales and fields, or roadside ditches. So when it rains, those will fill up; in a day or two, they are dry. So they don't hold water long enough to support fish, but we call it indirect

fish habitat because that water eventually flows into water that contains fish. So there are still potential impacts on water quality. So any deposit of sediment or contaminants into this indirect fish habitat could end up in water that contains fish, and that's why we still have the standard mitigation measures.

To determine existing conditions, we did a desktop review of available literature. We looked at government documents and scientific publications. It is a fairly well-known area, so there was a fair bit of information available as far as species present and distribution.

We did field surveys on 23 of the watercourse crossings, and at those we did assessment of riparian vegetation, bank stability. We did some water quality measurements, as well as some in-stream habitat features. And we also reviewed the First Nation and Metis and public engagement information we had available at the time to help with this type of information; again, species distribution, recreational, Aboriginal fishing, that sort of thing. So we used all this information to determine existing conditions in the area.

The 29 stream crossings, direct fish habitat, we did an assessment -- sorry, we classified the land cover, the riparian land cover, based on the vegetation information, which Nick will get to next. And we used that information to categorize the riparian habitat within the right-of-way and 30 metres up-bank from the ordinary high-water mark.

And we classified those into these five categories: Agriculture, being pasture, croplands; developed, being roads or rail or any kind of human development within that area. And then we also had wetlands, grassland, shrubland, and forest.

And the main one to consider here is forest, as I move along in the presentation. This is -- our greatest potential for effect is in areas that are forested, because this is where we need to clear. So I will get into that in a few minutes, but that's kind of why we categorize these, and separated out forest from maybe some of the other natural areas.

So I will quickly run through one example of -- sorry, two examples of this riparian land cover.

This is Sturgeon Creek, just west of the city. So when we look at the riparian land cover there, we have -- this is per cent of the area within that. Forty-one per cent agriculture, almost 44 per cent developed. And again, to note here, the forested area is zero. So when we look at that, when we go to clear the right-of-way, in this case, basically we don't need to do any clearing, so there is no change in fish habitat.

So the counter to that would be, as an example, the LaSalle River. So if we look at that, it is 79 per cent forested, so when we are doing right-of-way clearing, there is a potential change to fish habitat, because 79 per cent of that area is forested, so there will be a change there.

So of the 29 crossings that we looked at, we found that 15 were primarily agricultural or developed, and 14 of them had at least some forested riparian habitat.

And that's shown on the -- it's probably hard to tell, but that's shown on the map here, the distribution of those.

So as I mentioned earlier, for the environmental assessment, our primary factor was

the change in fish habitat. We did also consider a change in fish mortality; I will go into that one briefly, but I will cover change in fish habitat in a little more detail.

Fisheries and Oceans Canada developed pathways of effects diagrams, and so we used those as our assessment tool, and those were developed by Fisheries and Oceans. There was habitat biologists, engineers, and scientists from across the country that developed these, and they describe the pathway, the cause-and-effect relationship of various activities leading to the ultimate potential effect on fish habitat.

And as I discussed in my opening slide, there are no in-water activities planned, so none of those applied. And there were two land-based activities that applied to this project, being use of industrial equipment and vegetation clearing.

So this is a fairly -- very streamlined version of the pathways of effects diagrams. There is quite a few pathways that they describe, how vegetation clearing can lead to decrease in shade, increase in erosion. Leaf litter inputs -- there is various inputs that

vegetation has, and by removing it, we are altering the fish habitat in that way, and the main effect being -- or potential effect being a change in water quality through increased sediment and erosion, contaminants, herbicides, or the use of industrial equipment that leaks, spills; petroleum products and that sort of thing.

So we looked at all of the various pathways. And the next step was to apply mitigation to each of these pathways. So on the left-hand screen I have a diagram of one of the mitigation measures, and that is the riparian buffer.

So it is generally 30 metres. It increases with slope. And within that, there is a seven-metre machine-free zone. So within that area, trees that have the potential to affect the operation of the line are selectively removed. The other vegetation is left in place, and the seven-metre machine-free zone is what it sounds like: Machines don't encroach on the stream within seven metres. Trees within that area are either removed by chainsaw or by reaching in with the equipment.

There is various other mitigation

measures listed there. Pesticide use permits, which controls the use of herbicides in the area. We have erosion control measures, emergency response plans.

And after the application of all of these mitigation measures, we looked at the residual change in fish habitat and determined that there should be no measurable change in water quality, and a reduced change in riparian vegetation.

So we did a similar process for change in fish mortality. Most of the pathways overlap. The one that didn't, that I didn't cover here, is access. So by increasing access, there is the potential to open up new areas and increase fishing -- fishing pressure, which could alter fish populations. But I think it is going to be discussed tomorrow with the access management plan, where the majority of areas are very accessible, and there should be no increased fishing pressure and no change in fish populations based on that.

So, the assessment on fish and fish habitat concluded that there will be negligible effects to fish and fish habitat, and based on

that, a cumulative effects assessment was not conducted on fish and fish habitat.

Monitoring and followup will be done primarily through environmental inspections. There will be environmental inspectors on site during construction. They will look for the -- they will monitor the implementation of mitigation measures. They will ensure that the riparian buffer widths are maintained, any mitigation measures are properly applied and are working effectively.

In addition to that, there is the plan for annual monitoring, during construction and when you are post-construction, and that will look at the same thing, to ensure that the riparian buffers were maintained, make sure that the mitigation measures were applied properly and were effective.

The key findings, I will summarize quickly. We crossed 75 -- or, sorry, we will cross 75 watercourses. Forty-six of those were determined to be indirect fish habitat; however, we will still apply our standard mitigation measures to those where required. Twenty-nine of those were direct fish habitat, and we assessed

potential effects to that -- sorry, to those crossings.

Of those 29, 15 were primarily agricultural or developed, so there should be no change in fish habitat based on our project.

Fourteen of those did contain forested habitat, so there will be a change in fish habitat. And that will be the selective removal of trees that have the potential to affect the operation of the line.

And based on that, our conclusion was that the project will alter fish habitat primarily through the selective removal of riparian vegetation; and based on that, the residual effects on fish and fish habitat were predicted to be not significant.

MS. COUGHLIN: Okay. Thanks, Dave.

Did you want to bring up your presentation now? Sure.

Okay. Nick De Carlo is going to present on vegetation and wetlands.

MR. DE CARLO: Hello. Nick De Carlo. I'm going to present on the vegetation and wetlands.

So, first, why vegetation and

wetlands? As Ms. Coughlin mentioned briefly, it has values covering a range of concerns for both nature and the public.

First, it is important for the healthy natural ecosystems. Effects to vegetation and wetlands can alter other aspects of an ecosystem, such as nutrient cycling, floods, climate, and soils.

They sustain other elements of biodiversity, such as wildlife and wildlife habitat. They support valued human activities, including hunting, camping, birding, and other recreational activities. And they are valued for indigenous use and collection, including collection of food, medicine, building material. And they have social and spiritual value.

And there is potential for the project to affect vegetation and wetlands, be it from clearing of vegetation or movement of equipment and vehicles, for example.

Regulatory guidance that was used to help direct the assessment included the Species at Risk Act. This includes measures to protect plants that are listed as endangered, threatened, or of special concern, and any habitat that is

identified as critical habitat.

There is also Provincial legislation, Manitoba's -- the Endangered Species and Ecosystems Act. This is similar to the federal Species at Risk Act. It includes some of -- many of the same species, but does include additional species; and unlike the Federal Species at Risk Act, applies to both Crown land and public land for species. It also provides protection for two ecological communities: Alvars and tall-grass prairie. And those are protected on Crown land.

There is also the Noxious Weed Act, and this identifies plant species that need to be either controlled or eradicated.

So I will give you an overview of conditions in the region of the project. The project crosses both prairie and boreal ecozones, and as we've heard before, includes both agricultural land and native upland and wetlands.

Three species at risk, protected under the Federal Species at Risk Act, have previously been identified in the region. And two plants have been previously identified that are provincially listed as rare plants. These are not protected under the Manitoba Endangered Species

Ecosystems Act or the Federal Act, but they are still species of concern, and are considered rare in Manitoba.

And no plant species at risk with critical habitat has been identified in the region.

Just before I move on, the species protected under the Federal Species at Risk Act that have been identified within the region are the Great Plains ladies' tresses, Riddell's goldenrod, rough purple false foxglove. And the provincial rare plants plants are arethusa, or also called dragon's mouth, and ram's head lady's slipper.

In the engagement process, we heard several concerns related to vegetation and wetlands. These included herbicide use, specifically changes in the health of plants, inadvertent loss of native plants, and safety for eating.

Conservation and protected areas, including areas of special interest, conservation easements, and the desire that these areas be avoided.

Also concern about rare plants and the

desire to see effects avoided for rare plants, particularly of orchids.

And concern for landscape fragmentation, concern for breaking apart large patches of native prairie, or native vegetation in general, habitat loss, and degradation of native vegetation, regardless of size, particularly on Crown land, and traditional use plants and collecting sites.

So effects to traditional use plant health, changes in abundance, uses of preferred sites. And these last three items are items that we received more consistent feedback on, and are items that I will discuss further under key issues.

Some of the issues could have been addressed through routing, particularly areas of large, intact native vegetation, including areas of special interest, and these were largely avoided.

Private and publicly owned managed tall-grass prairie, which was avoided, and this was partially done through project routing and routing the project parallel to existing linear features, taking advantage of existing

disturbances and not creating new disturbance where there was none.

Going on to what we assessed, we used three assessment areas -- you have heard some of this before.

For vegetation, specifically, we used the PDA, or the project development area, and this is the immediate area of the project footprint, so the immediate area of disturbance.

We can see this on the second screen. This is the centre-most line.

Next we used an LAA, or local assessment area. This is a one-kilometre buffer either side of the PDA. And this was used to put project effects into local context and determine what are the local effects.

Then we also used an RAA, or regional assessment area, and this was a 15-kilometre buffer either side of the PDA, and this was used to assess cumulative effects.

Okay. We used a biodiversity approach in the assessment, looking at three levels of diversity.

Change in landscape diversity, landscape being broad patterns of interacting

ecosystem, such as uplands and wetlands.

The next level was the change in community diversity, which is a finer scale of resolution, and this is patterns of vegetation species, such as deciduous forest, mixed-wood forest, or grassland..

And then, finally, changing species diversity. What are the changes to individual plants; for example, effects to rare plants.

We will move to the next.

And attributes that we used to look at these levels of diversity included landscape intactness; this was at the landscape diversity level. Native upland vegetation and wetland cover, so the community level diversity.

And then at the species level diversity, we looked at rare plant species, traditional use plant species, and invasive plant species.

And at those levels, where appropriate, we looked at changes in abundance, distribution, and structure.

So on the slide to your left, that graph there, abundance can be the number of items, so the number of patches of large upland areas,

and we can look at -- how did the number of these large patches change from before the project and with the project.

Distribution refers to the geographical spatial distribution. And are large patches or cover types of deciduous forest widely distributed in the study areas, or are they clumped at one area?

And then structure, as the photo shows there, refers to the different layers within vegetation communities. So some communities will have a tree layer, shrub layers, and then Forbes and grass layers.

Depending on the layers present, there may be different effects to different communities. Some communities will require removal of structures, and other communities may not.

Our methods for the assessment consisted of a desktop review. We used peer-reviewed scientific journals, government publications, and reports prepared for other projects that are in the public domain. And with this information, we were able to map vegetation cover, native uplands, wetlands, large patches. Identify plant status, so which species are

considered rare. What information do we have of those species within the regions, study areas that were examined.

And then, are there any plants that we know of that have been identified previously as traditional use plants?

We also conducted key person interviews, such as with Provincial biologists, get their input on issues that are of concern to them, attributes that they would like to see included or not required within the assessment.

Other stakeholders, also public engagement, getting the feedback from the public of their concerns. Traditional knowledge, both First Nation and Metis engagement process and self-directed study. And we also conducted field surveys, specifically for wetlands and rare plants.

The second screen there, on your right, shows the location of survey sites. Not all of our survey sites occur on the final preferred route, as the initial focus for surveys was not purely on the final preferred route, but was also done to help support alternative routes.

As part of the wetland surveys and

rare plant surveys, we also collected information on traditional use plants, and invasive plants, when they were observed.

With this information, we conducted the effects assessment.

So the first key issue, landscape intactness. This refers to large intact patches of native vegetation, both uplands and wetlands, and clearing from the project could fragment -- break these patches apart, and make them smaller.

Large patches are important because they help support wildlife populations and maintain important functions, such as fire.

It may seem odd that we use wildlife to define the large patches here. That's done because more is known about wildlife and their dependency on large patches and vegetation, and what is known indicates that they are more sensitive to the patch size. So as a conservative approach, we've used wildlife requirements.

And in this case, it is 200 hectares, and that comes from a report done by Environment Canada.

So, like I indicated, right-of-way clearing will be required. This has potential to

break patches, particularly forested areas, which will result in fragmentation, and this fragmentation could result in fewer large intact native patches and reduced number of species that require these large intact patches.

On the second screen, there, on your right, you can see the distribution of large patches within the study areas. Anything that is hatched is a large patch, so greater than 200 hectares. I believe the blue are wetland, and the red are patches that are intersected.

The key findings from the assessment is that there is a net change in the number of patches, but the net change is small, and no patch size category is lost, including patches greater than 200 hectares in size.

Twenty-two patches out of 202 larger than 200 hectares will be affected, and the effects are mainly to upland native vegetation.

And we can see this in the graph here. This is the existing corridor, so we split the assessment into the existing corridor and the new right-of-way, recognizing differences in past use of the area, and abundance of native patches.

So on the existing corridor, there

will be a reduction in one patch larger than 200 hectares, and most of the effects are patches smaller than 2 hectares, or between 5 and 20, and 20 to 100.

In the new right-of-way, there is a similar pattern. We don't lose any patches greater than 200 hectares. It is actually an increase in the number, and this is due to very large patches, greater than 200 hectares, being intersected by the project. So instead of one, you may get two. But the two remaining patches are still greater than 200 hectares. The remaining effect is still largely to patches less than 2 hectares, or between 5 and 20, and 20 to 100.

The next key issue, native vegetation cover. Native vegetation cover in this case refers to both uplands, including grassland, shrubland, deciduous areas, mixed-wood and coniferous forest.

Thirty-three per cent of the local assessment area and 33 per cent of the regional assessment area is composed of these cover types, and it also includes wetlands, types such as bogs, fens, swamps, and marshes.

Four per cent of the local assessment area and 5 per cent of the regional assessment area is composed of these wetland types.

The project could affect these through right-of-way clearing, tower construction, mobilizing and demobilizing of equipment and vehicles, and weed control, specifically the use of herbicides.

And these activities could result in vegetation removal, the introduction or spread of non-native species or weeds, or native species loss. And those outcomes, together, could alter the community distribution, reduce the community abundance, and also reduce native species abundance.

Key findings from the assessment were that less than 5 per cent of grassland, shrubland, and forest will be affected in the local assessment area, and less than 5 per cent of wetland will be affected in the local assessment area.

And the project is not routed through managed tall-grass prairie parcels, and we can see that illustrated on the screen to your right.

Managed tall-grass prairie parcels

occur largely to the east of the final preferred route, although there is one to the west. And all of them have been avoided by the final preferred route.

The next issue; traditional use plant species. More than 300 species were identified through First Nation and Metis engagement. This includes plants that are gathered for construction purposes, such as bur oak; medicines, such as sweetgrass; and berries, such as cranberry.

Traditional collection areas do occur in the final preferred route right-of-way. The majority of the areas, though, identified from the self-directed studies and the Manitoba Metis Federation final report, are located east of the final preferred route right-of-way, and 39 species that were identified through the engagement process as traditional use plant species were observed during wetland and rare plant surveys along the final preferred route right-of-way.

And we can see those here.

Most of the sites recorded berry plants, but other plants were recorded at other sites as well.

As with native vegetation clearing,

our native vegetation issues, effects to traditional use plants, include right-of-way clearing, tower construction, mobilizing and demobilization of equipment and vehicles, and weed control -- again, specifically the use of herbicides -- basically result in vegetation removal, non-native invasive weed introduction and spread, and native species lost.

And for traditional use plant species, this could result in a loss of plant collection sites, reduced plant vigour, so plants are not as tall; they may not produce as many berries. Or also just reduce plant abundance, so just fewer plants that are used for traditional use purposes.

Key findings of the assessment were that the project avoids many known traditional use plant collection sites.

Vegetation cover classes; those supporting traditional use plant species will be reduced, and traditional use plant species and supporting cover classes are expected to persist, including on the final preferred route right-of-way.

Now, these -- the assessment and the approach to these last two bullets is based on the

ranking of traditional use plant species in Manitoba. The majority of the species are common species; only five species are considered species of conservation concern within the province, and they are associated with cover, common cover community types. So if the cover community types are maintained, the species that they are associated with are expected to be maintained.

Moving on to key mitigation measures, five key mitigation measures are being used for vegetation and wetlands.

First, clearing and construction when ground is frozen or dry. This is important because when the ground is frozen or dry, there is less likelihood for erosion and rutting, so less potential for disturbing the soils that the plants rely on, so changing the conditions, and less vegetation removal.

Vehicle and equipment is restricted to established roads and trails, so managing the disturbance to what is predicted, not having inadvertent disturbance, carefully controlling the disturbances.

Existing access routes used where possible, so being efficient with how areas are

accessed, and making use of existing disturbance, as opposed to creating new disturbance where it is not needed.

Equipment is clean and free of debris. So when equipment arrives to site, it's clean; it doesn't have mud or plant material that could contain seeds or plant fragments of weeds and invasive plant species from other areas. This will help reduce the spread of weeds and invasive plants, and will help limit the introduction of these species to new areas.

Disturbed areas will be rehabilitated where appropriate, and weed control conducted at access points. So weeds are good at exploiting disturbance, bare ground. Rehabilitating these areas will help limit the potential for their introduction and establishment.

And conducting control at access point will help check vehicles, that they are clean and free of debris, and will also help identify areas with invasive plants or weeds, where vehicles may be traveling through when they are accessing the right-of-way, identifying them before the vehicles get onto the access right-of-way, and further help limiting the spread of those species.

Now, our findings and conclusions, I'm going to talk about cumulative effects first.

The RAA, as we've seen in other talks, has been altered by agricultural conversion and development. A lot of this happened in the late 1800s and early 1900s.

Forty-eight per cent of agricultural land is composed -- in the RAA is composed of agricultural land, and 13 per cent of the RAA is composed of developed land.

Project contribution; the project will have a contribution to cumulative effects, and incremental, but the effect is small, with less than 1 per cent of native upland and wetland within the regional assessment area affected.

There is potential for interactions with future projects, but a review of future projects indicates that they will largely be situated in developed areas. However, there is some uncertainty with future projects.

And the project will not affect the long-term persistence or viability of landscape, community, or species diversity. By this I mean it is not expected to change the status of a species or community, so make species or community

threatened or endangered when it isn't, or result in a loss of community or species.

Monitoring and followup is planned to check the conclusion of the assessment. So, further surveys will be done, including for rare plants and invasive plant species. So identify other locations that rare plants may occur along the route, where there is potential for them, and help identify where mitigation is required.

And consultation with Manitoba Fish and Wildlife Branch of Manitoba Sustainable Development to see if there is anything further they would like since the date of the assessment and the original surveys were completed.

Further wetland intersect preconstruction surveys will also be done. So there are opportunities in some locations for adjustment in the final tower placement, and surveys will be done to help confirm and refine mapping and identify where there are opportunities to locate towers either closer to the edge of wetland, and possibly fully avoid wetlands.

And postconstruction monitoring surveys will be done to evaluate the effectiveness of mitigation, identify areas that require further

mitigation, identify what is working and what is not working.

Key findings and overall conclusions of the assessment are that the number of patches of large -- number of patches, in general, of vegetation will increase and will be affected, including large patches.

But the next change, particularly with large patches, is small, and no patch size category is lost. Less than 10 per cent of upland and less than 5 per cent of the wetland is expected to be affected.

Areas of special interest are largely avoided, although not completely. And no traditional use plant species are expected to be lost from the local assessment area, or the regional assessment area, due to the project.

As a result project residual effects are considered to not be significant.

Thank you.

MS. COUGHLIN: So I guess we will keep going.

So this is Dr. Marcel Gahbauer; he is going to talk to us about wildlife and wildlife habitat.

MR. GAHBAUER: Good afternoon.

I will be speaking about wildlife, and why we picked wildlife as a VC, similar to what Mr. De Carlo indicated for vegetation and wetlands, we have wildlife being a critical component and indicator of healthy ecosystems.

We've certainly heard that wildlife are important to First Nations and Metis culture and sustenance, and we also recognize that wildlife have the potential to be affected by a transmission project.

The regulatory guidance that applies to wildlife is, again, similar to what you've heard from the previous speakers. The Species at Risk Act applies, again. In addition, for birds, the Migratory Birds Convention Act is relevant in terms of protecting birds and their nests.

The Manitoba Endangered Species and Ecosystems Act again applies, as it does to vegetation and wetlands, as does the Manitoba Wildlife Act.

So the key issues for wildlife are change in habitat availability for species and individuals; disturbance to individual wildlife, particularly during the construction phase; and

potential for mortality during both construction and operation.

The wildlife assessment areas are the same as were described before, so I won't belabour the point. But again, just to refresh everyone's memory, the PDA is the right-of-way itself; the LAA, or the local assessment area, is a one-kilometre buffer around the PDA, and the regional assessment area, or RAA, is a 15-kilometre buffer around the PDA, and is used primarily for setting a context for understanding of cumulative effects.

What we heard from public consultation, and from the First Nations and Metis engagement process, were several concerns. Certainly there was a concern over potential to fragment protected areas, or other large existing tracts of habitat, primarily forest and large wetlands, that clearly support wildlife and our wildlife habitat.

There were concerns expressed about potential for disturbance of the elk heard that centred around Vita. Also mention about the fact that the route passes through some areas that have been designated under the Species at Risk Act as

being critical habitat for a threatened species under the Species at Risk Act, that being the golden-winged warbler.

Some concerns about how changes in access could result in differences in predation pressure on certain wildlife, or hunting pressure.

And lastly, concerns were expressed regarding potential for mortality specific to bird collisions with the transmission lines during operation.

Some of these issues were addressed through routing. So the routing has gone outside of the wildlife management areas and other protected lands, and the routing is such that additional fragmentation of the landscape is limited.

The landscape is already severely fragmented over much of the RAA, but as you can see on the inset on the left, this is an example of where the route, the PDA, or the right-of-way, as it is shown there, is largely skirting the edge or just crossing through a corner of some of the larger patches, to reduce the extent of fragmentation.

The final preferred route is more than

500 metres away from sharp-tailed grouse leks, that being a distance at which the grouse are considered to be sensitive to disturbance. And the routing is also away from the core of the Vita elk herd.

So what we assessed was principally two areas: the change in habitat for wildlife, which takes into consideration fragmentation; and also mortality risk, which is throughout the whole process, from construction, including collision risk during operation, and also considers changes that may be in relation to differences in predation and hunting during operation.

To undertake this assessment, we took an ecosystem approach, and we did, though, look particularly at certain focal species or groups to help guide our assessment.

So we broke it down first into mammals, birds, and amphibians and reptiles, and within each of those groups, we identified a few specific -- well, at least within mammals and birds, we identified some specific focal species and groups.

So for mammals, we looked in particular at how elk, moose, deer, black bear,

fur-bearers, and bats might be affected by the project.

For birds, we took more of a habitat-based assessment, considering the effects on interior forest birds, open forest birds, grassland birds, and wetland birds.

And then amphibians and reptiles, we looked at largely as a group. We did look at upland and wetland, but there was a minor distinction there, so we will be discussing them as a group here.

The approach we took was to begin with a desktop review, where we looked at the status of species that may occur within the RAA, and their distribution within it, and then to consider the availability of habitat for these species, given their needs.

We undertook the key person interviews, where we spoke with Provincial biologists with Manitoba Sustainable Development, with faculty from University of Winnipeg, and with a variety of other stakeholders. We considered input from the First Nations and Metis engagement process.

And then, with these first three

points in mind, we identified gaps that we needed to investigate further or supplement with our field studies. So we undertook a variety of surveys for mammals, birds, reptiles, and amphibians, and the map on the right screen here shows an overview of the field programs and their locations.

As with the comment that Mr. De Carlo made previously, some of these are a fair distance away from the PDA; that reflects, in part, again, that some of these were undertaken at a time when multiple routes were under consideration. But also some of these are reflective of our intentional surveys along existing transmission lines, specifically M602F and R49R, which we used as proxy areas to understand some of the existing conditions along right-of-way habitat that might give us an indication of what the future conditions would be like along this project.

And with the field data, then, collected and analyzed as well, we then undertook the effects assessment.

So what I will do here is go over some of the key findings in relation to the focal species and groups that I identified previously.

With mammals, I will begin with elk. Elk are a generalist herbivore. They use forest edges, grassland habitats. Within Manitoba, the population is a bit fragmented, but within the RAA, we are limited to having a population that's known as the Vita herd, roughly based around Vita, and crossing the border back and forth to Minnesota different times of year.

The population of that herd is around 100 to 250 individuals. We did not, through our field studies, observe any elk or sign of elk, such as tracks, within the LAA, although there were some within the RAA. And this is further supported by telemetry data from ongoing research that Manitoba Hydro has been supporting, and which will be discussed further in the monitoring presentation tomorrow, likely.

So, given the distribution of the elk primarily outside the local assessment area, we see there being negligible potential for interaction with the project.

Moose are largely a wetland and forest-edge ungulate. Like many of the other mammals that we looked at, they are traditionally hunted by First Nations and Metis. They were

formerly more common in southeast Manitoba, and declined considerably in the 1990s.

During our field studies in 2014, we had observations of moose at only three locations. Again, with the population as small as it is now, and also understanding that moose are rather generalists, and are known to use right-of-way habitat, we see there being a negligible interaction of the project with moose.

Deer, even more so than the previous two species, are habitat generalists. Unlike the previous two, they are widespread and abundant throughout most of the regional assessment area. As such, there is potential for disturbance of deer, especially during the construction phase. That being said, habitat availability during operation is going to be largely unaffected for a flexible species like this.

Black bear is another generalist species, largely forest and edges. One of the distinct aspects of black bear biology is that they den; they hibernate over winter. Black bears are widespread in the eastern part of the regional assessment area, and the regional population, according to Provincial biologists, is considered

to be stable or increasing.

Again, during the construction phase, there is some potential for disturbance of bears, and that will be mitigated by monitoring for bear den locations and responding accordingly if any are discovered. But habitat availability during the operation phase is largely unchanged for this species too.

There are a number of species of fur-bearers that occur within the RAA. These include wolf, coyote, fisher, and marten, among others. Some of these species are widespread, such as coyote; others, such as marten, are a little bit more restrictive because of more specific habitat requirements. The marten is mostly in the larger, more mature forest patches in the eastern part of the RAA.

With the marten, roughly 2 per cent of its habitat within the local assessment area will be cleared as a result of the project vegetation clearing. Most of the other fur-bearers are actually going to be affected less, because they are more generalist in their habitat usage.

And finally among the mammals we've looked at bats. Bats, primarily because there are

a couple of species that are considered endangered under the Species at Risk Act, and that designation is largely a function of the white-nosed syndrome disease that's been affecting them over the eastern parts of their range, but hasn't quite yet reached Manitoba.

In summer, these bats use maternal roosts in trees. Given the extent of forest habitat, there is not expected to be any limitation on availability of such maternal roost habitat. What restricts them a bit more is their over-wintering sites, their hibernacula; and although there are a number of sites known for over-wintering bats in Manitoba, there are none documented within the RAA, and the habitat and bedrock structure is not considered suitable for there to be such hibernacula present.

Given that the bats can actually forage quite effectively along habitat edges -- forest edges, specifically -- we don't anticipate any adverse effects for bats.

Moving on to birds, the first habitat category that we will look at is the interior forest species, and there's quite a number of birds that fall under this category. The ovenbird

is one that is representative of that, because a number of studies have been done on it over the years. The effects on ovenbird and other forest interior birds have largely been mitigated through the process of avoiding many of these larger forest patches.

So, for example, the deciduous forest patches that ovenbirds prefer are those that are 90 hectares or greater, and these have been avoided by the route. These species are primarily found in the larger habitat patches that remain, mostly north of Richer, east of Marchand, and near Sandilands and Piney.

There are also a wide variety of open-forest bird species. Most notable among these is the golden-winged warbler, which as I noted earlier is designated as threatened under the Species at Risk Act.

The project does traverse critical habitat, as defined under the Species at Risk Act, and the recovery strategy for the species in the Ste. Genevieve and Richer area, it is worth noting that the fact that it crosses critical habitat is not necessarily in itself a concern, as long as suitable habitat can be maintained or enhanced

through other means.

So in the case of this project, the suitability of habitat along the future right-of-way can be enhanced in such a way to actually facilitate suitability for this species.

We also noticed through our studies of birds along the existing M602F right-of-way that on average, the species diversity was slightly higher there than we had in our samples elsewhere. That reflects the diversity of species that can be found along this right-of-way in future, or we can infer would be the case.

So the message there being that during construction, there would be potential for disturbance; but as noted previously, there would be an effort to largely avoid having construction during the breeding bird season, so that would be minimized there, and habitat would largely be suitable for open-forest birds during operation.

There are also a number of grassland species that occur in the RAA. The native grassland has been significantly reduced over time, but there are patches still suitable. As with other birds, there is some potential for disturbance during construction, if there are any

activities during the breeding season, especially.

Unlike for the forest species, there is likely to be very little change during the operational period, since the only real change to the landscape is the presence of the towers, but there's no actual -- except for the tower footprint itself, no actual clearing of habitat or change in habitat structure, so most of the grassland species will be largely unaffected in that way.

And then we have wetland species. And although this includes some songbirds as well, we are chiefly concerned here with the water birds, so the ducks, geese, swans, cranes, herons, gulls; others like that. These species, of course, are very concentrated where there is suitable habitat, so primarily that's at the river crossings, large lakes, Deacon Reservoir, and a couple of the larger wetlands.

And similar to the grassland birds, there is limited concern in terms of change of habitat, given that it is just the footprint of the towers that's changing. The concern here is more with the collision risk that I alluded to earlier. And it is these larger, heavier wetland

birds that have been reported in the literature to be most vulnerable to collisions. And we will be speaking about the mitigation in relation to those in a moment.

With amphibians and reptiles, we are largely talking about similar locations. The majority of them are found around the major wetlands and river crossings. Given that the river crossings are spanned and set back -- Mr. Block noted earlier that the closest tower is 42 metres away from the river, and the others are farther.

We have a large degree of avoidance of the areas where these species occur. So there is a little bit of a mortality risk during the construction phase, and that will be mitigated through some additional preconstruction surveys to understand where this risk is greatest, and adaptive management to that. But during operation, again, the transmission line will not have any effect on amphibians and reptiles.

So there are a number of mitigation measures for the project, several of which have specific relevance to wildlife and wildlife habitat, so I will just note a few of those.

The key one is the integrated vegetation management plan for golden-winged warblers. And I won't go into that in detail here, because that will be presented more fully by the monitoring panel. But the message in relation to my presentation is that as I noted before, we are essentially enhancing future habitat, and having essentially no net loss of habitat, suitable habitat for this species.

Equally important is the installation of bird flight diverters. So these, again, will be discussed in some more detail, but these are markers that are put on the overhead lines to increase visibility to birds, to reduce the probability of collisions. And these typically have an effectiveness of about 50 to 80 per cent.

And then there is also the access management plan, which addresses some of the concerns about changes in hunting and predation risk. And the main message here is that the majority of access will be along existing roads and trails. There will be very little additional access created.

And in terms of the overall increase in fragmentation, we are only looking at about a

1 per cent change, so it is really quite a minimal difference there, not likely to have much of an effect there on the hunting and predation.

There are also a number of other elements of the environmental protection plan that have direct bearing on wildlife. So this includes some of the items that come out of the preconstruction surveys, such as the mapping of environmentally sensitive sites.

As I noted before, the plan to clear land outside of the breeding bird season, that will greatly reduce disturbance to a wide variety of wildlife; birds, primarily, but also some others.

More generally, seasonal avoidance of sensitive wildlife periods. If there are active nests or dens, buffers will be established around those to minimize disturbance. Also buffers, as noted previously, around wetlands and riparian corridors.

And then some general common practices to maintain voiced control, and not to allow any hunting or harvest by project staff during construction.

In terms of cumulative effects, we

have a region that -- as others have noted on numerous occasions -- a region that's already substantially altered by agricultural conversion, nearly half of the regional assessment area, as well as by urban and residential development. So we have less than 40 per cent of the RAA that's considered natural habitat.

We've identified other existing -- that is current or future activities that have direct or indirect effects on wildlife, or the habitat availability of wildlife. So this includes things such as resource use, forestry, quarries, mining, hunting and trapping, the use of ATV and snowmobile trails, and other linear projects; that including roads, pipelines, and other transmission lines.

In terms of cumulative effects on habitat, again, we are looking at a landscape where the current distribution and abundance of wildlife habitat, or wildlife, is a function of that cumulative loss of habitat over time.

Some of the future activities do overlap to some degree in time and space with parts of this project. That can include the clearing of the right-of-way on other transmission

lines, the St. Norbert highway bypass, and some expansion of residential areas.

Overall, there certainly is an adverse cumulative effect of habitat loss on wildlife, but the project contributions to that are considered to be incremental and minor.

In terms of future projects that could have bearing on mortality of wildlife, there is a number of those. Certainly other transmission lines, again, have the same collision risk issues that this project does. Pipelines, the South End Water Pollution Centre upgrade. There is ongoing collision risk from roads, simply vehicle traffic is a hazard to wildlife, as anyone driving in rural areas knows. There is the expansion proposed for the Piney -- Pine Creek border airport, and again, additional residential development may have some implications for mortality.

With respect to the project, again, the bird flight diverters are really the key mitigation; that's the biggest mortality potential. And as I noted before, those have a 50 to 80 per cent effectiveness, generally, and those will be targeted at these areas around the

wetlands and river crossings that have the higher activity of birds.

So, again, there is a cumulative adverse effect of mortality on wildlife, but as with habitat change, the project contributions are incremental and minor.

There is a biophysical monitoring plan as part of the environmental protection program, and as I noted before, that will be presented in more detail tomorrow. But just to note here, this will touch on a number of the wildlife focal species that I've discussed, with the intent being to monitor that the -- to monitor the potential effects of the project and adapt mitigation as required.

So this will include additional surveys, winter track surveys, aerial ones, to look for ungulate distribution and abundance. The continued use of remote cameras, again, to detect largely the occurrence and use of the area by large mammals. Carcass searches under the transmission lines to really assess mortality rates from bird collisions. Point counts and lek surveys, to get a continued understanding of any effects on bird distribution. Surveys of snake

hibernacula and amphibian surveys, again, to detect any changes there.

So to summarize the potential changes in habitat for wildlife, there will be a reduction in forest cover within the local assessment area of just under 5 per cent. There will be some creation, accordingly, of new edge habitat. There will also be some indirect loss of habitat, primarily through sensory disturbance during the construction phase, so wildlife that's temporarily avoiding the area, due to noise and light and the general disturbance of the construction process.

A large part of that, as previously noted, is going to be avoided through seasonal avoidance at the time of year when most of the wildlife are present and active.

And there will be some fragmentation of habitat beyond what is already existing on the landscape, but again, it is only about 1 per cent, so it is quite minor, and involves only a small loss of corridor forest habitat.

So, overall, the project residual effects are considered to be non-significant, and the contributions to cumulative effects are minor.

And lastly, in terms of the wildlife

effects on mortality, we do, during the construction phase, have some potential for collisions with wildlife or destruction of dens or nests. Again, through seasonal avoidance and awareness and environmental monitoring, this can be greatly reduced.

The change in access is also quite small, given that the plan is to use largely existing roads and trails. So there is a small potential there for increased hunting pressure where there is new access, but it is limited to only a couple of habitat segments.

And there is acknowledged to be a risk of mortality through collision with overhead wires, and this is primarily of concern for the larger wetland birds. But a large part of this has been mitigated through routing, to avoid wetland areas as much as possible, and will be further mitigated through the application of the bird diverters, to make the lines more visible and less likely to result in collisions.

So, overall, the residual effects on mortality are also considered to be not significant, and the contribution to cumulative effects are, again, minor.

MS. COUGHLIN: We would like to proceed with Butch Amundson's presentation on traditional lands and resource use, if that's okay.

Okay. Thank you, Mr. Chair.

MR. AMUNDSON: Okay. I would like to talk this afternoon about traditional land and resource use.

First of all, I would like to make a note that the photographs that I'm using in this presentation are from the other VCs' field work, and not from the self-directed studies.

So, why traditional land and resource use? And I will probably shorten that to TLRU as I speak today, for time considerations.

Traditional land and resource use was chosen as a valued component because the project has a potential to adversely affect traditional activities, practices, sites, areas, and resources that are important to First Nations and Metis.

Manitoba Hydro's guiding principles are to recognize the diversity of First Nations and Metis cultures and worldviews, to work with First Nations and Metis to better understand these perspectives, to determine approaches for

addressing concerns and for building relationships, and to provide First Nations and Metis opportunities to communicate on an ongoing basis and early in the process.

The regulatory considerations for traditional land and resource use include the requirements that -- for the EIS that were from the project description. The Federal and Provincial legislation and guidelines for the preparation of this assessment are from the final scoping document, the filing requirements under the National Energy Board Act and guidance for environmental and socioecomonic elements contained therein, and the Canadian Environmental Assessment Act of 2012 and its applicable regulations and guidelines.

So I would like to talk about lessons learned from past experience.

First of all, traditional knowledge greatly enhances the understanding of species and resources assessed by other VCs. Traditional knowledge contributes a time depth of generations of observation of the ecosystem, its interactions and changes from a holistic point of view. This adds valued knowledge and insight to the

assessment of biophysical VCs in the context of a cultural landscape.

Secondly, the conservative approach recognizes that DLRU may occur near the project, even if it is not specifically identified by First Nations and Metis.

So this presentation follows the same roadmap as previous ones. Beginning with what we've heard, TTLRU interests and concerns addressed in this valued component include plant harvesting for food, medicine, and cultural purposes, especially on Crown land; hunting and trapping for food, economic, and cultural purposes -- again, especially on Crown land; trails and travelways, such as and trail systems, and cultural sites, including burial sites, spiritual sites, and sacred sites and spaces.

Continuing with what we assessed, the spatial boundaries chosen for TLRU followed the wildlife VC to be the most inclusive, and captured the broadest area for assessment of effects on harvesting wildlife and vegetation within the context of the environmental assessment.

Temporal boundaries consider the current generation that practices traditional land

and resource use. Current use incorporates information from traditional land use studies regarding existing conditions.

The oral tradition is the shared collective memories of a community passed from generation to generation, that in the context of an EIS, contribute valued insight from ecological, historical, and cultural observations over a very long period of time.

Future use refers to the continued availability of and access to lands and resources for traditional purposes for First Nations and Metis beyond the life of the project.

The First Nations and Metis engagement process informed the assessment of TLRU. Manitoba Hydro engaged First Nations and Metis through leadership meetings, open houses, field visits, letters, phone calls, and through support for self-directed studies. Through these activities, Manitoba Hydro heard and recorded concerns, constraints, and opportunities. Manitoba Hydro received information regarding existing conditions that was incorporated into the relevant VC sections.

Potential project concerns shared

during the preliminary routing discussions include exercise of Aboriginal and treaty rights, historical use areas, harvesting berries and plants, gathering places and sites, sacred and sensitive areas, traditional practices in sacred areas, pressure on Treaty land entitlement issues, and pictured here, on the second screen, the medicine line, and the potential for burials there.

The United States is on the left of that photograph, and Canada is on the right of that photograph.

Issues addressed through routing include limiting the area of the project PDA on Crown land.

A specific example of routing addressing a specific concern is that a traditional medicine-gathering area on private land was avoided when segments -- when Segment 417, sorry, was replaced by Segment 475, to address this concern. And pictured here is the avoidance that was created by that.

The traditional knowledge studies supported by Manitoba Hydro include four studies that were shared before and during the EIS

submission, and these include a study prepared by Black River, Long Plain, and Swan Lake First Nations, Peguis First Nation, Roseau River Anishinabe First Nation, and Sagkeeng First Nation. Two were submitted after the EIS was submitted, and these included one from Dakota Plains Wahpeton Oyate First Nation and Manitoba Metis Federation.

Our methods included describing existing conditions for TLRU, as documented from self-directed ATK studies and oral histories, the First Nation and Metis engagement process, secondary sources, and the other VC assessments for the project. These were used to identify TLRU activities, including plant harvesting, hunting and trapping, trails and travelways, and cultural sites.

Key findings from these sources named above are that First Nations and Metis harvest native plants for food, medicinal, and cultural purposes, and harvest a variety of big game, small mammals, birds, and waterfowl throughout the RAA.

Further, First Nations and Metis continue to use long-established trails and travelways that connect communities, harvesting

areas, and gathering places in a network of traditional use and cultural patterns, and report cultural sites and areas in the RAA.

Some of the places named in the mitigations that I'm going to present here are illustrated in the map on the left screen.

Mitigations for TLRU include routing to mitigate potential effects by project design. For example, through engagement, Manitoba Hydro heard that the eastern portion of the route planning area, with more forest and Crown land, was highly valued for hunting and trapping activities. This understanding helped inform route evaluation.

Routing addressed a sacred area near Sandilands, a weekis patch -- that's rat root, or sweet flag -- a cedar bog, a plant-harvesting area, concerns for vegetation cover, and a travelway to fishing near Marchand, that includes areas around Pocock Lake Ecological Reserve and Sandilands Provincial Forest, that was identified by Black River, Long Plain, and Swan Lake First Nations.

Routing addressed the Sandilands area, the area west of Sundown, and the Marchand area,

Spur Woods, Watson P. Davidson Wildlife Management Area, and cultural areas in South Rapids that were identified by Roseau River First Nation.

Routing is away from tall-grass prairie areas; routing is away from areas identified by wildlife investigations that are sensitive; routing considered availability of existing access to reduce new access construction.

First Nations and Metis will be invited to contribute to the environmental protection program by identifying sensitive sites, and this will include the botanical survey completed by Black River, Long Plain, and Swan Lake First Nations.

Herbicides won't be used to clear the right-of-way. Manitoba Hydro will consider non-chemical vegetation management in areas that contain plants important to traditional harvesters, and include these in the integrated vegetation management program.

Manitoba Hydro will apply construction techniques that will limit effects on plant-harvesting resources.

Preconstruction wildlife surveys will be done to identify areas for setbacks and

buffers, and construction will respect the reduced risk timing windows for wildlife.

Where appropriate, regional native grass mixtures will be used to assist with revegetation of disturbed areas.

The access management plan will be implemented.

Identified cultural heritages sites will be marked for protection, and measures for chance discovery during construction are established in the culture and heritage resource protection plan.

Monitoring and follow-up: Manitoba Hydro will continue to engage First Nations and Metis to discuss proposed mitigation measures and to consider recommended new mitigation measures.

Project residual effects: The residual effects on plant harvesting will include change to the availability of plants gathered for food, medicine, and cultural purposes. Change to availability can include loss of plants, reduced plant vigour, or reduced abundance.

There will be change in access to plant-gathering sites, and there will be an alteration to the experience of plant-gathering in

the PDA extending to the LAA.

Residual effects on hunting and trapping will include a change to the availability of hunted and trapped species, a change in access to hunting and trapping sites and areas, and an alteration of the experience of hunting and trapping in the PDA extending to the RAA.

Residual effects on trails and travelways will include a change in availability of, or access to trails and travelways, and an altered experience of traveling for traditional purposes in the PDA extending to the LAA.

Residual effects on cultural sites include disruption to or reduction of the use of sites of cultural, spiritual, or sacred value, and an altered experience of traditional activities at these sites.

To sum up residual effects on traditional land and resource use, we learned that most plant-harvesting, hunting and trapping, travelways and cultural sites reported in ATK are beyond the LAA. With mitigation, the effects on TLRU are characterized as low to moderate magnitude, extending from the PDA to the LAA.

This is because the area of Crown land

in the PDA is proportionally small relative to the RAA, and after construction, access to TLRU sites and activities within the project easement will be unrestricted, apart from times and places of maintenance activities.

As identified for the other biophysical VCs regarding relevant resources, TLRU has experienced cumulative effects from land conversion to agriculture, resource development, transportation, utility corridors, and residential development.

The addition of this project and future projects will incrementally contribute to cumulative effects.

Manitoba Hydro will continue to engage First Nations and Metis regarding concerns and recommendations in the planning process.

Thank you very much.

MS. COUGHLIN: And that concludes our biophysical presentation.

THE CHAIRMAN: All right. So I'm assuming, then, there are no more components, at least to the biophysical side of things; is that right?

MS. COUGHLIN: That's correct.

THE CHAIRMAN: Good.

Well, we are just about at five o'clock, so subject to anything that we have to file here, which we will come to in a minute, I'm going to suggest we are adjourning, and we will be back here at 9:30 in the morning to look at -- well, first of all to deal with questions on this; then Hydro's next presentation.

Anything to file?

MS. JOHNSON: Yes, quite a few things today.

MH48 is the community health and well-being presentation. Forty-nine is heritage, Part 1. Fifty is heritage part 2. Fifty-one is the introduction to this panel. Fifty-two is fish part 1. Fifty-three is fish part 2. Fifty-four is vegetation part 1, 55 is vegetation part 2. Fifty-six is wildlife part 1. Fifty-seven is wildlife part 2. Fifty-eight is the traditional land use part 1. Fifty-nine is part 2. And SCO number 1 is the safety data sheet and DPW01 is the Bipole III/picture.

(EXHIBIT MH-48: Community health and well-being presentation)

(EXHIBIT MH-49: Heritage presentation

Part 1)
(EXHIBIT MH-50: Heritage presentation Part 2)
(EXHIBIT MH-51: Introduction to Biophysical panel)
(EXHIBIT MH-52: Fish presentation part 1)
(EXHIBIT MH-53: Fish presentation part 2)
(EXHIBIT MH-54: Vegetation presentation part 1)
(EXHIBIT MH-55: Vegetation presentation part 2)
(EXHIBIT MH-56: Wildlife presentation part 1)
(EXHIBIT MH-57: Wildlife presentation part 2)
(EXHIBIT MH-58: Traditional land use presentation part 1)
(EXHIBIT MH-59: Traditional land use presentation part 2)
(EXHIBIT SCO-1: Safety data sheet)
(EXHIBIT DPW-01: The Bipole III/picture)
THE CHAIRMAN: All right. That's it

for the filings. Okay. Thank you all and we will see you tomorrow morning at 9:30.

(Adjourned at 5:00 p.m.)

OFFICIAL EXAMINER'S CERTIFICATE

Cecelia Reid and Debra Kot, duly appointed Official Examiners in the Province of Manitoba, do hereby certify the foregoing pages are a true and correct transcript of our Stenotype notes as taken by us at the time and place hereinbefore stated to the best of our skill and ability.

Cecelia Reid

Official Examiner, Q.B.

Debra Kot

Official Examiner Q.B.