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7   Proceeding ID No. 22665

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10   EDP RENEWABLES SH PROJECT GP LTD. - SHARP HILLS WIND FARM

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16   P R O C E E D I N G S

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21   June 13, 2018

22   Calgary, Alberta

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REPORTING GROUP

1   Proceedings taken at the offices of the Alberta Utilities

2   Commission, 1400, 600 Third Avenue S.W., Calgary, Alberta.

3   _____

4   Volume 5

5   June 13, 2018

6

7   Mr. M. Kolesar   Chair
     Ms. T. Collins   Commission Member
     Ms. J. Phillips   Commission Member

8

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9   Ms. K. Macnab   Commission Counsel
     Mr. T. Buhler   Commission Counsel

10

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     Ms. J. Yu   Commission Staff

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     Ms. T. Oleniuk   For EDP
13   Ms. N. Bakker

14   Mr. G. Fitch, QC.   For the Clearview Group
     Mr. M. Baldasaro

15

     Ms. D. Gerbrandt, CSR(A)   Official Court Reporters
16   Ms. B. Ball, CSR(A) RPR CRR

17   _____

18   (PROCEEDINGS COMMENCED AT 8:59 A.M.)

19   THE CHAIR: Good morning, everyone. Please be

20   seated.   08:59

21   And welcome. I think we've got a few technical

22   glitches we're trying to sort out here, so maybe while

23   that's happening I'll talk about a few things.

24   Number one, welcome to the alternate universe. In

25   this world, the witnesses are on that side, the counsel

1   have switched, and the staff and Legal are on that

2   side. So it might take us a little while to get used

3   to where we're supposed to look, and I hope you don't

4   have the same challenges as us.

5   Also, welcome to the Krokers and various other

6   people who made the long drive from the far east to

7   come here. Welcome.

8   And the last thing that I'm going to talk about is

9   what happens in the event of an emergency. So there

10   are two emergency exits out of this room. One is right   09:00

11   behind me to my right here. You go out these doors and

12   you turn left. You'll be into the hallways and go find

13   the stairwells to go down.

14   And back through the way you came, through these

15   doors, you turn right, go straight through and out the

16   other set of doors you came in, and you'll find the

17   emergency exits and the stairwells to go down from

18   there.

19   So in the event of any type of an alarm that we're

20   required to vacate, that's your way out.   09:01

21   So today we're going to hear the two remaining

22   witness panels from the Clearview Group, and then we'll

23   be taking a break for preparation of oral argument.

24   We'll have another break. We will then hear the reply,

25   and that should pretty much conclude our day.

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1   Does anybody have anything of a preliminary nature

2   that we should deal with before we ask Mr. Fitch to

3   introduce his panel?

4   Seeing none, maybe we'll wait a few minutes and

5   just get the technical issues, get themselves sorted

6   out. Please speak among yourselves.

7   All right. It looks like we've got things

8   basically sorted out.

9   Just a few things I probably should have

10   mentioned. We're pretty technology savvy here, so all   09:04

11   of the exhibits are going to show up on the screens

12   that you see. When you refer to an exhibit, we'll have

13   the exhibit pulled up. So just give us a minute or so

14   to make sure that the exhibit is up on the screen. We

15   have the same real live transcript, as we had last

16   week. And all the microphones are wireless. So,

17   again, push the button to speak. The little light will

18   turn green so you'll know it's on. Push it again, it

19   will turn red. And you can pull the mic to you to make

20   sure that people can -- or that the court reporter and   09:05

21   the rest of the room can hear you.

22   I think that's probably all I really need to

23   explain.

24   So let's go. Mr. Fitch, please introduce your

25   panel.

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   MR. FITCH: Thank you, Mr. Chair and Panel

2   members. Nice to see you again.

3   So this is the final witness panel of the

4   Clearview Group. I will introduce them by name, ask

5   that they be sworn or affirmed and then we'll get

6   going.

7   So seated farthest from the hearing panel is

8   Mr. Hank de Haan of dBA Noise Consultants, who

9   helpfully created his own name tag. Thank you. It's

10   been a long week and a half.   09:05

11   And seated next to Mr. de Haan is

12   Mr. Ken Fairhurst of RDI, Resource Development Inc. So

13   he's the fellow with no name tag.

14   May I ask that the witnesses be sworn or affirmed,

15   please.

16   THE CHAIR: I'll ask the court reporter to do

17   that, please.

18

19   H. DE HAAN, K. FAIRHURST (For the Clearview Group),

20   sworn/affirmed   09:06

21   **MR. FITCH EXAMINES THE PANEL:**

22   MR. FITCH: Thank you, madam court reporter.

23   Mr. Chair, Panel members, I'm going to begin with

24   Mr. de Haan.

25   Q. So, Mr. de Haan, I'm going to now ask you to introduce

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   yourself to the Hearing Commissioners by briefly

2   running through your qualifications.

3 A. **MR. DE HAAN: My name is Hank de Haan. I'm an**

4   **acoustical practitioner with about 28 years of**

5   **experience. I'm a member of the Acoustical Society of**

6   **America of the Institute of Noise Control Engineers of**

7   **the USA. I'm a board certified member. I'm a member**

8   **of the Canadian Acoustical Association, and I'm a**

9   **member of the Royal Dutch Engineering Society.**

10   **I've been practising in Alberta for about 11 years**   09:07

11   **now. I've been involved in several procedures before**

12   **the AUC.**

13 Q. Thank you. And, sir, can you confirm you have provided

14   a copy of your curriculum vitae which sets out your

15   qualifications in greater detail and that that has been

16   marked as Exhibit 188?

17 A. **MR. DE HAAN: Correct.**

18 Q. And, sir, can you confirm that your CV is accurate to

19   the best of your knowledge?

20 A. **MR. DE HAAN: Yes.**   09:08

21 Q. Thank you. And, sir, I understand you were retained on

22   behalf of the Clearview Group, my clients, to carry out

23   a review of the noise impact assessment of the proposed

24   Sharp Hills wind farm project that was conducted by

25   RWDI?

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   **A.**   **MR. DE HAAN:**   **That is correct.**

2   Q.   And, sir, further to that retainer, you prepared a

3   report with some appendices, and that report has been

4   marked as Exhibit 138?

5   **A.**   **MR. DE HAAN:**   **That is correct.**

6   Q.   Thank you. And, sir, can you confirm that the report

7   is accurate to the best of your knowledge?

8   **A.**   **MR. DE HAAN:**   **Yes, it is.**

9   Q.   And, sir, do you have any corrections you would like to

10   make to your report?   09:09

11   **A.**   **MR. DE HAAN:**   **No. I stand by it as it is.**

12   Q.   Thank you. And, sir, you also prepared a memorandum

13   dated May 10, 2018, setting forth the results of a

14   field trip that you took to the project area on

15   April 26 and 27, 2018. And that memo has been marked

16   as Exhibit 177; is that right?

17   **A.**   **MR. DE HAAN:**   **That's correct.**

18   Q.   Okay. And, finally, the Clearview Group was asked

19   several information requests by both EDP and the

20   Commission on the issue of noise, and you can confirm   09:09

21   that you prepared, on behalf of the Clearview Group,

22   the responses to those IRs on noise?

23   **A.**   **MR. DE HAAN:**   **Yes, I did.**

24   Q.   Thank you. Sir, can you confirm that you adopt your

25   report, your memo, and your IR responses on noise as

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   your evidence in this proceeding?

2   A.   MR. DE HAAN: Yes, I do. I do confirm.

3   Q.   Thank you. You might want to -- that's wireless. You

4   might want to bring the mic just a teeny bit closer to

5   you. No, no. To you.

6   A.   MR. DE HAAN: Okay.

7   Q.   That's right.

8   A.   MR. DE HAAN: Sorry.

9   Q.   And I don't think it's on. Maybe that's part of the

10   problem. You have to hit it and then it will go to   09:10

11   green. Okay.

12   And, sir, can you confirm that you have reviewed

13   the reply evidence prepared by WDI on behalf of EDP in

14   this proceeding?

15   A.   MR. DE HAAN: I did.

16   Q.   And you can confirm you have also reviewed the

17   transcript of portions of the hearing so far, including

18   my cross-examination of Ms. Drew of RWDI?

19   A.   MR. DE HAAN: Correct.

20   Q.   And, finally, sir, can you confirm that you have   09:10

21   reviewed the revised modelling results using a ground

22   factor of 0.5 that were prepared by RWDI at the

23   Commission's request?

24   A.   MR. DE HAAN: Yes, I reviewed that.

25   Q.   Okay. And, sir, finally, you have prepared an opening

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   statement, which summarizes your report, provides your

2   comments on RWDI's reply evidence and on the revised

3   modelling results; correct?

4   A. MR. DE HAAN: Correct.

5   Q. MR. FITCH: And for the Panel, the opening

6   statement of Mr. de Haan and a couple of documents he's

7   going to be referring to were uploaded to DDS

8   yesterday. They, of course, don't have an exhibit

9   number, but they're certainly accessible. In fact, I

10   think Mr. de Haan's opening statement is right at the   09:11

11   top of the list, so to speak. So I don't actually have

12   hard copies, but I'm assuming you can -- to the extent

13   you want to look at the opening statement as

14   Mr. de Haan presents it, we ought to all be able to

15   view it?

16 THE CHAIR: Yes, sir. I think that is fine.

17 MR. FITCH: All right, thank you.

18 Q. So, Mr. de Haan, I'm going to ask you now to please

19   proceed with your opening statement.

20 A. MR. DE HAAN: On behalf of the Clearview Group,   09:12

21   I reviewed the noise impact assessment prepared by RWDI

22   for the proponent EDP. I also reviewed EDP's response

23   to various information requests on noise and EDP's

24   reply evidence to my report.

25   Finally, I also reviewed the recalculated noise

1   **levels using a ground factor of 0.5 that were provided**

2   **by EDP during the hearing in response to a request from**

3   **the Commission.**

4   THE CHAIR: Sir, when we read something, we

5   have a tendency to go really fast, and the

6   court reporter is going to have trouble being able to

7   keep up with you --

8   A.   **MR. DE HAAN:**   **I'll slow down.**

9   THE CHAIR: -- so I would just ask you to go

10   not quite so quickly. Thank you.   09:12

11   A.   **MR. DE HAAN:**   **Okay. To summarize my findings, I**

12   **believe, first of all, that the noise effect from**

13   **third-party facilities may be underestimated by both**

14   **not including all potentially relevant facilities and**

15   **by not modelling their noise contribution correctly.**

16   **Second, the noise effects from the wind turbines**

17   **may be underestimated due to a number of factors. The**

18   **sound power level used for the wind turbines does not**

19   **accurately represent the sound power level on the**

20   **maximum operating conditions.**   09:13

21   **Second, the general ground factor of 0.7 used in**

22   **RWDI's original modelling is optimistic.**

23   **Third, sound reflective ground surfaces were not**

24   **incorporated in RWDI's modelling.**

25   **The presence of second-storey dwellings in the**

1   project area was not included in RWDI's modelling.

2   And, lastly, representative propagation conditions

3   in the study area were not considered in the modelling.

4   And, by that, I mean atmospheric stability Class E.

5   I therefore believe that the PSL may be exceeded

6   at a number of residences under representative

7   conditions. I will now briefly discuss each of these

8   points.

9   A short interruption, is this the speed -- a

10 better speed?   09:14

11 THE CHAIR: We'll get the court reporter to

12 get a nod on that.

13   Yes.

14 A. MR. DE HAAN: Thank you.

15 THE CHAIR: Thank you, sir.

16 A. MR. DE HAAN: Noise effects from third-party

17 facilities may be underestimated. I have concerns

18 regarding the selection process of third-party

19 facilities. RWDI has stated that only pumping wells

20 were included and not flowing wells or instrument   09:14

21 shacks or other facilities. Wells with other codes,

22 like licences, reentered, issued, recertified, were not

23 included in the NIA. If wells with these codes become

24 operational again, then noise impact may lead to an

25 exceedance of the PSL.

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   Future operations at all or a number of these

2   wells may be permitted by the AER. No information was

3   provided to assess whether or not operations at these

4   wells are permitted and what their noise effects may

5   be.

6   RWDI has stated that measurements of noise from

7   third-party facilities were conducted according to

8   ISO 3744, ISO 3746, or AMSI S12.57 (2011). That's not

9   correct. As stated in the NIA and in responses to

10   information requests from the Clearview Group, they   09:15

11   were regarded as point sources over a reflective

12   plane -- see Section 2.2.4 on page 16 of the NIA

13   review. That's Exhibit X0138 and Exhibit 0129,

14   IR 034 -- the reflective plane, being the facility

15   terrain. However, the facility was modelled by RWDI as

16   70 percent absorptive.

17   It is common practice for dBA Noise Consultants to

18   conduct field measurements when possible for the

19   purpose of trying to verify the accuracy of our

20   modelling. During my field trip to the project area on   09:16

21   April 26 and April 27, the noise from several

22   facilities were re-measured, along them Sedalia

23   9-29-31-5-GP. And that's referred to in the NIA as

24   facility OG-2 or facility TPF-002.

25   I also conducted measurements at some distance

1   from this facility. I then remodelled the facility

2   assuming a fully reflective terrain with the ground

3   factor of 0. A comparison between the measured noise

4   levels and the model noise levels revealed identical

5   results, spot on. That is, modelling using a ground

6   factor of 0 was found to perfectly match actual

7   measured noise.

8 Q. Mr. de Haan, just if I can interrupt you briefly. I

9   leave it to your discretion, but you may not need for

10   the purpose of the flow of your statement to identify   09:17

11   every single reference, the exhibit number and all of

12   that. We can all read it, and it might just flow

13   better if you --

14 A. MR. DE HAAN: Sure.

15 Q. -- omitted that. Sure.

16 A. MR. DE HAAN: Finally, in my report we raised

17   concerns that not all potentially relevant third-party

18   facilities were included in the NIA for the project.

19   During my field trip, I made field observations and

20   conducted measurements. In response to information   09:17

21   requests from EDP, I submitted plots from the modelled

22   facilities.

23   A review of aerial photos subsequently provided by

24   RWDI as part of the reply evidence indicates that

25   several facilities that were not included by RWDI may

1   be relevant. In my opinion, these facilities should

2   have been visited to confirm whether or not they are

3   relevant.

4   I'll move on now to the sound power level for the

5   turbines. In my report, I raised the concern that the

6   sound power level included in the NIA is valid for the

7   hub height wind speed of 12 metres per second and not

8   the maximum wind speed of 20 metres per second.

9   In its reply evidence, RWDI justified its use of

10   12 metres per second by reference to the mandated   09:18

11   ambient sound level of 35 dBA as included in Rule 12.

12   RWDI asserted that when hub height wind speed is

13   greater than 12 metres per second the ambient noise

14   levels will be higher than the assumed 35 dBA, and thus

15   the sound from the wind farm would be masked by ambient

16   contamination.

17   In my opinion, there is no connection between the

18   operating conditions for the wind turbine at the

19   mandated ambient sound level of 35 dBA and receptor

20   heights. The ambient sound level is defined in Rule 12   09:18

21   as a composite of different airborne sources far away

22   from and near the point of measurement. It does not

23   contain the contribution from energy-related facilities

24   or from the wind.

25   The value of 35 dBA is mandated in Rule 12 for

Examined by Mr. Fitch

1   rural Alberta and is not defined as valid for a single

2   height only. There is no connection between the

3   ambient sound level as mandated and operating

4   conditions for the wind turbines. It has been

5   demonstrated that both wind speed and direction can

6   differ significantly between ground level and hub

7   height.

8   To move on to the general ground factor of .7. As

9   the evidence thus far in the proceeding has shown, NIA

10   practitioners modelling noise from wind farms typically   09:19

11   use a ground factor of 0.5. For this reason, in our

12   report we concluded that RWDI's use of a general

13   area-wide ground factor of .7 is optimistic. Revised

14   modelling results using a ground factor of 0.5 showed

15   the impact that using a ground factor has. We stand by

16   our opinion.

17   The exclusion of sound reflective surfaces. As

18   stated in our report, dBA Noise believes that

19   waterbodies should be included separately in the

20   modelling. Reflective areas may be present in   09:20

21   different quantities in different propagation paths,

22   affecting noise propagation differently for each

23   source-receptor combination.

24   There is a substantial amount of waterbodies

25   present in the study area. They should be included in

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   the modelling separately, along with other hard areas,

2   such as roads or tamped ground. We note that

3   waterbodies have been included as separate surfaces in

4   other recent wind farm NIAs, such as Grizzly Bear Creek

5   and Halkirk 2.

6   In reviewing Ms. Drew's testimony, I note that she

7   has drawn a distinction between open water and marshy

8   areas, suggesting that marshy areas are not reflective.

9   According to the Handbook of Acoustics and Noise

10   Control by Cyril M. Harris, the 3rd edition, on   09:21

11   page 3.9, and I quote:

12   "Trees and bushes are very poor noise

13   barriers. They provide very little

14   noise attenuation as a result of

15   shielding. Their roots do provide some

16   ground attenuation by keeping the soil

17   porous. Therefore, the principal

18   contribution of foliage is not barrier

19   attenuation but, instead, ground

20   attenuation, which is inherent in the   09:21

21   calculation for A ground (the ground

22   factor)..."

23   ISO 9613 provides in Annex A to the standard

24   guideline for the inclusion of vegetations in noise

25   models. That annex states that the foliage -- and I

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   quote again: (as read)

2   "The foliage of trees and shrubs

3   provides a small amount of attenuation,

4   but only if it is sufficiently dense to

5   completely block the view along the

6   propagation path. So when it is

7   impossible to see a short distance

8   through the foliage. The attenuation

9   may be close to the source, it may be

10   close to the receiver, or by both   09:22

11   situations."

12   End quote.

13   During my field trip I saw only short shrubs of up

14   to a few metres high along the edge of some waterbodies,

15   but never sufficiently high or dense close to a

16   receiver -- due to the source height, there can be no

17   shielding from foliage next to a wind turbine. After

18   all, these are over 100 metres high -- to be taken into

19   account as shielding by foliage.

20   As a result of all this, I do not agree with   09:22

21   Ms. Drew's opinion that marsh areas should be modelled

22   as being less reflective than other wetlands and

23   waterbodies.

24   In addition to waterbodies, we believe that the

25   facility terrain should also be modelled as fully

1   reflective with a ground factor of 0. This is because

2   we make a practice of conducting some downwind

3   measurements of operating facilities to check our

4   modelling.

5   We have noticed now the acoustic software has been

6   adapted to reflect recommendations of an ISO standard,

7   and I quote "recommendations for quality assured

8   implementation of ISO 9613 in software according to

9   ISO 17534, that treating tamped ground as fully

10   reflective gives the most accurate results. This is   09:23

11   illustrated by the comparison of modelled results for

12   Baytex 09-29-31-05 west of the 4th, where we had spot-on

13   results using a ground factor of 0. We compared it to

14   using an average ground factor of .7 for that facility

15   terrain and we modelled 1.7 to be short.

16   And that makes also sense if you think of how the

17   sound power levels from third-party facilities were

18   calculated from the measured sound power levels, both by

19   us and by RWDI. We both assumed, as is industry

20   practice, that sound levels propagated in a half sphere   09:24

21   from source to microphone. That is, that all the sound

22   energy directed towards the ground fully reflected in

23   the facility terrain between each individual source and

24   the microphone.

25   By consequently modelling the same facility terrain

1   as mostly sound absorbent instead of reflecting, you

2   basically throw noise energy away.

3   Finally, we note the following: The way ISO 9613

4   calculates the noise level from a multitude of noise

5   sources to a receptor is by calculating the noise

6   contribution of each individual source to that specific

7   receptor along its individual propagation path, taking

8   the specific of each path into account, such as

9   waterbodies or hard surfaces that may be present in one

10   propagation path but not in another path.   09:24

11   Then, as the last step in the calculation, the

12   contribution from each individual noise source is summed

13   with all the other noise sources for that receptor,

14   arriving at the total noise level for that specific

15   receptor.

16   Given that there are a multitude of different-sized

17   waterbodies and hard surfaces in the study area, each

18   propagation path is different from another.

19   To illustrate the difference in propagation paths,

20   I brought an enlargement of part of the noise model that   09:25

21   was assembled.

22 Q. If I could just stop you there, Mr. de Haan.

23   Mr. de Haan is referring to a document that was also

24   uploaded yesterday to DDS at the same time as his

25   opening statement. What's it called? It's simply

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   referred to as "Enlargement of Model." And I do have

2   hard copies of that, if anyone would like to have them

3   handy.

4   THE CHAIR: Sure, if you've got them, it might

5   be helpful for us. Thank you.

6   Q.   MR. FITCH: All right, Mr. de Haan, please

7   proceed.

8   A.   **MR. DE HAAN: Okay. In the plot, receptors are**

9   **indicated by a little green dot with next to them their**

10   **identification, such as, in the upper right-hand**   09:26

11   **corner, R22 or R23.**

12   **Noise sources are identified as little bright**

13   **orange stars, with a number like 53A, 62, 63, 64. And**

14   **waterbodies, hard surfaces are identified as blue**

15   **polygons.**

16   **To start in the upper right corner, I drew as a**

17   **red line the propagation path from noise source 53A,**

18   **that's a wind turbine, to Receptor R22 and R23. And we**

19   **see that the propagation path only crosses a road and**

20   **that's it and no other hard surfaces. So most of the**   09:27

21   **propagation path would be soft, relatively soft.**

22   **If we go down in the plot to Receptor R20, and**

23   **let's start with Wind Turbine 64 in the lower**

24   **right-hand corner, and we see that propagation path, we**

25   **see that it just touches some waterbody in the centre**

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1   of the propagation path, you see it right in the

2   middle, and then it crosses some hard surface next to

3   the receptor.

4   If we move a little to the left to noise source

5   63, Wind Turbine 63, we see that it crosses way more

6   waterbodies in its propagation path from wind turbine

7   to Receptor R20.

8   And if we move to the left again, we see Wind

9   Turbine 62, and it crosses a few waterbodies close to

10   the wind turbine, and then a few bodies close to   09:28

11   Receptor 20.

12   The main point being that each individual

13   propagation path differs.

14 Q. And, Mr. de Haan, we probably should have already done

15   this, but just advise the Hearing Commissioners where

16   this document comes from.

17 A. MR. DE HAAN: This is an enlargement from the

18   model plots that we submitted earlier as part of an

19   answer to an AUC information request.

20 Q. Thank you.   09:28

21 MR. FITCH: Mr. Chair, if we could mark the

22   enlargement plot document as the next exhibit, please.

23 THE CHAIR: That will be Exhibit 281.

24   EXHIBIT 281 - ENLARGEMENT PLOT DOCUMENT

25 Q. MR. FITCH: Thank you, Mr. de Haan. Please

1   proceed.

2 A.   MR. DE HAAN: Also, if you look at the layout of

3   receptors, there are receptors who have absorptive

4   surfaces on one side of the house, like the backyard,

5   and tamped ground or concrete on the other side where

6   the access with vehicles is. This results in different

7   propagations.

8   By modelling an area as accurately as possible

9   based on the available information such as aerial

10   photography and freely available shape files for   09:29

11   waterbodies, an element of uncertainty is removed. You

12   don't have to guess what the ground factor would be;

13   the model does it all for you, and way more accurately

14   than we can do it as well. And it's really no trouble

15   at all.

16   In conclusion on this point, modelling with only

17   an average ground factor of, say, 0.5 can be

18   appropriate, but only in conditions where the

19   propagation path between each noise source and each

20   receptor is comparable. That's not the case here due   09:30

21   to the presence of a large number of waterbodies, as we

22   have just seen.

23   Further, the comparison we provided between

24   measured and calculated results next to a third-party

25   facility indicates that tamped ground near sources or

1   receivers should be modelled as reflective surfaces

2   with a ground factor of 0.

3   Second-storey dwellings were not included. The

4   second storey is relevant for the nighttime noise

5   impact and is included in Rule 012 for complaint

6   situations. They were not included in the RWDI NIA,

7   but they should have been included, in our opinion.

8   This would result in approximately 1 dBA higher noise

9   impact, but it could be, in some conditions, lead to

10   3 dBA higher noise impact.   09:30

11   In my view, it's important to include the second

12   storey of a residence in a noise assessment where

13   there's one present. That's where the noise effects

14   are typically experienced by the public, and the noise

15   impact at a second storey is typically higher.

16   Ground-level noise impact is typically lower than at

17   second-storey height, and this may lead to an

18   exceedance of the PSL.

19   Also, imagine a situation where only the

20   ground-level height is assessed, so a height of 1.5   09:31

21   metre, and not the second-storey height, 4 1/2 metres.

22   If the ground level is predicted to be only just

23   compliant, and during compliance verification or a

24   complaint, the second-storey noise impact is well over

25   the PSL, what are we going to do then? That's why in

Examined by Mr. Fitch

1   our NIAs, the dBA will include the second storey if we

2   know one is present and we will look for it during our

3   field trips. We know that several of our colleagues do

4   the same.

5   In several AUC-approved wind turbine projects,

6   second-storey receptors were included, like the

7   Bull Creek wind farm, for instance.

8   Representative propagation conditions were not

9   considered, or stable atmospheric conditions. As

10   stated in our report, we believe that stable   09:32

11   atmospheric conditions should be considered in a noise

12   survey. Considering that stable atmospheric conditions

13   could lead to an increased noise impact if these stable

14   conditions occur more than 10 percent of the time in a

15   particular season, I believe they should have been

16   considered as a representative.

17   The evidence we filed shows that under such

18   conditions the noise impact could be higher than by

19   predicting using ISO 9613 by itself. dBA asked EDP in

20   an information request how frequently stable   09:32

21   atmospheric conditions occur in the study area. They

22   declined to provide the requested information on the

23   basis that it's confidential.

24   Subsequently in their reply evidence, and that's

25   number 200, RWDI stated that atmospheric Class E is

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   representative for the study area. If that is indeed

2   the case, it's my opinion that these conditions should

3   have been considered in the NIA.

4   The conclusion of this all is that the PSL may be

5   exceeded at a number of residences. As stated in my

6   report, based on all the points discussed above, it's

7   my opinion that RWDI's modelling results underpredict

8   noise levels and the nighttime PSL may be exceeded at a

9   number of residences.

10   The revised modelling results prepared by RWDI in   09:33

11   response to the Commission's request do not change my

12   opinion at all. In my view, these results are

13   insufficiently representative for the following

14   reasons.

15   The modelling does not include waterbodies and

16   propagation paths between different noise sources and

17   receivers may differ. Some combinations of noise

18   source and receiver may not have any water at all

19   between them, while others may have significant amount

20   of reflective areas in their propagation.   09:34

21   Facility modelling -- facility terrain is not

22   modelled as reflective, and we have demonstrated that

23   facility terrain should be modelled as such.

24   Reflective areas near the receptors are not

25   included in the modelling.

1   And the conclusions, the results are basically

2   based on "baked in" meteorological conditions in ISO

3   9613. RWDI states that atmospheric stability Class E

4   is representative for the propagation conditions in the

5   study area. However, ISO 9613 does not cover these

6   conditions.

7   We have recalculated our results included in

8   Table 6 of our evidence on pages 43 and 44 for the same

9   selection of 16 receptors for stability Class E, wind

10   direction 315 degrees and wind speed 3 metres per   09:34

11   second.

12 Q. All right. And if I might just stop you there,

13   Mr. de Haan.

14 MR. FITCH: We, Mr. Chair, also yesterday as

15   part of Mr. de Haan's opening statement posted to DDS a

16   document titled "Table 6B Updated Results, CONCAWE

17   Class E." I do have hard copies. I might just pass

18   them out. It's probably simplest.

19 THE CHAIR: Yes, sir. Thank you.

20 Q. MR. FITCH: And, Mr. de Haan, just so the   09:35

21   Commission is clear what they're looking at now, you

22   can confirm that in your original report you had a

23   Table 6 which provided recalculations for 16 receptors

24   using the CONCAWE model and Class F stability; correct?

25 A. MR. DE HAAN: That is correct, yes.

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   Q.   And then so what you're saying is in the reply evidence

2   EDP said that actually Class E stability conditions are

3   representative in that they occur greater than

4   10 percent of the time in a season; correct?

5   A.   **MR. DE HAAN:**   **That is correct.**

6   Q.   So then what you did in Table 6B here is you

7   essentially reran your numbers that originally appeared

8   in Table 6, but instead of Class F you used Class E;

9   correct?

10   A.   **MR. DE HAAN:**   **That is correct.**   09:36

11   Q.   Okay.

12   A.   **MR. DE HAAN:**   **We only changed the stability**

13   **class. We did not change anything else.**

14   Q.   Okay. Sorry. Now, please proceed.

15   A.   **MR. DE HAAN:**   **In that updated Table 6B, we also**

16   **included a comparison with the calculations according**

17   **to ISO 9613 as provided in Table 5 of our evidence on**

18   **page 41 and 42 of that evidence. Results indicate that**

19   **under these propagation conditions the PSL will be**

20   **exceeded by five out of the selected receptors with**   09:37

21   **between .2 and 1.7 dBA.**

22   **And that concludes my opening statement.**

23   Q.   Thank you, sir.

24   MR. FITCH: If we could have the document

25   titled "Table 6B" marked as the next exhibit, please.

1   THE CHAIR: Exhibit 282.

2   MR. FITCH: Thank you.

3   **EXHIBIT 282 - DOCUMENT TITLED "TABLE**

4   **6B"**

5   THE CHAIR: And, sir, I'm unclear as to

6   whether or not we need to mark the written version of

7   Mr. de Haan's opening statement as an exhibit. I

8   believe we do. So that will be Exhibit 283.

9   MR. FITCH: Thank you.

10   **EXHIBIT 283 - MR. DE HAAN'S OPENING**   09:38

11   **STATEMENT**

12   Q.   MR. FITCH: So, Mr. de Haan, I just have a

13   couple of follow-up questions for you. Earlier in the

14   proceeding Ms. Drew, when she was testifying about

15   noise on behalf of EDP, was asked by, I believe,

16   Commission counsel about ISO 9613 and essentially, you

17   know, the appropriateness of using it versus

18   potentially this other model, CONCAWE.

19   Can you just provide us your thoughts on using

20   ISO 9613 for modelling turbines such as are applied for   09:38

21   by EDP?

22   A.   **MR. DE HAAN: ISO 9613 is an international**

23   **standard that was conceived in the early '90s when wind**

24   **turbines were far less high up -- picked up somewhere**

25   **that they were maybe 30 to 50 metres high. ISO uses**

Examined by Mr. Fitch

1   generally favourable propagation conditions, assuming

2   downwind propagation conditions from each noise source

3   from each -- to each receiver. And ISO 9613 is

4   intended for ground-based noise sources. It's not

5   valid for propagation over water, and that's included

6   in that standard in several locations.

7   While the standard is widely used, I feel that

8   with increasing size of wind turbines ISO 9613 is in a

9   way becoming less and less appropriate to use because

10   you kind of leave the criterion of it being a   09:39

11   ground-based noise source. The turbine is up there,

12   way up in the air, where propagation conditions and

13   wind may differ.

14   We have -- we, the international community of

15   acoustical practitioners, have been able to use

16   ISO 9613 and -- in a good way, and it's proven to be

17   good for downwind conditions, provided we fiddle with

18   the settings in the model.

19   For instance, by not including ground that would

20   qualify as an absorptive as hard grounds or ground with   09:40

21   a different absorption factor or by -- instead of

22   calculating the noise level at receptors at ground

23   height, moving the receptor point up to 4 metres.

24   That's one of the recommendations made in the

25   literature. Or by using a ground factor of 0 instead

Examined by Mr. Fitch

1   and by limiting things like screening to 2 dBA and it's

2   not valid for -- it's stated that it's not valid for

3   propagation over ravines.

4   So, to me, it feels like we're kind of pumping and

5   pumping the balloon, but I'm not sure when it bursts.

6   That kind of sums up what I would like to say about it.

7 Q. Just to follow up on that, so if the noise source is

8   not actually on the ground but rather 132 metres up in

9   the air, are you saying that essentially there would be

10   less -- just by virtue of the location of the source,   09:41

11   there's just going to be less ground attenuation?

12 A. MR. DE HAAN: That is -- that is correct.

13   Ground attenuation occurs over absorptive ground

14   providing grazing incidents, and in the literature you

15   find values of 20 -- being less than 20 degrees or less

16   than 30 degrees to define grazing incidents.

17   At steeper angles, as you're closer to the wind

18   turbine, the ground is reflective and not absorptive at

19   all. This would also occur in the propagation path if

20   there's very stable conditions. So there's a strong   09:42

21   downward reflection. So the angle of incidence from

22   the sound rates towards the ground are much steeper

23   than during daytime, daytime hours.

24 Q. Thank you. The next follow-up question I would like to

25   ask you is when -- again, when Ms. Drew was questioned

1   about her use of a general ground factor of 0.7 instead

2   of 0.5. One of the ways she responded was to say that

3   instead of using a more conservative ground factor,

4   RWDI used this 1 dB uncertainty, which was applied to

5   the noise source; i.e. the turbines.

6   Can you comment on the use of a 1 dB uncertainty,

7   I guess, as a measure of conservatism?

8   A.   **MR. DE HAAN: Well, we don't do it. I don't see**

9   **the need for it to just apply to the wind turbines and**

10   **not to the third-party facilities, for instance. Both**   09:43

11   **would have the same amount of uncertainty applied to**

12   **them. And I don't think that applying a general**

13   **uncertainty of 1 dB is the same as modelling the**

14   **situation properly and with a little bit of**

15   **conservatism in it. It just doesn't match up.**

16 Q.   And I assume the community of NIA practitioners in

17   Alberta is not large. Can you tell me, is a 1 dBA --

18   or dB uncertainty typically used by practitioners in

19   Alberta, to your knowledge?

20 A.   **MR. DE HAAN: Not to my knowledge, no. The**   09:43

21   **acoustical practitioners that I deal with from time to**

22   **time don't use it, no.**

23 Q.   Okay, thank you.

24   Finally, in my -- I think it was my discussion

25   with Ms. Drew about the conservatism of her NIA, she

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1   made reference to the fact that other wind farms, such

2   as the Oldman 2 wind farm and the Halkirk 1 farm and

3   the Wintering Hills farm, have all been determined

4   through post-construction monitoring, noise monitoring,

5   to, I guess, have shown that what was predicted turned

6   out to be the case.

7   Can you comment on her evidence in that regard?

8   A. MR. DE HAAN: Yes, I think I can. One always

9   has to be careful by comparing one project to another.

10   For instance, with Oldman 2, there were no waterbodies   09:45

11   present between the turbines and the receptors. In

12   that model, the Oldman River reservoir to the west of

13   the -- kind of the project area was included in the

14   model height. The turbine height was way less. It was

15   between 67 and 80 metres.

16   For Halkirk, the hub height was restricted to

17   80 metres and the rotor only had a diameter of

18   77 metres. Wintering Hills used a ground factor of .5.

19   I don't know. You have to be careful, as I just

20   demonstrated in my opening statement, by comparing one   09:45

21   situation to the other, to make sure that they are

22   really comparable. And in this study area, there's

23   quite some water present.

24   Q. Thank you.

25   All right. I'm going to move on to Mr. Fairhurst.

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1   If we could move the microphone.

2 A. DR. FAIRHURST: Thank you, Mr. Fitch.

3 Q. So, Mr. Fairhurst, as I did for Mr. de Haan, I'm going

4   to ask you to introduce yourself to the Hearing

5   Commissioners by describing your qualifications,

6   please. Go ahead.

7 A. DR. FAIRHURST: Yes. I have 38 years of

8   progressive experience in visual resource management,

9   starting with BC government and two years with Alberta

10   government. In those responsibilities, I helped   09:46

11   develop systems and implement them for visual resource

12   management, which includes visual impact assessments.

13   Following that, I have 22 years of experience with

14   my own company created in 1996. We have focused on

15   visual resource management.

16   While we are in BC, and a lot of our work is

17   forests, we also have done Run of River Power, NLG

18   facilities, transmission lines. So there's a number of

19   applications that I have been involved in over these

20   years.   09:47

21   I completed a PhD at UBC in 2010, while still

22   running the company, and I looked at a methodology for

23   cumulative vulnerability along roadways.

24   The problem that we often have is fixed viewpoints

25   don't really address what is the collective effect as

1   one travels. And also the limitations of those few

2   viewpoints, you can't really address it all. So my

3   system did come -- was helpful in that way.

4   As well, I did some teaching of GIS and VRM at

5   UBC.

6   Now, back with Alberta, in 2084, '85 --

7 Q. 1984 and 1985?

8 A. DR. FAIRHURST: Yes, thank you.

9 Q. Okay.

10 A. DR. FAIRHURST: -- I did the early drafts of what   09:48

11   turned out to be the visual landscape management

12   strategies for Alberta. My successor was Terry Turner,

13   and he put it into a very beautiful package.

14   While with RDI in 2003, I developed for the

15   Cumulative Environmental Management Association the

16   approach to planning for visual landscape called

17   "Visual Landscape System."

18 Q. And, Mr. -- or Dr. Fairhurst, I guess, the Cumulative

19   Environmental Management Association, or CEMA, that's a

20   body located in Fort McMurray that deals with the oil   09:49

21   sands; correct?

22 A. DR. FAIRHURST: Yes. It's the Wood Buffalo

23   region.

24   They also looked at all resources. So there was

25   forestry, any resource that had some visual impacts --

1   not just visual, sorry. It was all environmental

2   impact.

3   And what was great about that association was it

4   was called "Cumulative Environmental." And I really

5   speak to the cumulative effect.

6   Now, my document, if I'm not wavering too far from

7   my -- just my experience, is online. It's called

8   "CEMA Online."

9   Now, CEMA has come to an end. Its life has come

10   to an end, but CEMA Online still exists. I'm very   09:50

11   pleased to see my document is still there, easily to

12   find. "CEMA Online, Fairhurst."

13   Q.   Thank you. Now, sir, you have provided a curriculum

14   vitae which sets out your qualifications in greater

15   detail, and that has been marked as Exhibit 137 at

16   pdf page 17; is that --

17   A.   DR. FAIRHURST: Yes, that's correct.

18   Q.   -- correct? Sorry, you just have to let me finish my

19   questions.

20   Is that correct?   09:51

21   A.   DR. FAIRHURST: That's correct.

22   Q.   Yes. We just don't want to be speaking over each

23   other, that's all.

24   Sir, can you confirm that your CV is accurate to

25   the best of your knowledge?

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   A.   DR. FAIRHURST: It is.

2   Q.   And, sir, you can confirm that you were retained on

3   behalf of the Clearview Group to carry out an

4   assessment of the visual impacts of the proposed

5   Sharp Hills wind farm project on the local community

6   within which it will be located?

7   A.   DR. FAIRHURST: That's true.

8   Q.   And, sir, you can confirm that you have prepared a

9   report with two appendices, A and B, which have been

10   marked as Exhibits 137, 136, and 135?   09:51

11   A.   DR. FAIRHURST: Yes, I've seen them.

12   Q.   And, sir, can you confirm that the report is accurate

13   to the best of your knowledge?

14   A.   DR. FAIRHURST: It is accurate with some errata

15   that I have determined.

16   Q.   Okay, so that was my next question.

17   You have some corrections you would like to make

18   to your report?

19   A.   DR. FAIRHURST: Yes.

20   Q.   All right. And so it might be helpful, Panel members,   09:52

21   if you brought up Exhibit 137, which is

22   Mr. Fairhurst -- Dr. Fairhurst's report. Okay.

23   So there, Dr. Fairhurst, we're looking at the

24   first page of your report. Can you please proceed?

25   A.   DR. FAIRHURST: Now, on -- I'll bounce back and

Examined by Mr. Fitch

 1   forth, depending on what I found. On page 8,

 2   paragraph 4 --

 3   Q. Okay. Just give them a moment to get there.

 4   Okay. Are we in the right place?

 5   A. It's hard for me to see.

 6   It starts with "RDI tested." It's the bottom

 7   paragraph.

 8   What I found was of the 27 viewpoints tested by

 9   RDI, I made an error of saying 24 had foreground wind

10   turbines. The "WTG" is just an acronym for wind   09:53

11   turbines in my report. And that should be 10. I had

12   transposed a number that came from the number of

13   turbines, rather than the number of viewpoints. So

14   instead of 24, it's 10.

15   Q. Okay, thank you.

16   A. DR. FAIRHURST: On page 9, Table 1, viewpoint 28

17   or EDP Number 10, I had measured on a GIS 1370 metres

18   distance from the viewpoint. I re-measured it and

19   found it to be 1321. And I believe this is the closest

20   turbine to a viewpoint established by EDP and possibly   09:54

21   the one spoken of by Mr. McDougall -- Mr. McDonnell as

22   possibly being within the foreground. I don't have a

23   number to verify that that's the one he meant, but this

24   is the closest I found.

25   Q. Okay.

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   A.   DR. FAIRHURST: **So it's 1321 metres instead of**
2   **1370, Table 1.**
3   Q.   And that's in the row 28, EDP 10; correct?
4   A.   DR. FAIRHURST: **Yes, that's correct.**
5   Q.   Okay, thank you.
6   THE CHAIR: Sir, I'm sorry, but I'm confused,
7   because on the document I think it's 10 is 3440 and --
8   MR. FITCH: Mr. Chair, you need to go down to
9   the bottom of the table, and what we're looking for is
10   the one that's actually 28.   09:55
11   THE CHAIR: Not Number 10.
12   MR. FITCH: Well, it's then described as
13   EDP 10.
14   THE CHAIR: EDP 10. Okay. I'm looking at the
15   wrong column. That makes it clear now. Thank you.
16   Q.   MR. FITCH: Okay. So that should be 1321, not
17   1370.
18   A.   DR. FAIRHURST: **Yeah.**
19   Q.   Okay.
20   A.   DR. FAIRHURST: **I mean yes.**   09:55
21   **On page 2 and page 15, we can flip between them --**
22   Q.   Well, let's start with 2.
23   A.   DR. FAIRHURST: **Page 2. And the last paragraph of**
24   **the page. And, first of all, my measure of**
25   **415 kilometres, square kilometres, would require some**

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   definition, which I intend to bring out in my statement

2   and a reference to the map, which follows on the very

3   next page, and perhaps it would be handy just to look

4   at that map for --

5   Q.   Okay. So page 3 then.

6   A.   DR. FAIRHURST: Page 3. I have outlined in green

7   a close-in zonation covering all wind turbines and

8   following closely what I also called was "1 kilometre

9   zone from roads." But we can discuss --

10   Q.   That's the purple area; right?   09:57

11   A.   DR. FAIRHURST: Pardon?

12   Q.   That's the purple area? The 1 kilometre --

13   A.   DR. FAIRHURST: The purple zones, 1 kilometre.

14   And I outlined 415 square kilometres and called it

15   "east zone" and "west zone."

16   So this I severely mixed up and must apologize,

17   because it would tend to alarm, and I don't want that

18   and never intended that.

19   What happened was I said there would be five -- in

20   the last -- back on page 2 and the last sentence, five   09:57

21   turbines per square kilometre, when in fact it was

22   supposed to be one turbine for 5 kilometres. How that

23   transposed, I cannot explain, but that led me to

24   further and further getting into worse transposition

25   for, at the very last one, a turbine for every 20

1		hectares, when it actually should be one turbine for
2		500 hectares or one turbine for 1236 acres.
3		That mistake, and I apologize, also showed up on
4		page 15. And of course it showed up in my opening
5		statement, which I will get to. So I will make that
6		change or speak of that change when we get to that.
7	Q.	Okay.
8	A.	DR. FAIRHURST: And in the June the 5th transcript
9		there was five references to work done by RWDI when it
10		should have been RDI. That was my work and that extra
11		W got snuck in there somehow.
12	Q.	There is another consultant in this matter called RWDI,
13		so I think that's what probably happened.
14	A.	DR. FAIRHURST: Yes. Yes. But I didn't want
15		anything to influence or take away from what we were
16		trying to say there. Right.
17	Q.	Okay. Then if that is all of the corrections you would
18		like to make to your report --
19	A.	DR. FAIRHURST: Yes.
20	Q.	-- sir, can you confirm that your report as corrected,
21		including the appendices, constitutes your evidence in
22		this proceeding?
23	A.	DR. FAIRHURST: Yes, they are.
24	Q.	Okay. And, sir, can you confirm that you have reviewed
25		the reply evidence prepared by Mr. McDonnell of WSP

09:59 (line 10)

09:59 (line 20)

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   Canada on behalf of EDP?

2 **A.   DR. FAIRHURST: Yes, I have.**

3 Q.   And you can confirm that you have reviewed the

4   transcript of portions of the hearing, including my

5   cross-examination of Mr. McDonnell?

6 **A.   DR. FAIRHURST: Yes, I did.**

7 Q.   Okay. So, sir, you have prepared an opening statement,

8   you've alluded to it already, and that opening

9   statement summarizes your report and provides your

10   comments on Mr. McDonnell's evidence; right?   10:00

11 **A.   DR. FAIRHURST: It does.**

12 Q.   Okay. Please proceed with your opening statement then.

13 **A.   DR. FAIRHURST: And is this being called up?**

14 Q.   There it is.

15 THE CHAIR: Okay, sir -- sir, just before you

16   start, I think it might be helpful for us to ask you to

17   define what "visual resource management" refers to and

18   what the objectives are? I think it would --

19 **A.   DR. FAIRHURST: Yes.**

20 THE CHAIR: -- help us to understand your   10:01

21   background a little bit better.

22 **A.   DR. FAIRHURST: Thank you very much. That is**

23   **really essential.**

24   **"Visual resource management" is a term that looks**

25   **at the visual landscape. It used to be called "visual**

1   landscape management." Somehow it changed over into

2   visual resource management, but really what it is is

3   what people see in the landscape. And finding a way to

4   manage change, whether it's forestry, or here we have

5   wind turbines, that is compatible in the landscape.

6   That's a lot of my -- my work is visual impact

7   assessment to find and design ways to achieve that

8   compatibility. Now, part of that visual resource

9   management is setting visual landscape objectives or

10   visual quality objectives. That's a very big part of   10:02

11   it.

12   In order that the proponent of change, which

13   whatever resource it is, has some guidelines for the

14   extent of change, that's going to be acceptable. So

15   that would be visual quality objectives or VQOs. And

16   we -- we determine this, firstly, by looking at the

17   landscape, doing visual landscape inventories, rating

18   various features, the feature itself by physical

19   features. There are the viewing features, viewer

20   related, are they concerned, how many, and it comes   10:03

21   out, more or less, as a matrix for planning. And in

22   BC, that actually is put right into the determination

23   of available timber. The amount that is available

24   every year is affected by -- in one, it's just one,

25   aspect of planning, the visual quality objective. So

1   that's a big part of it.

2   So it's -- it's a whole process from, first of

3   all, identifying the values out there, setting

4   objectives with public input to come up with

5   restraints, or there's other areas that are less or no

6   constraint. And then guiding the industries towards

7   their level of change that will be acceptable.

8   I think -- would that be fine to start with?

9   THE CHAIR: Yes, sir, that's fine. Thank you.

10   That's very helpful for us. So if you want to   10:04

11   proceed --

12   A.   DR. FAIRHURST: Yes.

13   Q.   --with your opening statement. Thank you, please do.

14   A.   DR. FAIRHURST: Now, I began to try and read this

15   document, and it sort of seemed long and tedious. So

16   what I'm going to do is, in the first opening

17   statement, I have six paragraphs. Who is actually

18   moving this ahead? I have six paragraphs, just

19   numbered 1 to 6, and I'll try to keep you in -- there's

20   six paragraphs.   10:05

21   And then the second half, I get to a review of

22   Mr. McDonnell's reply evidence. There I've already

23   numbered them.

24   And I would like to make it as brief as I can,

25   because you have this in front of you, and just hit the

1   highlights. So it may not look what's in front, but if

2   you scan it, these things will jump out at you.

3   So, first of all, I visited the Sharp Hills area

4   in November of 2017. I conducted a field

5   familiarization and I was taken around by the Krokers,

6   and they very kindly pointed out stopping points or

7   viewpoints that they felt were missed by EDP in their

8   original analyses. And most of these, I think all of

9   these, but most, were at farms that they knew the

10   owners and felt they should be included.   10:06

11   So I did 27 viewpoints, find at the end of it, and

12   initially three of the viewpoints -- and I would prefer

13   to call them "observation points" because the view is

14   inferring something else, I think, in people, like a

15   prospect, an important gathering point.

16   So, if I may, I started to use a -- I may not have

17   consistently used it, to call them observation points

18   in this opening statement.

19   There were three initially foreground observation

20   points located with the Krokers, and that formed   10:07

21   11 percent of the final total. So the foreground was

22   very underrepresented. And when I got back and did my

23   map work, I identified another 11. Four of them were

24   already EDP viewpoints, which were in the middle

25   ground. And middle ground is -- foreground is, in this

1   sense, is 0 to 1 kilometre distant. So -- on either

2   side or around a viewpoint.

3   A middle ground is 1 to 8. And that's

4   conventional -- fairly conventional. It is definitely

5   conventional in BC, fairly conventional with a little

6   rounding error in the States.

7   And of those 11, I had identified 7 new ones,

8   which were actually about a quarter of the total. And

9   these I purposely located on roads, easily accessible,

10   but close to wind turbines, because that, to me, was   10:08

11   underrepresented in the mix.

12   So, of course, I measured the proximity of all 83

13   of the proposed turbines and to the observation points.

14   And, also, along the road corridors that interconnect

15   in the community, which is shown on -- in my main

16   report. And I don't want to just leave it right now,

17   but I might be --

18   So that -- that brings us to the end of my

19   paragraph Number 1.

20 Q. If I could just stop you there. You mentioned numbers   10:09

21   of foreground views. So if we can just kind of get

22   clear on that.

23   So, ultimately, you looked at 27 different

24   observation points. How many of those total in your

25   work are foreground?

1   A.   DR. FAIRHURST: Ten.

2   Q.   What percentage is that?

3   A.   DR. FAIRHURST: It's 37 percent.

4   Q.   Okay. Thank you. Carry on.

5   A.   DR. FAIRHURST: 63 percent are mid-ground,

6   identified by both EDP and during my field tour with

7   the Krokers.

8   Q.   Okay, thank you.

9   A.   DR. FAIRHURST: RDI, or me -- I produced -- did

10   all the work -- visual simulations from all 27   10:10

11   viewpoints. I used a Vestas three-dimensional model

12   that appeared to be comparable, and I placed it into my

13   software -- not mine but the one I use -- called

14   "Visual Nature Studio," and set the scale to

15   200 metres. The 3D object had its one blade turning

16   towards the top, so that top was 200 metres.

17   Unfortunately, there was no vegetative cover data.

18   I usually apply that in recognition that usually

19   vegetation, particularly where there's forests, can do

20   a lot of screening. And screening just being -- would   10:11

21   be obscuring the view if it's close to the road, say,

22   or even if it's -- if it's further back, but it's

23   covering whatever is being looked at.

24   So there was no vegetative cover from the Alberta

25   government, AltaLis. So I did two things. So I

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   matched it with my photo Panoramas, which I took in the

2   field, and those panoramas are 360 degrees, and I broke

3   it along the roadway, and then I -- my visual

4   simulations were also 360 degrees, in each case taking

5   normal lens frames and automatically pasting them

6   together in the software type -- different software,

7   but the same effects. And I broke it out from the main

8   roadway, north-south, east-west, and that gave me good

9   orientation, good control.

10   Q.   Sir, just a follow-up question. You mention that you   10:13

11   produced your visual simulations using the Vestas

12   three-dimensional model. I take it that's something

13   you got off the Vestas website?

14   A.   DR. FAIRHURST: No. I was not very good at that,

15   so I got it off an online 3D model maker.

16   Q.   Okay. And can you confirm that what you looked at was

17   described on whatever website it was as a Vesta 136

18   3.45 turbine?

19   A.   DR. FAIRHURST: I used two models. One for --

20   Visual Nature Studio was the one that I got online.   10:14

21   And then I used a wind farm planning software called

22   windPRO, which had that 1. -- that one you just

23   mentioned embedded in the software. I think it said it

24   was the 2010 version. And that was, for all I could

25   see, the correct one.

1   So there's two softwares. One that I used sort of

2   as counterbalance to the Visual Nature Studio, the

3   counterbalance being it, the windPRO, was able to do a

4   photomontage.

5   So, for instance, when I was at Jorgensons' bins

6   photo, I could bring the turbines in, cut them into the

7   photo for photo realism. That was rather missing,

8   unfortunately, from the Visual Nature Studio one.

9 Q. Okay, but, again, just to be clear, the turbine that

10   you simulated is the Vesta 136 3.45 megawatt; correct?   10:15

11 A. DR. FAIRHURST: In the windPRO version.

12 Q. Okay. Thank you.

13 A. DR. FAIRHURST: It is the close approximation set

14   to 200 metres in the Visual Nature Studio application.

15 Q. Got it. Okay. Thank you.

16 A. DR. FAIRHURST: Was there -- would it be helpful

17   to look at some photos?

18 Q. Yeah, why don't we. So you've been talking about your

19   simulations. Sir, your report is Exhibit 137, and then

20   you have two appendices to your report, which were   10:16

21   marked. I think Appendix A is 136 and Appendix B is

22   135. Do you want to direct the Commissioners to one of

23   those?

24 A. DR. FAIRHURST: Yes, I would like to. 136, I

25   believe, page 3.

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1    Q.   Okay.
2    A.   DR. FAIRHURST:     Okay.  So that on top is my photo
3         panorama, and on back -- on bottom is my Visual Nature
4         Studio rendering.
5    Q.   Okay.
6    A.   DR. FAIRHURST:     The point I would make here is
7         that a lot of the Sharp Hills landscape is very bare.
8         It's beautifully bare, but bare.  And so there was a
9         fairly easy correlation to what you're looking at as
10        far as what might be screened and what not -- what      10:17
11        might not be screened.
12   Q.   So, in other words, looking -- comparing the photo to
13        the simulation beneath it, it's not like the simulation
14        has somehow omitted a bunch of screening vegetation.
15   A.   DR. FAIRHURST:     In this case no.
16   Q.   Right.
17   A.   DR. FAIRHURST:     Closer -- and we look at another
18        one, there is more screening.  And which one did I have
19        there?  But before I move on, I'll just say the bottom
20        rendering of panorama has directional degrees marked    10:18
21        off in -- well, I guess they're almost every one, but
22        five little bars.
23            So in the centre we're looking south.  On the left
24        we're looking east, and on the right we're looking
25        west.  So that's a lot of view.
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Examined by Mr. Fitch

1   And when I -- I should mention that we will talk

2   about Mr. McDonnell's approach, which says you

3   should -- human eyes should only be looking

4   120 degrees, but it's obvious to see and say that the

5   human isn't constrained to that. They will move their

6   eyes, their head, and their body. So either half a

7   panorama or the 360 if it's interesting them, they

8   will -- they will absorb that.

9   Another point to make with this simulation, all of

10   my wind turbines were facing east. I did not have wind   10:19

11   information to make those adjustments. So in the

12   centre, you can see that it's a side profile, while at

13   either end it's the broad profile.

14   Q.   I'm sorry. In the centre side, when you say "broad,"

15   you mean you're looking directly at it?

16   A.   DR. FAIRHURST: Well, you see the full front on --

17   Q.   Front on.

18   A.   DR. FAIRHURST: -- back on, whichever it happens

19   to be.

20   Q.   Okay.   10:20

21   A.   DR. FAIRHURST: And we will get to a discussion on

22   colour of turbines a little later, but we could do it

23   right now.

24   Q.   As you wish.

25   A.   DR. FAIRHURST: I was criticized for these

Examined by Mr. Fitch

1		turbines in Visual Nature Studio being dark. What
2		happens is if the sun is from the south, there's no
3		illumination, and there's a tendency also to just
4		darken. I will get into a full discussion on how much
5		is white or dark, greater or lesser contrast and is
6		that a particular problem in the credibility of my
7		work.
8		We could look at page 7. A barren -- I mean, a
9		bare landscape. At that time the stubble was golden,
10		and it is really an appealing landscape.
11		Off to the left is New Brigden and the bins.
12	Q.	Those are the Jorgenson bins you referred --
13	A.	DR. FAIRHURST: Jorgenson bins.
14	Q.	-- to earlier. Yeah.
15	A.	And we see in the next page -- okay, first of all,
16		there is a frame that I put around each picture or the
17		photography and also the simulation. And that's
18		40 degrees, a normal picture -- roughly a normal
19		picture view, a 35 millimetre camera view. And then I
20		enlarged it --
21	Q.	Sorry. And those are the boxes or the outlines, square
22		outlines --
23	A.	DR. FAIRHURST: The boxes, yes.
24	Q.	-- on the left side; yes? Okay.
25	A.	DR. FAIRHURST: Yes. And you can see that it's

10:21 (line 10)

10:22 (line 20)

1   40 degrees down below just by counting the degrees.

2 Q. Okay.

3 A. DR. FAIRHURST: The next page. Okay. So we know

4   that -- we knew already from the photo that this box

5   was going to look at the Jorgenson bins. And we had --

6   I think there's a reference to one of the EDP

7   simulations of the same site. That was called

8   Location 3. I think we --

9 Q. The exhibit is on the top.

10 A. DR. FAIRHURST: Oh, yeah. Exhibit 76, pdf 7. 10:23

11 Q. Okay. Just give everyone time to get there.

12 A. DR. FAIRHURST: It's okay. You don't need to go

13   right away, unless...

14 Q. Let's have a look. Otherwise it may not make sense.

15   Okay, so now we're looking at Exhibit 76, pdf 7.

16   You're saying that's basically the same view?

17 A. DR. FAIRHURST: Yes. And I'll show you, when I

18   did windPRO, that there's the similarity.

19   You'll notice also, because of the angle of the

20   sun versus this southeast view towards these turbines, 10:23

21   the wind turbines are dark.

22   I will show you another viewpoint of mine where

23   the wind turbines are bright white. But, still, I'll

24   contend that, in different conditions, the bright white

25   has the highest contrast. Say, dark clouds behind it.

1   Okay. So we're going to bounce back, if I can

2   find my way -- okay. We were at --

3   Q. Was it -- I think we were at Exhibit 136, pdf 8.

4   A. DR. FAIRHURST: Okay. So that little inset is

5   something I did with windPRO. And I also did one for

6   nighttime viewing with some navigation lights.

7   Unfortunately, all of them had to come on or off at the

8   same time. I also then did an animation. And we

9   picked that up, hopefully somewhere.

10 Q. Right. So if we go to Exhibit 190, pdf 29. Go down,   10:25

11   please.

12   So there's a -- is that the right page,

13   Dr. Fairhurst?

14 A. DR. FAIRHURST: Oh, sorry. It's referenced --

15 Q. It's near there for sure. Sorry, I got the wrong

16   page reference. It's pdf 31. Sorry.

17   So just to set this up for the Commissioners, you

18   were asked by EDP certainly, and perhaps also by the

19   AUC, to provide links to an animation --

20 A. DR. FAIRHURST: Yes.   10:26

21 Q. -- in your main report you said you had done. So the

22   question I have for the AUC is if we click on the link,

23   are we going to be able to pull up the animation?

24 A. DR. FAIRHURST: This just requires two things. If

25   it hasn't been done yet, it requires the link on the

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   **bottom to get the player. And I hope there's no -- no**

2   **wall that will prevent it.**

3   **Yes?**

4   UNIDENTIFIED SPEAKER: There's five videos?

5   **A.   DR. FAIRHURST: Sorry, I don't hear you.**

6   THE CHAIR: She said there are five videos.

7   **A.   DR. FAIRHURST: Every five?**

8   UNIDENTIFIED SPEAKER: She asked if it's five videos.

9   **A.   DR. FAIRHURST: Yes. Yes, it is.**

10   THE CHAIR: Okay. So she's got them up now.   10:27

11   I'm assuming --

12   **A.   DR. FAIRHURST: You need the player first.**

13   THE CHAIR: -- Josephine can open them up.

14   **A.   DR. FAIRHURST: Yeah, our hope was that the player**

15   **may have been downloaded when we filed the information**

16   **so it could be viewed.**

17   THE CHAIR: Why don't I suggest it's time for

18   the morning break.

19   MR. FITCH: Sure.

20   THE CHAIR: Why don't we try and sort out our   10:27

21   technological challenges. I guess we're not as

22   technological savvy as I thought we were, but --

23   MR. FITCH: Certainly the lawyers are not.

24   THE CHAIR: -- why don't we try and sort that

25   out during the break, and then you can resume after the

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

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1          break, sir, and we will be able to see them at that

2          time, we hope.

3     A.   DR. FAIRHURST:        I hope.

4     THE CHAIR:                 So with that, let's take our break

5          and we'll be back at about 10 to, assuming we can sort

6          it out.  Thank you.

7     MR. FITCH:                 Thank you.

8     (ADJOURNMENT)

9     THE CHAIR:                 Thank you, everyone.  Welcome

10         back.  Please be seated.                                      10:53

11              Well, it seems that we've sorted out all our

12         technical snafus.  I just wanted to get the word snafu

13         onto the record.  And I believe we're going to ask that

14         these videos be refiled in the form of an MPEG so that

15         they'll be much easier access for any interested

16         parties.

17    MR. FITCH:                 That's fine, and we will do that.

18    THE CHAIR:                 All right.

19    Q.   MR. FITCH:            So, Mr. -- Dr. Fairhurst, sorry.

20         I keep calling you "Mr." -- just before we pull up the      10:54

21         animation, just so that we all kind of remember where

22         we're at, we had been looking at views of the Jorgenson

23         grain bins.  We looked at your simulation and we also

24         looked at the simulation that EDP had done.  And now

25         we're going to look at the same view, essentially, but
```

1   animated; is that correct?

2   A. **DR. FAIRHURST:**   **Well, it's a photomontage that I**

3   **prepared using -- sorry. A photomontage that I**

4   **prepared using windPRO and set to -- set into motion.**

5   **And the glitch was I used their own software to run the**

6   **animation, and I will have to rerun the animation into**

7   **an MPEG or whatever is the best way to, but I will do**

8   **that on the weekend.**

9   Q. All right. But we can call up the animation now, as I

10   understand it.   10:55

11   If we could do that, please.

12   All right.

13   A. **DR. FAIRHURST:**   **So this is essentially the same as**

14   **the EDP location 3. And I pointed out that there is**

15   **some similarity in the greyness between the two. And**

16   **if you look closely, there is a white bar on the right,**

17   **which is the full illumination of a white tower.**

18   Q. And what direction are we looking?

19   A. **DR. FAIRHURST:**   **Southeast.**

20   Q. Thank you.   10:56

21   A. **DR. FAIRHURST:**   **And in this case, for the windPRO,**

22   **the turbines are facing the camera.**

23   **Next --**

24 THE CHAIR: Sir, just before you move on now,

25   this is purely informational for us, this is looking at

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   the Jorgensons' bins; is that right?

2   **A.   DR. FAIRHURST: Yes.**

3   THE CHAIR: Do you know where the Jorgensons'

4   landing strip is relative to this view?

5   **A.   DR. FAIRHURST: I don't.**

6   MR. FITCH: Well, I do, if you would permit me

7   to put it on the record.

8   THE CHAIR: I will permit you.

9   MR. FITCH: The Jorgenson airstrip is

10   essentially immediately adjacent to the bins on the   `10:56`

11   south. So the bins are just north of the airstrip.

12 THE CHAIR: So in this view it would be this

13   side of the bins sort of in front of where that scrub

14   brush -- I don't know if it's scrub brush, but I'll

15   call it scrub brush.

16 MR. FITCH: Right. Yes, I believe that

17   follows.

18 THE CHAIR: All right, sir. Thank you.

19   That's helpful.

20 **A.   DR. FAIRHURST: The next animation is a nighttime**   `10:57`

21   **view with aviation lights. And in this case they all**

22   **come on or all come off, or turn on or turn off. I**

23   **couldn't vary them as the capability to do and just set**

24   **the outside -- outside ones with hazard lights rather**

25   **than all.**

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   **So there would be more of a flash, and a variable**

2   **flash, as one would -- you would see, in this case,**

3   **five, four turbines flashing at different times**

4   **throughout the night. That was the same image. I just**

5   **darkened it. And the turbines would probably be**

6   **darker.**

7   **Now, just to show that there is whiteness in these**

8   **turbines, I have the next one.**

9   **And so there's a high contrast in this**

10   **orientation. I forgot to check the exact direction,**   10:58

11   **but they're probably south facing. And the model used,**

12   **once again, was the correct model probably from 2010,**

13   **as I looked in the software. So there may be some**

14   **variance as far as the base goes and that kind of**

15   **thing.**

16   Q.   And do I understand correctly, Dr. Fairhurst, you

17   mentioned that the simulation that we're looking at

18   right now, the animated simulation, the turbines appear

19   light, and you speculated that it's because they're

20   south facing.   10:59

21   So is the idea that the software -- you input the

22   direction and then the software essentially decides

23   where the sun is going to be coming from?

24   A.   **DR. FAIRHURST: No, you set the sun.**

25   Q.   You set the sun.

1   A.   DR. FAIRHURST: In this case, it was the height

2   of -- the height of the sun, say June the 21st at 1:00,

3   and in my other images it had defaulted to winter sun.

4   So it was low on the -- it was low, and I was getting

5   more grey. That was not a manipulation, I would have

6   to say. I would like to have seen it brighter, but

7   that's what came out of that.

8   Q.   All right. So you don't consciously choose to colour

9   them light or dark. What happens is you input an

10   assumption about where the sun is, and then the model   11:00

11   processes that, and they look lighter or darker

12   depending on that input information.

13   A.   DR. FAIRHURST: Yes. There's a solar ephemeris in

14   both of them that chooses -- or places the sun at the

15   exact place at time of day and day of year. And this

16   was summer and the others were winter. There may have

17   been some distinction if I had done summer with the

18   others too.

19   Q.   All right. But just to be clear, what we're looking at

20   are snow-covered fields. So you might want to clarify.   11:01

21   You said they were summer, but the image is winter. Is

22   there an inconsistency?

23   A.   Probably.

24   Q.   Sorry, you're going to have to speak into the mic.

25   A.   DR. FAIRHURST: I wanted to show not -- and I

1   would say that bright white is legitimate in this case,

2   but I also wanted to show primarily that these turbine

3   models are white -- are white rather than some grey

4   that I had chosen to try and, for some reason, make it

5   brighter on the horizon. I can say that the bright

6   white is the greatest contrast.

7 Q. Okay. Carry on.

8 A. DR. FAIRHURST: That would be all that I want to

9   do with that.

10   And I would return to my opening statement. I   11:02

11   just wanted to glance onto that paragraph 4, "RDI found

12   24 wind turbines" --

13 Q. You can just carry on and start reading if you want.

14 A. DR. FAIRHURST: -- "within the foreground distance

15   zone." And that's the distance zone that literature

16   finds to have the greatest visual vulnerability of

17   visual impact.

18   I also created a 1-kilometre zone along roadways

19   that had turbines near. So I found there were 18 road

20   segments within the community, easy access roads,   11:03

21   totalling 88 kilometres from which 64 of the

22   83 turbines would be situated within 1 kilometre.

23   Do we need to see that map again? Those were the

24   purple lines. Do you want to just -- no, I'll carry

25   on.

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   So despite Mr. McDonnell's criticism that I had no

2   zone, I have two zones -- two types of zones. I would

3   have to go back to the map again.

4   Q. All right. Well, why don't we do that? So that's

5   Exhibit 137 --

6   A. DR. FAIRHURST: Page 3.

7   Q. -- yes, 3.

8   A. DR. FAIRHURST: Okay. The purple along roads is

9   that 1-kilometre width occupying the majority of the

10   buffers -- I mean, the turbines. Around that,   11:04

11   encompassing that is a green thick line, and it kind of

12   zigzags back and forth. And I have an east zone and a

13   west zone. And that brings all the -- all the turbines

14   together within the zone and still leaves some outlying

15   views -- viewpoints or observation points outside of

16   that. But that's that 415-kilometre -- square

17   kilometre zone that I had marked off.

18   I also had the 5 K, that squiggly outside of the

19   nearest turbine zone.

20   Q. That's in blue? The 5 K is the blue line?   11:05

21   A. DR. FAIRHURST: The blue and then a purple, I

22   guess.

23   Q. And the 10 K is purple?

24   A. DR. FAIRHURST: Purple. So that would take us to

25   questions of, well, how far are we supposed to be

1   **looking? Over the low rolling landscape, the 200-metre**

2   **maximum vertical height of the blade would be easily**

3   **seen close in, but the -- and I haven't tested how far**

4   **that zone might be before they begin to diminish, but**

5   **other studies, and I think a rather important study,**

6   **page 40 of -- let's see. It's just the wind turbine**

7   **visibility and visual impact threshold distances in**

8   **western landscape carried out by trained professionals,**

9   **including landscape architects for the Bureau of Land**

10   **Management. This I referenced in my original report.**   11:07

11   **But the blade height tip was 18 metres average.**

12   Q. Sorry, 118 metres?

13   **A.   DR. FAIRHURST: 118 metres average.**

14   Q. And just so the record is clear, you're talking about

15   an article that I think was sponsored or somehow the

16   Bureau of Land Management in the United States was

17   involved. This was the article that I put to

18   Mr. McDonnell when I was questioning him, and it's been

19   entered as an exhibit?

20   **A.   DR. FAIRHURST: Yes. Now, I don't -- they said**   11:07

21   **the zone of most vulnerability is 16 kilometres**

22   **distance in similar terrain in the wide open plains of**

23   **the U.S.**

24   Q. So, Dr. Fairhurst, if I could just interrupt you. I'm

25   going to show you Exhibit 254, which is an article

1   titled "Wind Turbine Visibility and Visual Impact

2   Threshold Distances in Western Landscapes."

3   A.   DR. FAIRHURST: Yes.

4   Q.   For the record, when you were discussing a moment ago

5   this study by the Bureau of Land Management, you're

6   referring to Exhibit 254; is that right?

7   A.   DR. FAIRHURST: Okay. Yes, I am.

8   Q.   Okay, thank you.

9   A.   DR. FAIRHURST: Thanks.

10   **It helps a little bit more to say on that, in**   11:08

11   **reference to -- another reference that McDonnell --**

12   **Mr. McDonnell has raised, and I'll state it in this**

13   **order, and I will get to that.**

14   **In Figure 2 on page 7 of -- is it my report?**

15   Q.   Yes. So that would be Exhibit 137.

16   A.   DR. FAIRHURST: Yes.

17   Q.   Pdf 7.

18   A.   DR. FAIRHURST: Go to that one. Oh, there it is.

19   **There's a cross-section that I did with a 200-metre**

20   **vertical height, vertical blade, and heights of**   11:09

21   **vegetation of -- I just used 15 metres, I believe. I**

22   **used some smaller ones also. But at 200 metres that's**

23   **the -- it's sort of a 45-degree right up to a**

24   **thousand metres, which is what, 11 point -- I can't**

25   **read it here. But as we slide along, the effectiveness**

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1		of intervening screening is very low for -- they could
2		be structures. They could be, 15-metre height, tree
3		clumps. The turbine towers over the landscape.
4		They also have a total sweep of over 14,000
5		square metres, which is 1 and a half hectares,
6		approximately, each as they rotate. They're slow, so
7		it's not a solid mass, but they do occupy that sweep.
8		And that's noted in the specifications.
9	Q.	Thank you.
10	A.	DR. FAIRHURST: Is this part of it, an exhibit? 11:11
11		This is...
12	Q.	Yes. There is -- I don't think that specific document
13		you're referring to, but there is in evidence
14		information about the turbine and its specifications.
15	A.	DR. FAIRHURST: Okay. We're moving on to that
16		last paragraph, paragraph 7, "visual landscape system."
17	Q.	So we're back on your opening statement then?
18	A.	DR. FAIRHURST: Yes.
19	Q.	Okay.
20	A.	DR. FAIRHURST: Now, that's the one that I built 11:12
21		for CEMA in 2003. I had seen it used in a
22		environmental impact assessment by Golder for Suncor, I
23		believe, in 2007. So it has had some applications.
24		And I had determined -- there's a lot of terminology
25		here which is kind of mind boggling if you don't really

1   see how it's derived.

2   I had my form as -- on page 14 of Exhibit 137, I

3   believe.

4   Q. Would you like us to call that up?

5   A. DR. FAIRHURST: Yes.

6   Q. Okay. So Exhibit 137, pdf 14. Okay. Carry on.

7   A. DR. FAIRHURST: Right. So I went through -- I

8   better look at this much closer. And I won't spend

9   much time on it. Page 14.

10   But the document that I related it to defines all   11:13

11   of these features and why we might come to these

12   conclusions, and in this case I did only one

13   classification form, and I was thinking that, on

14   average, close-in turbines, looking at the landscape

15   itself, its vegetation, water, colour, adjacent

16   scenery, scarcity, land use modification, I came up

17   with "moderate attraction." That was the first

18   category. And I did an override here because the form

19   says if -- land form modification, well, it's

20   harmonious, yes. But did I override the slope? I did.   11:14

21   Okay. I raised the slope, not the -- of the

22   terrain, but because if you think of that cross profile

23   of a turbine, that's creating a new slope close in. It

24   may disappear out of sight further back, and I

25   acknowledged that. But this form -- like, this is just

Examined by Mr. Fitch

1   the first go at using it for wind -- wind farms, and I

2   think it works. So I came up with "moderate."

3   For observability there's foreground and middle

4   ground. Focal, in-direct line. When you travel a

5   road, that is your focus. You can turn your head and

6   look around, but you're kind of grabbed -- it doesn't

7   have to be channelled by big trees or anything, or big

8   hills. You're looking ahead, and there's an expectancy

9   of what you're looking at.

10   Viewing frequency, many opportunities, because   11:15

11   that's a daily occurrence. A fair number of people who

12   have high concern.

13   And duration, many opportunities.

14   So I came up with a high observability, and then a

15   matrix gave it high significance for landscape.

16   Then risk, I did -- there's low uniform diversity,

17   low uniform topography. Colour contrast is low

18   uniform. Illumination can be from the front or side.

19   But there was this slope that was gentle. And, once

20   again, supposed to take off minus 10, but I think I   11:16

21   brought it closer to the centre to give it moderate.

22   So the answer, existing integrity is very high.

23   And that's where I stopped. But in my conclusions

24   I came up with another matrix that gave an answer.

25   So you got the existing integrity, landscape

1   integrity, but what are you going to do with it? This

2   could serve to guide what should be done there as an

3   objective.

4   So this was on page 25 of the document that I

5   cited, the visual landscape system, which is not in the

6   works. And I would like to see it in the works, but

7   that's up to you.

8   I took the -- for risk was moderate and

9   significance was high. So that gave a Class 2, high,

10   which had the same terminology. And that was page 14,   11:18

11   was it? "High" was minimal alteration to be evident,

12   subordinate, well designed, high landscape conformity.

13   And that's where I left it.

14   If you want to use this kind of approach in

15   planning -- and I did see that Golder did for Suncor,

16   so I was quite impressed -- there would be keeping

17   things subordinate and minimal alteration evident.

18   Now, obviously somebody is going to say, well,

19   that's that working agricultural landscape and -- but

20   what I experienced alteration of the fields, it may be   11:19

21   all industrialized, but it is done in a way of high

22   conformity. It just fits the land, obviously, and I

23   saw no jarring factors.

24   And even if a skiff of snow, the golden stubble

25   was added to it, the shape of these ways these fields

1   **get ploughed and seeded. It was great.**

2   **So that's my application of visual landscape**

3   **system.**

4   Q. Okay. So maybe if we could just summarize, then, you

5   used this visual landscape system rating form, or VLS

6   rating form, and you determined that the existing

7   landscape integrity for the area is high; correct?

8   A. DR. FAIRHURST: Yes.

9   Q. And you also concluded that there is a high landscape

10   significance rating; correct?   11:20

11 A. DR. FAIRHURST: Yes, high significance.

12 Q. Yes.

13 A. DR. FAIRHURST: **And existing is high, the risk is**

14   **moderate, but that just brought it down one point.**

15 Q. Right. And then what's your conclusion about what the

16   wind farm will do to the landscape integrity and the

17   landscape significance?

18 A. DR. FAIRHURST: **Well, I don't think it can fit in**

19   **the near ground. I could say that the height, the**

20   **numbers, and the distance all work to a rather -- a**   11:21

21   **very significant impact.**

22   **And I don't leave it there. I say this system**

23   **needs to look at all values, tradeoffs, and -- I wrote**

24   **those down -- consultation, design, and planning. If**

25   **there is a -- I have no idea if there is a better place**

Examined by Mr. Fitch

1   or if the fewer numbers -- I have not looked at fewer

2   numbers. I just say that the effects along the road

3   where the majority of turbines will be experienced on a

4   daily basis, and nightly, will be very strongly felt by

5   the community.

6   That's how I conclude that.

7 Q. All right, thank you. So then I think then you have a

8   few specific points you want to make in terms of

9   responding to Mr. McDonnell's reply evidence?

10 A. DR. FAIRHURST: Right. I have eight points to   11:22

11   make, and a lot of this I've already led us through

12   earlier so I don't have to make it too long.

13   Mr. McDonnell accused me and my report of bias

14   towards the foreground, to show things over the -- kind

15   of the way that he thought they would be viewed in the

16   middle ground from farms, in that nature, and I did

17   purposely select those close observation points.

18   So there was that total of 37 percent, including

19   the three with the Krokers, versus the 63 percent in

20   middle ground, and it's still a fairly low proportion.   11:23

21 Q. So then the majority of your views are not, in fact,

22   foreground; is that correct?

23 A. DR. FAIRHURST: Okay, the majority of the views

24   are not in the foreground --

25 Q. Correct. Yes.

1   A.   DR. FAIRHURST: -- or within foreground distance

2   of one or more turbines.

3   Q.   Okay. Thank you.

4   A.   DR. FAIRHURST: So there is not a bias per se. It

5   was more of a balance that I tried to create.

6   Mr. McDonnell in Point Number 2 -- could you bring

7   up those -- do you have the evidence -- I mean, my

8   statement?

9   Q.   Sorry, what -- oh, so the opening statement, please.

10   A.   DR. FAIRHURST: Down to Number 2 now. I disagree   11:25

11   with Mr. McDonnell, that the only views that matter are

12   from a person's residence, which just happen to be in

13   the middle ground, 2 kilometres to 8 kilometres away.

14   And I've said this already, viewing opportunities

15   from local community roads can be a significant daily

16   occurrence.

17   Mr. McDonnell also insisted that the way it's done

18   is you take a balance of, you know, here's one at

19   8 kilometres, here's one at 3 and a half, so you kind

20   of average off -- or you provide all the -- those   11:25

21   simulations, but you cannot -- you cannot address just

22   one. You have to think of how they all weigh out.

23   So I have always been used to addressing the best

24   case, which is also the worst case, and I can't -- the

25   best opportunity, viewing opportunity, which might just

1   happen to be the highest impact opportunity, so

2   best-worst, and I don't do the average. I never have.

3   Mr. McDonnell has not conducted a visual impact

4   assessment that says landscape architects are able to

5   appraise them. I would say, with experience or

6   practice, training, you see much more, you are able --

7   with that experience, you're going to be able to carry

8   out and assess.

9   He insisted that he was not assessing my visual

10   impact assessment, just the simulations, but he went to   11:27

11   lengths to condemn my application of the CEMA visual

12   landscape system. This was done by me in the absence,

13   recognized by Mr. McDonnell, that there is no VIA

14   procedure in Alberta.

15 Q. And by "VIA" you mean "visual impact assessment"?

16 A. DR. FAIRHURST: Yes, thank you.

17 Q. Okay.

18 A. DR. FAIRHURST: Mr. McDonnell criticized my use of

19   the word "community" and "community roads." I found

20   a -- I found a Wikipedia definition that seems to hit   11:28

21   well. If I may read it. (as read)

22   "A community is a small or large social

23   unit who have something in common, such

24   as norms, religion, values, identity.

25   Communities often share a sense of place

Examined by Mr. Fitch

1   that is situated in a geographical

2   area."

3   Sharp Hills is also part of Special Areas Number 3 and

4   4.   In 1938 these were created during the hardship of

5   the time, and they say on their website: (as read)

6   "... transformed into a strong and

7   progressive region in southeast Alberta.

8   The area holds an amazing balance of

9   rich opportunity, quiet living, so it

10   deserves a special name for this" --   11:29

11   their statement -- "breathtaking land."

12   And I haven't seen much mention of special areas or what

13   kind of planning or zonation they do but that exists.

14   Number 5. Mr. McDonnell claimed compatibility of

15   wind farms with the working agricultural landscape. He

16   cited Vissering 2011, an East Coast woman, who qualified

17   her landscapes compatibility because it has rolling

18   hills and great diversity.

19   He said, even with that, visual impacts would

20   typically occur between 5 and 8 miles, and suggested 10   11:30

21   would be a good guideline for the western part of the

22   country. But she had conversations with those who

23   conducted the BLM study, which we just referred to, and

24   said, actually she would recommend a new distance of

25   40 kilometres or 25 miles because of the open terrain,

1   dry air, larger wind projects.

2   The working agricultural landscape of Mr. McDonnell

3   already has high compatibility of all components. The

4   wind turbines are unlikely to succeed in merging,

5   particularly in the foreground, and quite likely not in

6   the mid ground. BLM said individual wind turbine

7   generators are very large structures incorporating

8   visually conspicuous, reflective surfaces, obviously

9   non-natural geometry that contrasts strongly with

10   natural landscapes.   11:31

11   And I just have three more to go. Mr. McDonnell

12   assessed several attributes of my simulations. As I

13   said, we, I, rigorously and consistently built these

14   from a composite; a 48-millimetre lens, individual

15   camera frame type simulation, to emulate the

16   35-millimetre camera lens, 360 degrees, and we've looked

17   at the 5-degree intervals. Some aberrations, such as

18   one turbine close up, actually bent, unfortunately. I

19   do not try to portray these in a worse light. It was

20   just a factor of the images joining like this together. 11:33

21   The colour he didn't like. You've seen that I have

22   used white turbines, but they get shaded. And the BLM

23   in their studies suggested that colour and geometry,

24   both the whiteness or the darkness of the turbines

25   against the backdrop and the vertical lines were major

1   contributors to visibility at all distances.

2   On my way, somewhat lost, from Calgary to Oyen on

3   my visit, I came across a wind farm right beside the

4   roadway I was travelling, and I noticed the bright white

5   of turbines in the sun, but just behind, and not very

6   far, it was almost right next to it, a dark turbine.

7   And these were having shade cast by the clouds. In the

8   sun there was bright white turbines in the greatest

9   contrast. And I've tried to pick these up by my

10   photomontages and animations, which we've seen.   11:34

11   Number 7, the photomontages referred by

12   Mr. McDonnell and the VNS simulations can describe

13   similar visibility when vegetation is minimal in height

14   and distribution. There were Figures 2 and 6 in the

15   McDonnell memo which showed rather similar -- a lack of

16   screening. And when turbines are close, the intervening

17   fence posts, power poles, farm structures are still

18   subordinate relative to these turbines. Even

19   high-tension towers are probably only 50 metres in

20   height and static, and the small pump jacks do have   11:35

21   repetitive movement but are dispersed and very small in

22   the landscape, that kind of thing.

23   The grain bins provide an essential function. You

24   may have higher contrast because of their colour:

25   white.

CLEARVIEW GROUP PANEL 6

Examined by Mr. Fitch

1   So I sort of conclude here that unlike the U.S.

2   Bureau of Land Management's findings, Mr. McDonnell

3   states that turbines will blend with the sky, can

4   provide visual interest and animated presence in a

5   static landscape and symbolic harnessing of the wind.

6   His end points, and maybe I'm a little tough on him, and

7   maybe I shouldn't even say it, but they seem contrived.

8   I think it was all leading to one end point.

9   In my opinion, passive, cultivated integrity of the

10   Sharp Hills landscape needs no enhancement of movement   11:37

11   from incompatible turbines.

12   And that's the end of my what was supposed to be

13   brief opening statement.

14 Q. Dr. Fairhurst, maybe just one follow-up question, which

15   may be of interest to the Commission. It's often said

16   that visual impacts are subjective.

17   I take it what you've tried to do is provide an

18   objective assessment of visual impacts?

19 A. DR. FAIRHURST: There's -- the formal esthetic

20   system, which visual impact assessment is one of, which   11:38

21   is identified by scholars in the United States and

22   studied, is one that is set to be objective and hard

23   measures rather than the other one, which is more

24   dealing with emotional response of people.

25   My intention was to set it out with strict

Examined by Mr. Fitch

1   controls and see where it leads me. I never contrived

2   and would never do that in my professional life or for

3   my company. I never set out to prove something that

4   wasn't there. I just was reading it as it is, as it

5   comes out, and the numbers.

6   One of the things I hadn't addressed was, okay, so

7   there's -- you see way down on the road there may be

8   more things kind of intervening that I didn't account

9   for. I say that this is a way of addressing that

10   cumulative effect as one might travel down the road.   11:39

11   One might not see all of those wind turbines at once,

12   but it also says there is a -- as you might travel

13   things, may open up and there they will be. And so it

14   looks, at first glance perhaps, more overwhelming than

15   it really is, but it serves that other purpose of

16   cumulative effect.

17 Q. Okay. So just the final question then following up

18   from that. As a practitioner in the area, what is your

19   response if someone says to you, "ah, all of those

20   visual impacts, they're just subjective"? As a   11:40

21   professional working in the area, what's your response

22   to that?

23 A. DR. FAIRHURST: I say there's very little

24   subjectiveness. I've heard that throughout my 28

25   years. But when you approach analysis on a systematic

1   basis -- and, yes, we do include, say, a measure of

2   social concern, high, medium, and low. Does the people

3   travelling the highway have high concern? Do people

4   kayaking along a lake have greater concern? Do fewer

5   numbers -- few people in a year who have high concern,

6   there's a slot that can be put in.

7   Now, we may not have exactly measured that, and we

8   may make some assumptions.

9   So that is the one element that goes into it that

10   is somewhat subjective. Everything else has a   11:42

11   measurement: the distance zone, the height of the

12   terrain, as said in the VLS, the risk. It's all

13   objective. And that's what I follow.

14   And, by the way, that visual landscape system was

15   built from amalgamation of systems in BC, Alberta, USA,

16   and Britain. So it stands well supported.

17 Q. Thank you, Dr. Fairhurst.

18 MR. FITCH: Mr. Chair, that concludes the

19   direct evidence of this witness panel. Mr. de Haan and

20   Dr. Fairhurst are now available for questioning.   11:43

21 THE CHAIR: All right. Thank you, gentlemen.

22   Ms. Oleniuk, whenever you're ready.

23 MS. OLENIUK: Thank you, chair.

24 <u>MS. OLENIUK CROSS-EXAMINES THE PANEL</u>:

25 Q. Good afternoon -- or good morning. It feels like

1   afternoon, but it's still morning.

2   My name is Terri-Lee Oleniuk, and I'm one of the

3   lawyers working for EDP. So I just have a few

4   questions with respect to your evidence, and I think

5   I'll start first with Dr. Fairhurst.

6   So, sir, just the first thing. I know you talked

7   a lot about the visual landscape system or VLS that you

8   developed for CEMA?

9   A. **DR. FAIRHURST:**   **Yes.**

10 Q. So my understanding, again, is that that was developed   11:43

11   specifically for the Wood Buffalo area?

12 A. **DR. FAIRHURST:**   **Yes, that's correct.**

13 Q. And my understanding is that Wood Buffalo is a boreal

14   forest; is that right?

15 A. **DR. FAIRHURST:**   **Yes. And open land with the**

16   **oil sands developments.**

17 Q. Right. Where the mines are?

18 A. **DR. FAIRHURST:**   **Yeah.**

19 Q. Yes, okay. And in your opening statement, you

20   indicated that you had adapted the VLS rating form for   11:44

21   wind farms; is that correct?

22 A. **DR. FAIRHURST:**   **For this particular application.**

23 Q. Okay. And you don't need to get into it, but I'm just

24   wondering if that -- the method by which you adapted it

25   is anywhere in your report?

1   A.   DR. FAIRHURST: Yes.

2   Q.   Can you point me to where it's described, the

3   adaptations that you did?

4   A.   DR. FAIRHURST: Well, on the -- maybe I was poor

5   in describing it, but on the form itself, I said

6   override, meaning the slope probably was undervalued

7   when it came to putting a 200-metre maximum height

8   turbine.

9   The viewing slope becomes what you're looking at,

10   not the -- not the terrain below. So there was some   11:45

11   overrides that I put in. If I didn't explain that, it

12   was quite possible.

13   Q.   And the next thing I just had a question about, and you

14   indicated as well in your opening statement, you talked

15   about there being no visual impact assessment procedure

16   in Alberta. Do you recall that?

17   A.   DR. FAIRHURST: Yes.

18   Q.   Okay. My understanding is BC, where you're from, I

19   understand does, in fact, have a procedure specific to

20   evaluating the visual effect of turbines?   11:45

21   A.   DR. FAIRHURST: They did a public perception

22   study. They don't have a system yet. They studied --

23   I don't know the number of people. They took them out

24   in the field and said what is your -- what is your

25   response in the various situations? But they didn't

CLEARVIEW GROUP PANEL 6
Cross-examined by Ms. Oleniuk

1   have -- they don't have guidelines.

2 Q. Okay. And that's the -- that's what's referenced in

3   your report?

4 A. DR. FAIRHURST: Yes.

5 Q. Okay. And I just -- I'm not sure if I necessarily need

6   to pass this out, but when I was preparing for this

7   hearing, I came across -- and I already provided this

8   to your counsel -- a visual effects assessment

9   guidebook for wind energy developments in British

10   Columbia. Are you familiar with that publication?   11:46

11 A. DR. FAIRHURST: I would have to look at that.

12 Q. Okay. So I take it the answer is no, you're not

13   familiar? I'm just curious if you're familiar with it.

14 A. DR. FAIRHURST: I withhold an answer until I check

15   that out.

16 Q. So, sir, I don't intend to ask you any questions about

17   it. My question was just relating to whether or not

18   you were familiar with the guidance that exists in BC.

19 A. DR. FAIRHURST: Okay. Mr. Fitch told me that this

20   was being sent out. I said just by the -- just a quick   11:47

21   look at the cover I thought it was a visual perception

22   study of wind farms, so I did not review this.

23 Q. Okay, that's fine. And my next question just relates

24   to -- I think what you refer to as the subjective

25   aspect of visual impact assessment.

1   A.   DR. FAIRHURST: Yes.

2   Q.   And if we can just turn to page 4 of your report, which

3   is Exhibit 137.

4   A.   DR. FAIRHURST: Hmm hmm. Yes.

5   Q.   And it's just the second paragraph here that we have on

6   the screen. Do you have that up in front of you?

7   A.   DR. FAIRHURST: Yeah.

8   Q.   Okay. And on page 4 here, in the second paragraph you

9   indicate: (as read)

10   "Symbolic aesthetic qualities, such as   11:48

11   those contributing to meaning and

12   function, cannot be measured by

13   quantitative methods and generally rely

14   on soliciting public opinion."

15   Do you see that there?

16   A.   DR. FAIRHURST: Hmm hmm.

17   Q.   And then you refer to a "level of concern," in quotes.

18   And you further indicate here that you did not seek

19   public opinion except those views expressed during the

20   field tour by Sheldon and Kelly Kroker?   11:49

21   A.   DR. FAIRHURST: Yes, that's correct.

22   Q.   And I just want to confirm whether you spoke to any

23   other individuals besides the Krokers?

24   A.   DR. FAIRHURST: None. They were my only two

25   contacts there during our field tour.

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1   Q.   Okay. And I note, as well, that you reference the

2   Special Areas Board in your opening statement.

3   A.   DR. FAIRHURST: Yes.

4   Q.   And I guess you mentioned you only spoke with the

5   Krokers when you were there, but did you have any other

6   opportunity to speak with Special Areas about their

7   permitting process?

8   A.   DR. FAIRHURST: No, I have not.

9   Q.   Okay. Despite the fact you didn't speak with the

10   Special Areas Board, did you have an opportunity to   11:49

11   review their land use order, which controls the use and

12   development of land and buildings within special areas

13   and has a specific section regarding wind turbine

14   projects?

15   A.   DR. FAIRHURST: I did not.

16   Q.   I'm just going to ask you a few questions, sir, with

17   respect to the simulations --

18   A.   DR. FAIRHURST: Yes.

19   Q.   -- some of which we talked about today.

20   I'm not a visual impact expert, but I did read a   11:50

21   little bit about it in preparing for this hearing. And

22   one thing I noted, and you can tell me if you agree

23   with this or not, is one guidebook -- it was actually

24   the BC one -- indicates creating technically accurate

25   simulations is critically important, so any

1   manipulations that would either exaggerate or minimize

2   the visual impacts of a proposed project must be

3   avoided?

4 A. DR. FAIRHURST: Yeah.

5 Q. Do you agree with that statement?

6 A. DR. FAIRHURST: Yes.

7 Q. Okay.

8 A. **DR. FAIRHURST: Of course. What I accomplished**

9   **was technically accurate. It had its limitation of no**

10   **provision of forests or vegetative cover that I could**   11:51

11   **put into the model. It was technically accurate. It**

12   **matched with the photo panoramas that I took**, and,

13   **therefore, I had confidence in its use**.

14 Q. Okay. If we could just pull up Exhibit 136. And this

15   is one of your simulations. And I just want to explore

16   with you, sir, the meaning of "technically accurate."

17   If we could just go to pdf 23, I think. Okay, perfect,

18   this is the one.

19   And so just -- again appreciating that I'm not an

20   expert in this area, my understanding of what you're   11:52

21   trying to portray on this page is essentially the top

22   photograph is meant to depict what the site looked like

23   at that time when you were there; is that right?

24 A. **DR. FAIRHURST: Yes, that's it.**

25 Q. Okay. And then the simulation immediately below it is

1   meant to represent what it will look like after the

2   project is constructed; is that correct?

3 A.   DR. FAIRHURST: It represents the turbine position

4   and height with the qualification that I make. It's to

5   be looked at together with the photo to get a sense of

6   what's -- how it all fits together.

7 Q. Okay, sir. So I guess my question would be, then,

8   wouldn't it just be more representative to have put the

9   turbines into the top photo with all of the remaining

10   landscape, vegetation, poles --   11:53

11 A.   DR. FAIRHURST: Oh, yes.

12 Q. -- bins?

13 A.   DR. FAIRHURST: That's why I did the windPRO one

14   that we just looked at, in particular the Jorgensons'

15   bins.

16   Now, if you look at -- beyond the bins or on the

17   right-hand side, it's an open landscape. There's also

18   very few, maybe two, turbines in the far, far distance.

19   So that's more of an accurate depiction of what the

20   future could look like.   11:54

21 Q. So you're saying the right-hand side of the bottom

22   image is more accurate?

23 A.   DR. FAIRHURST: I'm just saying that's an

24   accurate -- if there's no intervening screening, that's

25   accurate.

CLEARVIEW GROUP PANEL 6
                    Cross-examined by Ms. Oleniuk

1   Q.   Okay. Because I see a pole on the right-hand side in

2   the top picture.

3   A.   DR. FAIRHURST: Hmm hmm.

4   Q.   Okay. So that would be something that would still be

5   there, presumably, after the project; right?

6   A.   DR. FAIRHURST: Oh, yes.

7   Q.   Okay. Just one other quick question about the tool

8   that you used for this, the software program. It

9   allows you, presumably, to insert turbines. Does it

10   not allow you to insert bins and fences and poles and   11:54

11   power lines? Is that a software limitation?

12   A.   DR. FAIRHURST: Yes. This is not the use of

13   photomontages, the Visual Nature Studio.

14   Q.   Okay.

15   A.   DR. FAIRHURST: You have to add those separately.

16   Sometimes I add some elements just for scale, but in

17   this case I left that open and left it to refer back

18   and forth between the photo and the simulation.

19   Q.   Okay. So you could have added them in. You just chose

20   not to?   11:55

21   A.   DR. FAIRHURST: You can add them, but the level of

22   detail is probably not going to be very accurate.

23   There is no stock image of the bins or -- there is

24   stock images of houses. You can add fences, but that

25   is -- is all further effort to -- to accomplish what

1   the comparison already has accomplished.

2   Q.   Okay. Thank you. And just my final question for you,

3   sir, and this is in your report, and you also

4   referenced it in your opening statement as well. And

5   you recommend placing the turbines at much greater

6   distances from the community. And you gave your -- or

7   you recited the Wikipedia definition of community.

8   But I guess I'm just wondering, sir, in this case

9   and in this specific context of your recommendation,

10   what do you define as being the community? Are we   11:57

11   talking about Sedalia? New Brigden? Are we talking

12   about the individual farmhouses that are throughout the

13   area?

14   I guess where are you recommending -- like, what

15   are you recommending in here when you say they should

16   be placed farther from the community?

17   A.   DR. FAIRHURST: Well, first of all, I didn't have

18   any specific recommendation on distance. I don't know

19   that distance. I don't know. But I do know that it is

20   all of the above or whatever -- sorry, what you just   11:57

21   said. It is farms. It's people. It's people moving

22   through this network of roads, which is rather

23   cohesive, and identified by this -- partly by the

24   Clearview Group, but also there's -- there's the rest

25   of the people. People are the viewers.

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1   Q.   Okay. Thank you, sir.

2   Just turning to you, Mr. de Haan, I have some

3   questions. So the one thing I was just going to ask,

4   when I first read your report I noted that you didn't

5   make the AUC Rule 1 independent witness declaration,

6   which is to provide opinion evidence to the Commission

7   that is fair, objective, and non-partisan. But you did

8   confirm in your, I think, information request response

9   through EDP that you do acknowledge this duty; is that

10   correct?   11:58

11   A.   **MR. DE HAAN:**   **That is correct**.

12   Q.   And I assumed you've endeavoured to do that with

13   respect to your report in this proceeding?

14   A.   **MR. DE HAAN:**   **That is correct**.

15   Q.   Okay. I understand, Mr. de Haan, that you act for both

16   proponents of wind power projects as well as

17   interveners who have concerns with wind power projects;

18   is that right?

19   A.   **MR. DE HAAN:**   **I'm involved with wind power**

20   **projects from a proponent's perspective, and this is a**   11:59

21   **project where I'm involved from an intervener's**

22   **perspective, that's correct**.

23   Q.   Okay. And regardless of whether your client is a

24   proponent or an intervener, whether they're for or

25   against a particular project, I assume you always

1   strive to give evidence that's independent, fair,

2   objective?

3 A. **MR. DE HAAN:**   **Yeah. I try to provide accurate**

4   **assessments of the noise impact.**

5 Q. Okay. Thank you, sir.

6   And so I just want to understand, we've talked a

7   lot -- my friend did during his cross-examination of

8   Ms. Drew, and you did as well in your opening

9   statement -- with respect to some of the assumptions

10   that were made in the context of the noise impact   11:59

11   assessment completed in this proceeding and some other

12   projects, recent projects that the Commission is

13   looking at.

14   And so what I want to understand a little bit is

15   how your criticisms of the noise impact assessment in

16   this proceeding, and specifically some of the

17   assumptions compared to your practice in a recent NIA

18   that you authored -- and so I provided this excerpt to

19   my friend as an aid to cross. I'm not sure if you need

20   it right now.   12:00

21 A. **MR. DE HAAN:**   **Yeah.**

22 Q. And so, first, if we could just turn up Exhibit 258.

23   And this was an aid to cross that was provided by my

24   friend and which was just filed on the record

25   yesterday, I believe. And that's a two-page excerpt

1   from the noise impact assessment for Capital Power's

2   Whitla project, and it's dated October 19th, 2017.

3   And so, Mr. de Haan, I noted in your curriculum

4   vitae that you didn't indicate that you worked for

5   Stantec, but when I reviewed this report, your name was

6   on it. Is that correct?

7 A. MR. DE HAAN: Yes, that could be. I've been

8   **involved with parts of the Whitla wind power project,**

9   **that is correct.**

10 Q. Okay. And so, again, just my understanding, and just   12:02

11   if you can confirm for me, I didn't provide the

12   signature page for this, but my understanding is that

13   you're one of the two acoustic practitioners that's

14   listed on this NIA; is that correct?

15 A. MR. DE HAAN: **I don't have the signature page,**

16   **and I'm specifically asking for that because my**

17   **involvement with the Whitla project has ended before**

18   **the final report was filed.**

19 Q. Okay. I didn't provide it, sir, because I just -- I

20   assumed that you knew what reports you authored.   12:02

21 A. MR. DE HAAN: Well --

22 Q. Do you want to take a moment just to check if you

23   authored this one?

24 A. MR. DE HAAN: **There are specific Whitla reports,**

25   **and the most recent report, and I believe it is from**

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1   March this year, but I'm not certain, that's the one

2   that's on the record and that's the one I'm not

3   involved with. However, I have been involved with the

4   Whitla project as a subcontractor to Stantec before.

5   That is correct.

6 Q. So I guess, sir, maybe just to sort of speed things up,

7   I guess perhaps you can advise, maybe after the break

8   or subject to check, my understanding is that you and

9   Jonathan Chui, authored this report?

10 A. MR. DE HAAN: Mr. Chui authored the report. I   12:04

11   was involved. I did -- or I did the field program for

12   third-party facilities and I reviewed the report.

13 Q. Okay.

14 A. MR. DE HAAN: Later on I assisted him with a

15   few -- with the selection of information requests from

16   the AUC.

17 Q. Okay. So you did work on this report. That's helpful.

18   And just, again, understanding this impact

19   assessment is one that was done for the proponent? It

20   was done for Capital Power?   12:04

21 A. MR. DE HAAN: Correct.

22 Q. That's correct. Okay. And, again, just to be clear,

23   we talked about this as well last week, but the 2017

24   noise impact assessment was done before the Commission

25   instituted a technical meeting on the three Forty Mile

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1   projects and asked the proponents to agree to common

2   parameters; correct?

3 A. **MR. DE HAAN:**   **Correct.**

4 Q. If we can turn up your report in this proceeding, which

5   is Exhibit 138, and pdf 45.

6   We just have it on the screen here. And the first

7   dash point that's listed here indicates your view that

8   the study area, again for the RWDI noise impact

9   assessment, should be expand to include all facilities

10   within at least 4.5 kilometres from a receptor? That's   12:05

11   your recommendation; correct?

12 A. **MR. DE HAAN:**   **That is correct.**

13 Q. Okay. And if we can just turn up the aid to cross that

14   I just passed you, the one that's the noise impact

15   assessment aid.

16 A. **MR. DE HAAN:**   **Which one are you referring to?**

17   **The one from October 19th, 2017, or the one from just**

18   **October 2017?**

19 Q. Yes. So the one -- one of them is a noise impact

20   assessment and the other one is an environmental   12:06

21   evaluation.

22 A. **MR. DE HAAN:**   **Sure.**

23 Q. So the noise impact assessment, please.

24 A. **MR. DE HAAN:**   **Okay.**

25 Q. And, again, just looking to this -- this report, that I

CLEARVIEW GROUP PANEL 6
Cross-examined by Ms. Oleniuk

1   understand you did the third-party work for?

2 A. MR. DE HAAN: Correct, yeah.

3 Q. And the second paragraph in here, and if you can just

4   confirm this for me, my understanding is that for your

5   report, for Capital Power, you identified facilities

6   within 3 kilometres of the project area; is that

7   correct?

8 A. MR. DE HAAN: We got -- I got a map from Stantec

9   with the assignment to look at the third-party

10   facilities in the study area. I criss-crossed the   12:06

11   study area in and outside the 3-kilometre buffer and I

12   looked at both of the facilities that -- or the

13   potential facilities that were included on the map and

14   I looked what I could and count -- and counted on -- by

15   driving through the study area and around the study

16   area and what I could find.

17 Q. Okay. So just to confirm again, it was a 3-kilometre

18   radius that was included in this noise impact

19   assessment?

20 A. MR. DE HAAN: In the materials that were   12:07

21   provided to me, it was a 3-kilometre buffer, but I

22   criss-crossed -- I also criss-crossed outside this area

23   to look at potential facilities that were present.

24 Q. Okay. And did you indicate that you did that

25   additional work anywhere in this noise impact

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1   assessment?

2 A. MR. DE HAAN: How do you mean "did you

3   indicate"? I provided -- every facility that I

4   encountered on that field trip, I inspected that to see

5   if there were any noise sources or a way it could be

6   reasonably expected to become active again in one way

7   or another or overgrown. And I provided my findings in

8   the term of measurements and map locations and all that

9   good stuff to Stantec.

10 Q. Okay. If we can just go back -- oh, we still have your   12:08

11   report here.

12 A. MR. DE HAAN: Yeah.

13 Q. And we're still on pdf 45. And at the bottom of the

14   page, it's the fourth bullet from the bottom. And this

15   one indicates -- again, this is going back to

16   Sharp Hills -- your view that there's a significant

17   number of waterbodies in the study area --

18 A. MR. DE HAAN: Correct.

19 Q. -- that should be considered as acoustically reflective

20   surfaces?   12:08

21 A. MR. DE HAAN: Correct.

22 Q. And then you also make references to roads and tamped

23   ground; that's correct?

24 A. MR. DE HAAN: Yes.

25 Q. And I understand this to be a criticism of the RWDI

1   report?

2   A.   **MR. DE HAAN:**   **Correct.**

3   Q.   Okay. And then further back in your report, I don't

4   think we need to turn to it, but you essentially

5   recalculate the noise impact, and you include

6   waterbodies, roads, and other tamped surfaces --

7   A.   **MR. DE HAAN:**   **Hmm hmm.**

8   Q.   -- with a ground factor of 0. That's correct?

9   A.   **MR. DE HAAN:**   **Correct. Facility terrain.**

10   Q.   Sorry, what was the last part?   12:09

11   A.   **MR. DE HAAN:**   **The last part was that we included**

12   **facility terrain where visible as tamped ground as**

13   **reflective.**

14   Q.   Okay, thank you. And if we can just turn back to

15   Exhibit 258, which was the aid to cross that we were

16   just talking about. And so this is the Whitla noise

17   impact assessment excerpt.

18   A.   **MR. DE HAAN:**   **Yeah.**

19   Q.   And I think it's just the table at the bottom of that

20   page that's on the screen. There we are.   12:10

21   A.   **MR. DE HAAN:**   **Yeah.**

22   Q.   Okay. And, again, turning back to the one that you did

23   for Capital Power. If I look at Item 6 here, it

24   indicates you used a ground absorption of 0.5. Do you

25   see that there?

1   A.   MR. DE HAAN: Yeah. Stantec used a ground

2   absorption factor of 0.5. That is correct.

3   Q.   Again, you referenced Stantec, but to confirm, this was

4   work that you did, your name was on this report?

5   A.   MR. DE HAAN: I reviewed the report. I didn't

6   model it. I just did a third-party noise assessment.

7   I reviewed the report and I assisted with some IRs.

8   Q.   Okay.

9   A.   MR. DE HAAN: So I didn't model this.

10 Q.   Okay. But you were the quality reviewer I think is   12:10

11   what I have you down as?

12 A.   MR. DE HAAN: Reviewer of the report; that is

13   correct.

14 Q.   Okay. And in here there doesn't seem to be any mention

15   of any areas that were included with the ground

16   absorption of 0, so there doesn't seem to be any

17   reference to waterbodies, wetlands, tamped ground,

18   roads, anything like that. Is that fair?

19 A.   MR. DE HAAN: No. That is correct.

20   I would like to add that during my field trip, I   12:11

21   did not encounter any waterbodies except a large

22   waterbody just outside of the study area to the west,

23   off the top of my head. Nothing compared to what I

24   encountered during my field trip recently to the

25   Sharp Hills area.

 1   Q.   Okay. That leads me right to my next question.

 2   If you could pull up the other aid to cross that I

 3   passed you, and this is the environmental evaluation

 4   for Whitla. And if we turn to the fourth page I

 5   provided you, there's a map. Do you see that map,

 6   Mr. de Haan?

 7   A.   MR. DE HAAN: Are you referring -- sorry, are

 8   you referring to this map?

 9   Q.   Yes, I am.

10   A.   MR. DE HAAN: Okay.   12:11

11   Q.   Okay. And my understanding, and you can correct me if

12   I'm wrong, is this is a map representing the Whitla

13   project area, and it indicates there's a -- the

14   reference in here indicates it's native prairie

15   grassland and wetlands in the local assessment area.

16   Does that look right to you?

17   A.   MR. DE HAAN: Yes, it does.

18   Q.   And if we just turn to the next page in the aid to

19   cross, which is the Table 7-2, and that's the extent of

20   land cover type in the local assessment area. Do you   12:12

21   have that, sir?

22   A.   MR. DE HAAN: Yeah.

23   Q.   Okay. And if we look at the land cover type --

24   A.   MR. DE HAAN: Hmm hmm.

25   Q.   -- the first is "cultivated," then "developed," then

1   "native prairie," then "tame pasture," and then we get

2   into two rows, which I understand are meant to

3   represent waterbodies, wetlands, that type of thing?

4   A.   MR. DE HAAN: I'm an acoustician, so I don't

5   know what it means ephemeral waterbody or temporary

6   graminoid marsh or seasonal or semipermanent graminoid

7   marsh. I don't know what it means. I take it to

8   indicate marsh, and that's all it is to me.

9   Q.   Okay. So you wouldn't -- as an acoustical

10   practitioner, you wouldn't take this to mean that this   12:13

11   would be representative of marsh and wetlands in the

12   area?

13 A.   MR. DE HAAN: I don't know. I just told you

14   that when we -- when I conducted that field visit that

15   I didn't encounter any waterbodies in the Whitla study

16   area. And this is the first time I see this.

17 Q.   Okay. The reason I ask those questions, sir, and

18   you're probably -- you probably already figured this

19   out, is because the third column here talks about

20   percentage of local assessment area.   12:13

21 A.   MR. DE HAAN: Yeah.

22 Q.   And by my math, again, I understand marsh to be

23   wetland. And if we're looking here, it looks like

24   there's 5.5 percent of the first type of marsh and

25   7 percent of the second type of marsh?

1   A.   MR. DE HAAN: Correct.

2   Q.   And my understanding is that those two add together to

3   be 12.5 percent of the area as some type of wetland?

4   A.   MR. DE HAAN: I agree on your math.

5   Q.   Okay. And, sir, do you recall off the top of your

6   head -- you mentioned that you read the transcripts of

7   my friend's cross-examination of Ms. Drew, there was

8   quite a bit of discussion about the percentage area of

9   wetlands in Sharp Hills. Do you remember that?

10   A.   MR. DE HAAN: Yeah, I remember that.   12:14

11   Q.   It is your recollection, Mr. de Haan, that the number

12   is actually less than 12.5, which is the number that's

13   represented in this environmental evaluation by

14   Stantec?

15   MR. FITCH: Just for the record, the number of

16   12 percent was for Class 3 and above, and I don't think

17   there's any percentage number for all wetlands that

18   would encompass seasonal and ephemeral. So if we're

19   going to put this sort of contention to the witness,

20   let's be accurate.   12:15

21   A.   MR. DE HAAN: Would you repeat the question,

22   please?

23   Q.   MS. OLENIUK: Sure. So my question was is it

24   your recollection, then, when my friend was

25   cross-examining Ms. Drew that the number I think of

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1		wetlands in that situation was 12.5 percent? Is that
2		your recollection for Sharp Hills? Sorry, is it your
3		recollection that it was less than 12.5 percent?
4	A.	MR. DE HAAN: **I recall a percentage of 12.7, but**
5		**I may be off.**
6	Q.	Okay, that's fine. And just another question, and this
7		is with respect to the modelling that was conducted for
8		the NIA. Just going back again to your report --
9	A.	MR. DE HAAN: **Which NIA are you referring to?**
10	Q.	Your criticism of the modelling that was done for the
11		Sharp Hills NIA.
12	A.	MR. DE HAAN: **Okay. So you're referring to the**
13		**modelling for -- by RWDI?**
14	Q.	Correct.
15	A.	MR. DE HAAN: **Okay. Sure.**
16	Q.	Yes. I'm not sure we need to turn up your report, but
17		essentially my understanding is that you criticized the
18		use of the ISO 9613 standard for modelling noise from
19		wind farms because, in your view, it has the potential
20		to underestimate noise; is that right?
21	A.	MR. DE HAAN: **Well, according to the**
22		**peer-reviewed literature, there is a significant chance**
23		**that ISO 9613 underestimates the noise impact under**
24		**stable -- more or less stable atmospheric condition.**
25		**That is correct. And I share that -- I share that**

12:15

12:16

1   **view.**

2   Q.   Okay. And I assume that's the reason, sir, in your

3   evidence that you use the CONCAWE model for some of

4   your calculations? Is that part of the reason?

5   A.   **MR. DE HAAN:**   **Well, since the ISO 9613 method**

6   **doesn't accurately represent the noise impact on the**

7   **stable atmospheric conditions, we included calculations**

8   **using CONCAWE to represent those stable atmospheric**

9   **conditions. At that point, we didn't know how frequent**

10   **they occur in the study area. Later we learned that**   12:17

11   **stability Class E is representative of that study area,**

12   **and we conducted some calculations with the use of**

13   **CONCAWE from meteorological settings. That is correct.**

14   Q.   Okay. And, again, if we can just go back to the Whitla

15   noise impact assessment, which is Exhibit 258.

16   A.   **MR. DE HAAN:**   **Yeah.**

17   Q.   And, again, when this noise impact assessment was

18   conducted for Capital Power, my understanding is that

19   the standard that was used was ISO 9613; is that

20   correct?   12:17

21   A.   **MR. DE HAAN:**   **Correct.**

22   Q.   Okay. And was CONCAWE used for any part of this noise

23   impact assessment?

24   A.   **MR. DE HAAN:**   **Not to my knowledge, no.**

25   Q.   Okay. So just to be clear, this noise impact

1   assessment used the same calculation standard and

2   software essentially that the RWDI NIA used; is that

3   correct?

4 A. MR. DE HAAN: Yes. They both used Cadna and

5   they both used ISO 9613, and Stantec used a ground

6   absorption factor of 0.5.

7 Q. Okay. Thank you, sir.

8 MS. OLENIUK: Those are my questions, Chair.

9 THE CHAIR: Thank you very much. We'll move

10   on to any questions from Commission counsel. I believe   12:18

11   it's Mr. Mousseau, and you're just going to ask your

12   questions from there, sir, as opposed to rearranging

13   the room?

14 MR. MOUSSEAU: I'm going to stay seated, if

15   that's okay with everyone.

16 **MR. MOUSSEAU QUESTIONS THE PANEL**:

17 Q. I'm going to start with you, Dr. Fairhurst. I don't

18   have a lot for you, but I would like you to turn to

19   Exhibit 136, and we're going to start at pdf page 7.

20   And I think we've looked at this before. This is -- on   12:19

21   the top, it's a photomontage of the Jorgenson bins, and

22   on the bottom is your simulation of that; do I have

23   that right?

24 A. DR. FAIRHURST: Yes, you have it. That's correct.

25 Q. And now I'm going to move to the next page, which is

1   pdf page 8. And before I jump in there, sir, maybe

2   I'll explain who I am and what I'm doing here, if that

3   might be helpful.

4   So I'm the Commission's counsel. So I work for

5   the Alberta Utilities Commission. And my questions,

6   again, are to try and fill in any gaps or holes that I

7   might perceive in the record so that when the

8   Commission gets to making its decision it's going to

9   have the information it needs to make that decision.

10 A. DR. FAIRHURST: Yes.   12:19

11 Q. So in terms of my questioning, there's not much of an

12   agenda here. I'm just trying to figure out what I

13   perceive might be gaps or something that I might have

14   missed. So -- if that's helpful?

15 A. DR. FAIRHURST: Yes, it is.

16 Q. Okay. Looking at pdf page 8, I see your simulation

17   sort of dominating this page, but then there's a

18   photomontage done by windPRO and a day and a night

19   view.

20 A. DR. FAIRHURST: Yes.   12:20

21 Q. I guess my question is, sir, if you could create a

22   photomontage with wind turbines superimposed on the

23   picture using windPRO --

24 A. DR. FAIRHURST: Yes.

25 Q. -- why do you use the simulations? Is there a benefit

1   to having the simulations if you can actually

2   superimpose them on a photograph?

3   A. DR. FAIRHURST: The simulations allowed me to

4   address the 27 viewpoints in 360-degree views

5   consistently, and the photomontages are more of a --

6   they are photo work with somewhat less control on

7   position. You position from the known control points

8   and distance and also a narrow field of view.

9   So if we're looking at the 360-degree view, it

10   becomes more of a unwieldy task to complete 27   12:21

11   360-degree views. And I agree with you, that's -- that

12   works well.

13   It also provided me the opportunity to see what

14   might be ahead, as one travels the road. The photo

15   montage is set. It's a set viewpoint. It doesn't

16   allow for any movement one way or the other and it

17   doesn't account for that movement to make differences

18   in the views. So that's why I am familiar with visual

19   landscape -- VNS, and preferred that outcome.

20 Q. Okay. And just so I understand it, you can't somehow   12:22

21   stitch those windPRO photo montages together. I notice

22   the one we're looking at on pdf 8, that's a 40-degree

23   view; is that right?

24 A. DR. FAIRHURST: For this particular one?

25 Q. Yes.

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1   A.   DR. FAIRHURST: Yes.

2   Q.   Okay. And could you stitch that together with adjacent

3   views from windPRO?

4   A.   DR. FAIRHURST: Yes. It's a time-consuming

5   process.

6   Q.   Okay. But, from your perspective, does one better

7   portray ultimately what visitors to the area will see

8   as compared to the other? Is one more realistic?

9   A.   DR. FAIRHURST: Of course. With that windPRO one.

10 Q.   Okay. But, ultimately, I take it you decided to use   12:23

11   the simulations because it could give you a broader

12   sweep and you could do more of them in the time that

13   you had? Is that fair?

14 A.   DR. FAIRHURST: I believe I was under some time

15   constraint, and that gave me the whole concept of

16   positioning of those turbines.

17 Q.   Okay. Thank you, sir.

18   Okay, Mr. de Haan, I'm going to move on to you.

19   And the first thing I'm going to pick up on was a

20   discussion that you had earlier with Mr. Fitch, and it   12:24

21   related to the 1 decibel uncertainty that was

22   incorporated into the RWDI model?

23 A.   MR. DE HAAN: Okay.

24 Q.   Okay. And my understanding was that that 1 decibel

25   uncertainty was incorporated because at the time when

1   the original NIA was prepared, there was no sound power

2   guarantee. Is that your understanding as well?

3 A. MR. DE HAAN: That is my sum -- that is my

4   understanding, yes.

5 Q. Okay. And did it make sense, then, to build in some

6   uncertainty to take into account the fact that you

7   didn't have a sound power guarantee on that particular

8   model?

9 A. MR. DE HAAN: We don't do it, and neither do my

10   colleagues like at Stantec do it. There is a certain   12:25

11   uncertainty with any sound power level that you have.

12   Uncertainty in the -- of course, by both equipment,

13   operating conditions, a whole set of things.

14   It doesn't make sense to me to incorporate an

15   uncertainty for one specific source, the wind turbines,

16   and not for the other sources. And I don't think that

17   adding a 1 dB uncertainty would make up for differences

18   in modelling, for instance, not including the

19   waterbodies that are present.

20 Q. Right. And we'll get there, sir. But is it fair to   12:26

21   say that the impact of adding the 1 dB uncertainty, is

22   it going to introduce conservatism or reduce

23   conservatism in terms --

24 A. MR. DE HAAN: All other things being equal, so

25   the rest of the model being equal, it would introduce

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1   conservatism because you would get to a higher number

2   to compare to the PSL. So all things equal.

3 Q. Okay. Thank you, sir. I would like to take you to

4   Exhibit 179, pdf page 57. That should come up. If we

5   can just scroll down a bit, there at (b). I'm going to

6   read something to you and then I'm going to ask you a

7   question. It's ISO 9613-2 defines an area of interest

8   around each noise source, so source region, and around

9   each receptor but defines the rest of the area as

10   middle region, and all areas are included in the   12:27

11   calculation.

12   And I was just hoping, sir, that you could explain

13   at a high level how ISO 9613 uses these areas of

14   interest when calculating noise levels.

15 A. MR. DE HAAN: Yeah, that is correct.

16 Q. No -- okay. I want you to help me understand how the

17   model uses those three regions -- yeah, those three

18   regions when it is calculating noise levels. How do

19   those all get worked in?

20 A. MR. DE HAAN: Okay. The source region is   12:27

21   defined and is depending on the height of the source.

22   Then the model calculates in the propagation path

23   between each source and each receptor the ground factor

24   between each source and each receptor. It considers in

25   the calculation the ground factor for the source region

1   **and the region as defined on height. It calculates the**

2   **ground effect in the receptor region along the**

3   **propagation path. And if there is no overlap between**

4   **source region and the receiver -- the receptor region,**

5   **there's a middle region. And then it take that's into**

6   **account.**

7 Q. Okay.

8 A. **MR. DE HAAN: Does that answer your question?**

9   **Am I clarifying enough?**

10 Q. Not that I'm not an independent mind, sir, but if you   12:29

11   could help me understand how ground attenuation factors

12   in or is worked into those three regions.

13 A. **MR. DE HAAN: Okay.**

14 Q. When you're looking at it from ISO 9613.

15 A. **MR. DE HAAN: ISO 9613 then calculates the**

16   **ground absorption in octave bands -- for each octave**

17   **band -- for both the source region and the receptor**

18   **region and for the middle region.**

19   **Does that answer it? Maybe you could rephrase the**

20   **question, because I'm not sure if we're connecting.**   12:29

21 Q. Okay, sir, I'll try it this way. Considering the

22   height of wind turbines in general, do you think ground

23   factors or ground attenuation plays a significant role

24   in noise modelling for attenuating the sound from wind

25   turbines to nearby dwellings?

1   A.   MR. DE HAAN: Yes, I think it does.

2   Ground attenuation in general, in connection with

3   the sound waves with the ground, depend on grazing

4   incidents. Sound waves kind of strike the ground when

5   they connect with the ground.

6   If there is no grazing incidents, but a more steep

7   incidence, there's more reflections. In the acoustic

8   literature, I think it was C. M. Harris that said --

9   they mentioned percentage of 30 percent. So if the

10 angle of incident is 30 percent or more, there is no   12:30

11 grazing incident and the ground is essentially

12 reflective.

13   Other references -- I think it's -- well, other

14 references mention 20 percent. And that area around

15 the wind turbine acts as completely reflective ground,

16 and that is not considered as such in ISO.

17   If you take those percentages -- if you take the

18 30 percent, for example, it would -- and turbine height

19 has a height of roughly 130 metres, and you get to an

20 area of several hundred metres around the turbine,   12:31

21 where the sound waves will just reflect independent of

22 it being in general, the ground would be classified as

23 absorptive or as reflective.

24   And if you think of it, I think in my opening

25 statement I described -- we described -- noise source

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1   measurements close to the source and the propagation in

2   a half circle of the facility terrain because the sound

3   waves bounce from surface -- from the facility terrain

4   towards the microphone.

5   So propagation in a half sphere, that's consistent

6   with that. Did I --

7   Q.   You did, sir. Thank you.

8   A.   MR. DE HAAN: Thank you.

9   Q.   Yesterday I provided Mr. Fitch with an aid to

10   cross-examination, which is a table of my own making.   12:32

11   So if there's errors in it, they're mine alone, sir.

12   And what this table does -- and do you have it with

13   you?

14   A.   MR. DE HAAN: No. Actually I have an updated

15   table, but that's --

16   Q.   And I take it you updated it to include the CONCAWE

17   results for --

18   A.   MR. DE HAAN: E.

19   Q.   Yeah, the Class E.

20   A.   MR. DE HAAN: Yeah, that is correct.   12:32

21   Q.   I haven't done that to the ones I'm passing out but I

22   could --

23   A.   MR. DE HAAN: Sure.

24   Q.   -- incorporate that into my questions, sir. So maybe

25   I'll hand this to you.

1   A.   MR. DE HAAN: Yeah, sure.

2   Q.   And, Mr. de Haan, what I tried to do with this table is

3   to get all the results or all the NIA results that we

4   had so far in the proceeding relating to receptors that

5   were approaching or in excess of 40 dBA nighttime,

6   based on the information I had when I prepared it. We

7   know that since then you've provided this additional

8   modelling that deals with the Class E, and we'll get to

9   that.

10   But did you have a chance to review the table,   12:34

11   sir?

12   A.   MR. DE HAAN: Yeah, I did.

13   Q.   And to the best of your knowledge is it accurate?

14   A.   MR. DE HAAN: Yeah, I think it is.

15   Q.   Okay. That's helpful. Now, before I jump in, sir, I

16   had a question relating to Exhibit 138, which is your

17   evidence, and we're going to go to pdf page 41,

18   Table 5.

19   A.   MR. DE HAAN: Yeah.

20   Q.   And that's entitled "Nighttime Noise Impact According   12:34

21   to ISO 1996-2." Can you just tell me what ISO 1996-2

22   is?

23   A.   MR. DE HAAN: One moment.

24   That is an error. It should be ISO 9613-2. Sorry

25   about that.

1	Q.	That's fine. And I understand that sometimes those
2		titles are used interchangeably. Is that fair?
3	A.	MR. DE HAAN: No, that's not correct.
4		ISO 1996-2 is a different standard.
5	Q.	Okay. So --
6	A.	MR. DE HAAN: It is intended to be ISO 9613-2.
7	Q.	Okay. That's helpful, sir.
8	A.	MR. DE HAAN: Again, apologies.
9	Q.	And if I take you to the table and I compare RWDI's
10		revised results using a ground attenuation of a factor
11		of 5 with no uncertainty -- and for ease of reference I
12		think that's shaded in blue -- and I compare that to
13		your results using the ISO 1996-2 --
14	A.	MR. DE HAAN: Sorry, that should be, again,
15		9613.
16	Q.	Right. So 9613. So that's shaded in orange, or peach.
17	A.	MR. DE HAAN: Hmm hmm.
18	Q.	Right? For all receptors but R35, the difference
19		between the two ranges between .2 and .8 decibels. Is
20		that fair?
21	A.	MR. DE HAAN: I think the last one of 35 is 1.2.
22		So it ranges between .2 and 1.2.
23	Q.	Right. And I said with the exception of R35, because
24		we're going to talk about R35 a bit separately.
25	A.	MR. DE HAAN: Okay. Sure.

12:35

12:36

1   Q.   And, sir, would you attribute the differences between

2   these results to your inclusion of the ground

3   attenuation factor of 0 for hard surfaces?

4   A.   **MR. DE HAAN:**   **Yeah, I think so.**

5   Q.   Okay. That's helpful.

6   And were there any other differences that might

7   account for that difference between your modelling and

8   Ms. Drew's modelling?

9   A.   **MR. DE HAAN:**   **Our model settings were identical,**

10   **but we used the sound power level for the turbines fell**   12:37

11   **20 metres per sec. And while the overall sound power**

12   **level is identical, there's a slight shift to the lower**

13   **frequencies in the spectrum we used.**

14   Q.   Okay. And, sir, something I was trying to understand a

15   little better was, in your model, for all areas other

16   than I think it was water, tamped surfaces, and roads,

17   you used a mixed ground attenuation factor of .5.

18   A.   **MR. DE HAAN:**   **Right.**

19   Q.   But for those areas you used a ground attenuation

20   factor of 0.   12:37

21   A.   **MR. DE HAAN:**   **Correct.**

22   Q.   Can that act to double count or somehow change the

23   impact to the noise assessment? Because my

24   understanding is that the .5 ground attenuation mixed

25   ground factor is supposed to take into account a large

1   area where you have a mix of hard and soft surfaces.

2   Is that fair?

3   A.   MR. DE HAAN: No, that is not completely

4   accurate. What you do in your model is you define

5   reflective areas, if you want to, and you assign

6   appropriate ground factor to those specific area. Like

7   the lakes and the marshes in our model and the tamped

8   surfaces.

9   Then you can set an overall ground factor that

10   applies to the rest of the -- so the not specific   12:38

11   areas. So the rest of the -- so the model takes that

12   propagation path into account, looks what it encounters

13   and says, aha, this is not a specific area defined as

14   such, so for this area the overall ground attenuation

15   factor of .5 applies.

16   If that is stacked on -- and that is not stacked

17   on top of each other. They're independent.

18   Q.   Okay. But my understanding was that for porous ground,

19   which I think includes agricultural ground, you model

20   that at 1. Is that fair?   12:39

21   A.   MR. DE HAAN: According to the standard

22   ISO 9613, agriculture land counts as sound absorptive.

23   So it would be any ground that is agricultural land.

24   And there's a lot of that in the study area.

25   However, for wind turbines it has been shown --

1   it's known that ISO does not accurately predict results

2   using that ground factor for the -- so the -- let's

3   refer to that as the real ground factor that you would

4   recognize when you're in the field. To make ISO 9613

5   work for wind turbines, we have to fiddle with the

6   ground factor. That's recommended in the peer-reviewed

7   literature.

8   I think I referred to that in my opening statement

9   as recommendations to either use a ground factor of 0,

10   so fully reflective, even if it is agricultural land,   12:40

11   and you would think as an -- you would think that it's

12   fully absorptive; or to artificially increase the

13   height of the receptor to mitigate the ground effect.

14   Either way, for wind turbines, ISO 9613 overestimates

15   the ground impact if you model it as reality.

16   Q.   Okay, sir. I want to move on now to comparing RWDI's

17   results using the ground attenuation factor of .5

18   versus the CONCAWE results for Class E wind conditions.

19   A.   MR. DE HAAN: For Class E or Class F? I believe

20   that what you have here is Class F. Correct?   12:41

21   Q.   Right. But, sir, you today filed a new table for Class

22   E.

23   A.   MR. DE HAAN: Yeah. That's correct.

24   Q.   Is that fair?

25   A.   MR. DE HAAN: Yeah, that's fair.

1   Q.   When I look at that table, it looks as though, using

2   Class E, you're predicting exceedances at Receptor 14?

3   A.   **MR. DE HAAN:**   **That is correct.**

4   Q.   Receptor 19?

5   A.   **MR. DE HAAN:**   **Yeah.**

6   Q.   Receptor 25?

7   A.   **MR. DE HAAN:**   **Correct.**

8   Q.   And Receptor 32?

9   A.   **MR. DE HAAN:**   **Correct.**

10   Q.   Okay. And if I look at those... Sorry, I've got to   12:42

11   pull the spreadsheet I created while you were talking.

12   Just give me two seconds.

13   And when I look at those, the changes range from

14   about negative 0.9, so the -- sorry. If I look at the

15   changes as a result of this new modelling, I note that

16   for some receptors you're actually modelling below what

17   you had modelled for --

18   A.   **MR. DE HAAN:**   **ISO.**

19   Q.   -- ISO?

20   A.   **MR. DE HAAN:**   **Right.**   12:43

21   Q.   And then, for some, you're modelling above. And for

22   the ones that you're modelling above, they range

23   between about 1 dB and about 2.3 dB. Is that fair?

24   A.   **MR. DE HAAN:**   **Yeah, I think that's fair.**

25   Q.   Okay. And I take it, sir, these changes are a result

1   of the way CONCAWE models meteorological conditions?

2 A. MR. DE HAAN: Yeah. The only differences

3   between our ISO 9613 model that does not include

4   meteorological settings and the CONCAWE model is that

5   the CONCAWE -- is that the CONCAWE model includes

6   meteorological settings. It includes a wind direction

7   of about 315 degrees. That's the most prevalent wind

8   direction in that area, according to evidence filed by

9   the proponent. The new evidence is stability Class E,

10   and the wind speed is 3 metres per second.   12:44

11   So it -- the difference between ISO 9613 and

12   CONCAWE is that CONCAWE looks at the wind direction,

13   which takes a downwind direction from a certain angle

14   only into account, whereas ISO 9613 assumes that all

15   sources -- or all receptors are downwind from all noise

16   sources.

17 Q. Okay. That's helpful, sir. I want to discuss briefly

18   Receptor 35?

19 A. MR. DE HAAN: Okay.

20 Q. Okay. And you pointed this out where you sort of saw   12:44

21   the greatest variation in terms of slight changes to

22   the model, and I'm wondering if you can help me

23   understand why you're seeing those variations,

24   particularly at Receptor 35.

25 A. MR. DE HAAN: I cannot answer that without

1   analyzing the specific contributions from Receptor 35.

2   I'm sorry.

3 Q. Okay, sir, but if --

4 A. MR. DE HAAN: This is just -- if you have your

5   model settings correct, the model will predict the

6   noise impact and we have not analyzed for each specific

7   receptor why these differences are what they are, other

8   than the answer that I already provided, the CONCAWE

9   settings and reflective ground areas.

10 Q. Okay, sir. Could it have something to do with the   12:45

11   proximity of a third-party facility?

12 A. MR. DE HAAN: It could be that one of the

13   sources is more dominant. But there is no difference

14   in model calculations in either standard for

15   calculations closer to a receptor or further away from

16   a receptor. The model just looks at the difference,

17   and there are no differences in the way the model

18   handles situations with small relative -- small

19   distances between noise source and a receptor or a

20   large distance. It just takes the distance into   12:46

21   account on what it encounters on its propagation path.

22 Q. Right. But would it be fair to say that using a ground

23   attenuation factor of 0 at that facility versus a mixed

24   ground attenuation factor of .5 for the whole area

25   would impact the results; is that right, sir?

1   A.   MR. DE HAAN: If R35, if it is, to a large

2   extent, dominated by the third-party facility that is

3   not too far away from it, then, yes, that is -- that is

4   correct.

5   Q.   Okay. Thank you, sir.

6   MR. MOUSSEAU: Mr. Chair, it's quarter to. I can

7   keep going. I'm going to say I probably have another

8   half hour.

9   THE CHAIR: I think maybe we should maybe take

10   our break. I'm wondering if we just take a short   12:47

11   break, though, to give the court reporter a bit of a

12   break, let her get a stretch break in, and then come

13   back and then complete the rest of your questioning and

14   any questions that the Commission Panel might have, go

15   to any redirect that Mr. Fitch might have, and then

16   we'll be ready to take a lunch break and maybe wrap

17   that into the time that the counsel need to prepare

18   their oral argument.

19   Does everybody agree that that would be a good way

20   to proceed?   12:47

21   All right. Given that, let's just take a short

22   break. We'll come back at 1, and then let Mr. Mousseau

23   complete any questioning that he has. Thank you.

24   (ADJOURNMENT)

25   THE CHAIR: Welcome back, everyone. Please be

1   seated.

2   And we'll return to examination by Mr. Mousseau.

3   Q.   MR. MOUSSEAU: Okay. Mr. de Haan, if I could get

4   you to turn up Exhibit 179, and I'm going to go to

5   pdf page 40. If we could scroll down to the

6   paragraph that starts with "Noise propagation." And

7   about halfway through that paragraph, sir, you state:

8   (as read)

9   "ISO 9613 is only equivalent to CONCAWE

10   for stability classes A-C (unstable   13:01

11   daytime conditions) and not for classes

12   D-G (neutral to extremely stable

13   conditions) for the conditions included

14   in the test case."

15   And just before we jump into this conversation, if you

16   could briefly explain what a stability class is.

17 A.   MR. DE HAAN: Okay. Maybe I should first state

18   that I'm not a meteorologist, I'm an acoustician. But

19   noise propagation is dependent on atmospheric

20   stability. And depending on atmospheric stability,   13:02

21   noise propagates better or less well.

22   It is my understanding that you can kind of

23   categorize atmospheric stability in several classes,

24   Guildford classes. Class A is the most unstable one

25   and Class G is the most stable one, and it depends on

1   solar radiation, temperature inversion, wind speed, a

2   number of that, but that's my understanding.

3   Again, I'm not a meteorologist. I only know that

4   noise propagates well, very well on stable conditions

5   and less well under unstable conditions.

6 Q. Okay. So when you stated that ISO 9613 is only

7   equivalent to CONCAWE for stability classes A to C, can

8   you explain what you meant by that?

9 A. MR. DE HAAN: Yes. If you go to my report, I

10   believe that's Exhibit X0138, and you move to page 26,   13:03

11   and that's Table 3. Sorry, that should be page 28. A

12   little bit further down.

13   What we did is, because this whole discussion

14   about stable and unstable, we put the software to a

15   simple test. We modelled a wind turbine, like they are

16   being proposed, in a northwesterly direction. We

17   modelled a receptor at ground level of 1.5 metres --

18   several hundred metres away from that turbine. On the

19   top of my head, roughly 800 metres. And we only used

20   an average ground factor, so we didn't include anything   13:04

21   special there. And we just let the software calculate

22   what the noise level from that one -- from that one

23   turbine would be on the same receptor under those

24   different conditions.

25   As we calculated it using ISO 9613, without any

1   meteorological settings, but with the same overall

2   settings as used in the NIA, so with a temperature of

3   10 degrees, 70 percent humidity, et cetera, we came to

4   a sound level of 33.6 from that single wind turbine,

5   and then we applied stability classes according to

6   CONCAWE, first A and then B, et cetera, et cetera.

7   And you can see that the results for CONCAWE

8   stability Class A for that single wind turbine are

9   identical to ISO; same for stability Class B, 33.6; the

10   same for stability Class C -- sorry, stability Class C   13:05

11   starts to go up, 36.4, and the rest is all 36.4.

12   It was just a simple test to find out what

13   stability class kind of equals ISO. And it's a limited

14   test because it only involves one source and -- but

15   just, you know, let's put it to a test. Let's see what

16   happens.

17 Q. Okay, sir. Then just so I understand, your conclusion

18   that 9613 is only equivalent to CONCAWE for stability

19   Classes A to C is only based on this assessment?

20 A. MR. DE HAAN: Yeah. And it should be -- if I   13:06

21   read it right, it should be Classes A and B. Yeah,

22   that's all. I couldn't find any references, any

23   comparisons in the peer-reviewed literature, otherwise

24   I would have used those.

25 Q. Okay. And, sir, in its evidence, and you can turn it

1   up if you want, but I don't think you need to, RWDI

2   states that: (as read)

3   "ISO 9613 integrates the effect of

4   Pascoe Guildford Class E and F stable

5   atmospheric conditions."

6   Do you agree with that statement?

7 A. MR. DE HAAN: No, I don't agree with that. If

8   you turn back to the comparison table you made, this

9   one -- I don't have an exhibit number on it -- and you

10   compare the results with CONCAWE and the results that   13:07

11   we provide and the results of ISO, you see that for a

12   number of instances, the predictions are higher. And

13   for a correct comparison, you should compare our ISO

14   calculations because they incorporate all the ground --

15   the reflective areas that we used to the CONCAWE

16   calculations because they have the very -- they have

17   everything the same in the model except the

18   meteorological settings.

19   So based on the table that I just referred to

20   that's still up on the screen, and based on the   13:07

21   comparison, I have to disagree with that.

22 Q. Okay, sir. And when you're talking about Class E

23   stability conditions, like, can you describe physically

24   what sort of conditions you're talking about?

25 A. MR. DE HAAN: Again, I'm not a meteorological

1   expert. So I could -- they are described in the

2   CONCAWE report that I referred to in my evidence. At

3   the top of my head, but it is -- it occurs during

4   nighttime hours, a low level -- a low wind speed, but

5   that's about it. I don't have the information, sorry.

6 Q. Any idea whether that would be above or below the

7   cut-in speed for the turbines?

8 A. MR. DE HAAN: The CONCAWE wind speed is defined

9   at a level of close to the ground, where the hub height

10   wind speed is at 132 metres. Wind conditions can be   13:09

11   way different there as has been shown repeatedly. It's

12   included in my evidence, but I don't -- I don't know

13   the cut-in wind speed of the wind turbines by heart,

14   but I will say that it could occur that there's very

15   low wind speeds at ground level and very different,

16   higher wind speeds at turbine height, even complete

17   wind direction.

18   VanDenBerg in his thesis, sound of high wind,

19   demonstrated that.

20 Q. Okay, sir. I do have some questions about your use of   13:10

21   iNoise --

22 A. MR. DE HAAN: Sure.

23 Q. -- to create your ISO -- well, its 9613 results. And

24   can you briefly explain what iNoise is?

25 A. MR. DE HAAN: iNoise is a software package that

1   incorporates -- so it's acoustical prediction software

2   that incorporates ISO 9613. Its calculation core is

3   identical -- it's the same calculation core as

4   predictive software for ISO 9613. It's identical. And

5   the software is certified by that quality assurance

6   ISO -- ISO 17 and some more numbers.

7   Q. 17543, sir?

8   A. MR. DE HAAN: That's it.

9   Q. Okay. And looking at the iNoise website, I notice it

10   has got three versions: It's got a free version, a pro   13:11

11   version and enterprise version. Which version did you

12   use, sir?

13 A. MR. DE HAAN: I used enterprise.

14 Q. Okay.

15 A. MR. DE HAAN: But the only differences between

16   several possibilities that you have are the size of the

17   model, the amount of sources or the amount of objects

18   you can include. The calculation core is no -- is no

19   different. But we use the enterprise version.

20   I provided a number of plots, and the licence is   13:11

21   printed on the bottom of the page. So you can -- so

22   you can see it there.

23 Q. Okay. And, sir, if I -- I'm looking at Exhibit 179,

24   and it's pdf page 46, and I'm going to look at

25   paragraph (c). And there you state: (as read)

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1   "iNoise supports the optional features

2   of using a meteorological correction

3   according to CONCAWE by following the

4   procedures for calculation of the

5   meteorological corrections according to

6   CONCAWE instead of 9613. The

7   meteorological corrections Cmet,

8   according to 9613, is replaced by the

9   factor K4 according CONCAWE based on the

10   following parameters, wind speed, wind   13:12

11   direction, and atmospheric stability

12   Class A to G. And it should be noted

13   that, in calculations according to ISO,

14   a meteorological correction Cmet is

15   typically omitted."

16   And, sir, my question was does this mean that ISO 9613

17   using iNoise allows you to model atmospheric conditions

18   in a manner similar to CONCAWE?

19 A. MR. DE HAAN: Yes. It replaces -- ISO 9613 is

20   **intended to provide a long-term average noise impact.**   13:13

21   **And long term could mean average over a year.**

22   **To do that, you can apply, if you want to, average**

23   **meteorological conditions, or even conditions based on**

24   **statistical patterns for weather.**

25   **In Alberta, typically, the meteorological settings**

1   in ISO 9613 are omitted. So you don't do any

2   meteorological condition. It's just pure downwind.

3   So instead of the factor in ISO 9613, let's call

4   it 0 for now, you add the atmospheric conditions

5   according to CONCAWE at the end of your calculations.

6   So the rest of the propagation calculation is

7   identical, but then it applies that CONCAWE correction

8   K4 according to the CONCAWE record.

9   And maybe I should add that those -- I read -- I

10   obviously read the CONCAWE report, and the way they   13:14

11   quantify those corrections is by comparing measurements

12   from facilities under neutral atmospheric conditions to

13   measure -- to identical measurements for the identical

14   facility on the different meteorological stability

15   classes.

16   And that -- and that way they arrived at the

17   special correction and that's how they applied it with

18   the software.

19 Q. Sir, I'm just trying to understand when it says that

20   the meteorological corrections Cmet according to   13:15

21   ISO 9613 is replaced by the factor K4, I just want to

22   know whether omitting meteorological correction would

23   increase or decrease the modelling results?

24 A. MR. DE HAAN: You mean in ISO 9613?

25 Q. Yes.

1   A.   MR. DE HAAN: It would -- it would decrease the

2   reported noise impact. So it would -- you would get

3   the noise levels without the average meteorological

4   correction and at the end, then the meteorological

5   correction is applied to account for average

6   meteorological conditions in that area, and it reduces

7   the noise impact, depending on what the average

8   meteorological conditions are.

9   Such a correction -- I have seen corrections of

10   roughly 1 dB. But this correction is typically not   13:16

11   used in Alberta, so it's typically omitted. So Cmet in

12   this paragraph (c) is basically 0.

13   Q.   Okay, sir. Just jumping back again to the results that

14   you provided using CONCAWE for stability Class E.

15   A.   MR. DE HAAN: Okay.

16   Q.   And we can go back to the table I created, and you have

17   an updated table --

18   A.   MR. DE HAAN: Yeah.

19   Q.   -- I think that you created for yourself. My question

20   is when preparing the CONCAWE Class E results with   13:16

21   RWDI's results for a ground attenuation of .5 with no

22   uncertainty, at some of the residences, the CONCAWE

23   predicts an increase and, at some, it predicts a

24   decrease. Can you help me understand why that happens?

25   A.   MR. DE HAAN: Yes, I can. So ISO assumes

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1   downwind propagation from all directions. So if you --

2   just imagine that the receptor is in the centre of a

3   circle and there's wind turbines or other noise sources

4   all around it. What ISO 9613 does it assumes that all

5   wind turbines will radiate noise in -- towards the

6   centre of the circle. That's a condition that, in the

7   real world, cannot occur.

8   What CONCAWE does it --

9 Q. Can I stop you there, sir?

10 A. MR. DE HAAN: Sure.   13:17

11 Q. Does that make a model -- does that make it more or

12   less conservative?

13 A. MR. DE HAAN: That depends on the layout of the

14   model. It depends if there's sources on all sides of a

15   receptor or not.

16   But if you compare the long-term measured results

17   for wind turbines against predictions in ISO 9613, in

18   the peer-reviewed literature, it says that under more

19   or less stable atmospheric conditions that frequently

20   occurred during nighttime hours, ISO 9613 frequently   13:18

21   under-predicts the noise impact; hence, our fiddling

22   with settings in the model, like the ground factor.

23   So where you would think that it's conservative

24   assumption, that it calculates downwind towards all

25   receptors, it depends on (a) atmospheric stability;

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1   (b) the layout of the noise -- and, (b), the layout of

2   the noise sources.

3   So I can't provide you with the straight yes or no

4   answer. Sorry. It depends.

5 Q. That's helpful, sir. And when we look at the modelling

6   you provided just using CONCAWE and then the more

7   specific modelling you used for CONCAWE for Class E,

8   which of those two should the Commission be referring

9   to when it's -- should it be looking at both or should

10   it prefer one result -- one set of results over the   13:19

11   other as being more representative?

12 A. MR. DE HAAN: I think CONCAWE calculations are

13   more representative of the stable atmospheric

14   conditions.

15 Q. I'm asking you to choose between your two CONCAWE

16   results. So the --

17 A. MR. DE HAAN: Well, according to the evidence

18   filed by the proponent, stability Class E is

19   representative for group -- for the atmospheric

20   conditions in this area because it occurs more than   13:19

21   20 percent of the time. And I believe the cutoff,

22   according to Rule 12, is 10 percent. And I understand

23   that to mean that 10 percent of the time you could

24   exceed PSL due to unforeseen stuff like atmospheric --

25   like, very stable atmospheric conditions or other

1   non-representative conditions, but at the cutoff of

2   10 percent. So anything that occurs up to 90 percent

3   of the time should be considered representative. And

4   that's, in this case, according to the evidence, Class

5   E.

6 Q. That's helpful, sir.

7   I'm going to jump now to third-party facilities.

8 A. MR. DE HAAN: Sure.

9 Q. And I'm going to start with the difference between I

10   guess the radius that you use and the radius that   13:20

11   Ms. Drew used. And I understood that you used a radius

12   of industry sources of 4.5 kilometres, whereas Ms. Drew

13   used a radius of 3, but extended it out to 5, where she

14   encountered facilities that might contribute more than

15   20 dBA.

16   Is that your understanding as well?

17 A. MR. DE HAAN: There is some confusion about

18   that, but looking from a -- you should look from a

19   perspective -- a receptor perspective, and I understand

20   from the transcript that RWDI did that, and then you   13:21

21   should look a certain distance out to include all

22   potential -- all facilities that might potentially

23   affect the noise impact at each receptor.

24   And my -- my suggestion for -- at least for 4 and

25   a half kilometres was based on the presence of the

1   facility in the study area and included in the NIA

2   report by RWDI, having a sound power level of, top of

3   my head, close to 115. It would be something like 113

4   or 114 dBA.

5   If you do some calculations, you will get to a

6   sound level from such a facility of 20 dBA at the

7   receptor at a distance of 4 and a half kilometre.

8   So if they -- and there is some confusion in the

9   document, but if they included facilities up to

10   5 kilometres, then I'm fine with that.   13:21

11 Q. That's helpful, sir. Thank you. I have a few

12   questions, sir, on infrasound, and I'm going to take

13   you back to Exhibit 179, and we're going to go to

14   pdf 55.

15   And so we are going to be looking at

16   paragraphs (b) and (c).

17 A. MR. DE HAAN: Sure.

18 Q. Okay. And I'm looking at the last sentence in

19   paragraph (b), where you state: (as read)

20   "Infrasound is typically not measured,   13:22

21   however, during a comprehensive sound

22   survey and may therefore go undetected."

23   And the last sentence at paragraph (c), where you say:

24   (as read)

25   "Considering the nature of infrasound

1   levels exceeding the audibility

2   threshold may generate noise

3   complaints."

4   I'm just wondering if you can comment on the audibility

5   threshold for infrasound.

6 A. MR. DE HAAN: The audibility of infrasound is

7   relatively high, but the difference between

8   perceiving -- the difference in sound level between an

9   infrasound level just at the hearing threshold and a

10   little bit above it is relatively condensed.   13:23

11   So the sound that you hear when you hear

12   infrasound goes from barely audible to annoyance to

13   just an outright nuisance pretty quick, far more -- far

14   faster in a far more condensed way, so the dynamic is

15   much less than in the more audible range, around

16   500,000 hertz.

17 Q. When you're talking about infrasound that is

18   undetected, are you talking about infrasound from a

19   wind turbine that may be below the audibility

20   threshold? Is that what you're getting at there?   13:23

21 A. MR. DE HAAN: Well, regular microphones do not

22   pick up infrasound. Infrasound is sound below

23   20 hertz, and most sound level meters don't go -- go to

24   20 hertz. So they might not pick it up.

25   And predictions in ISO, according to ISO and

1   CONCAWE, typically include only 31.5 hertz. So it's --

2   in a regular noise assessment, it's typically not

3   assessed in a numerical way.

4 Q. That's helpful, sir.

5   I do want to talk a bit about wind shear, and

6   we're getting close to the end, sir. And there was

7   some discussion about wind shear between myself and

8   Ms. Drew and between Mr. Fitch and Ms. Drew, and I just

9   wanted to know what your understanding of wind shear is

10   and its role in noise prediction.   13:24

11 A. MR. DE HAAN: Right. Well, wind shear is the

12   difference in wind speed measured at different heights.

13 Q. And, sir, is it fair to say or can you comment on

14   whether there's -- from your perspective, any

15   connection between wind shear and atmospheric

16   stability?

17 A. MR. DE HAAN: To my knowledge, there is. But,

18   again, I'm not a meteorologist. To my -- to my

19   knowledge, unstable conditions, because there's a much

20   more layered atmosphere, can blow up there and can be   13:25

21   eerie quiet down here, but it could also be the other

22   way around.

23   There is a graph in the evidence that I provided,

24   copies of a presentation for -- a CONCAWE spring

25   conference in 2010. And maybe I can find it.

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1   It's in an appendix somewhere. No, that's not it.

2   I'll try once more, and then I'll call it a day.

3   Okay. I can't find it. But it includes a graph where

4   you see the difference at the same time of wind speeds

5   measured at a height of 1.5 metre and measured at hub

6   height at 65 metres in that instance, and you see

7   differences all the time. You see positive

8   differences. So where the wind speed at 1.5 metres is

9   way lower than up there, but you also see it the other

10   way around.   13:27

11 Q. Okay, sir. And my final question, and it picks up on a

12   question I asked Ms. Drew, and it deals with

13   post-construction noise surveys. In the event that the

14   Commission decides to approve some or all of the

15   project, are there locations where you would recommend

16   that post-construction noise surveys be conducted?

17 A. MR. DE HAAN: I haven't prepared for that

18   question, but I would argue that at least New Brigden

19   and Sedalia should be included and potentially some

20   other receptors that are close to the PSL.   13:27

21 Q. Okay, sir. And when you say "close to the PSL," should

22   we be looking at your CONCAWE results for Class E?

23 A. MR. DE HAAN: Well, I think if you look at my

24   results for CONCAWE Class E, that it would be hard for

25   the Commission to permit the project, but that's not a

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1   one.

2   Yeah, I would like at the receptors with the

3   highest noise impacts.

4 Q. Thank you, sir.

5 A. MR. DE HAAN: I would like to add to the results

6   for CONCAWE Class E. These are valid for a specific

7   wind direction. So for a complete assessment for those

8   atmospheric conditions, there should be calculations

9   included for different wind directions. And since a

10   wind direction is defined as plus or minus 45 degrees   13:28

11   or certain -- or specific direction in degrees, on the

12   top of my head, it would involve another set of

13   calculations to get to a total of eight numbers for a

14   specific receptor to get to the highest one to be the

15   representative conditions.

16 Q. Sir, is that a reasonable exercise when you're doing an

17   NIA? Or would you simply rely on 9613 for the NIA's

18   perspective because it tries to average those, maybe?

19   Is that a fair way to put it?

20 A. MR. DE HAAN: The way I understand it, is the   13:29

21   intent is that the PSL should not be exceeded on the

22   representative conditions. And by averaging it, you

23   would kind of go from the noise impact during a

24   specific night to a long-term average, and that would

25   be different from Rule 12.

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1   To answer your question of is it a reasonable

2   exercise to demand in an NIA, all I had to do to

3   provide you with numbers, to provide you with results

4   for CONCAWE Class E to Class F is change a couple of

5   settings in the model and hit the calculation button.

6   So to include results for a total of -- to include

7   the total wind rose of 360 degrees, you would have to

8   hit that button seven times, and that's not a big

9   exercise. It's more numbers, but I can't make it

10   simpler than that.   13:30

11   So I don't -- so I don't think it's an

12   unreasonable exercise. I think it's very overseeable.

13 Q. Right. But then -- okay, but just so I understand what

14   you're recommending, how would you then treat those

15   numbers? Would you then have to look at meteorological

16   data for the year to determine how often the wind is

17   blowing at that level from that direction?

18 A. MR. DE HAAN: Well, the way Rule 12 defines it

19   is that if it occurs more than 10 percent in a

20   particular season, then it's representative.   13:30

21 Q. Okay. But if all eight directions -- I'm just

22   struggling with how you amalgamate or average --

23 A. MR. DE HAAN: Well, if all eight directions

24   occur more than 10 percent of the time. So you cover

25   more than 80 percent. And then you look at the highest

1   number, because, of course, more than 10 percent.

2   Q. Okay, sir.

3   A. MR. DE HAAN: Is that helpful? It's just a

4   suggestion. It's up to the Commission to decide how to

5   go about these things.

6   Q. And when you're trying to determine representative

7   conditions, is it -- do you just simply rely on

8   anything above 10 percent of the time or are there

9   other factors that you take into account when you're

10   trying to figure out representative conditions for a   13:31

11   project area?

12 A. MR. DE HAAN: Well, I would -- I would think I

13   would refer to Rule 12 for representative operating

14   conditions for the wind turbine. They are defined as

15   the maximum operating conditions. And I would think

16   that in Rule 12 it is included that if conditions occur

17   more than 10 percent of the time in a particular

18   season, that they should be looked at. And I think

19   that pretty much covers it.

20 Q. That covers it for me, sir.   13:32

21 A. MR. DE HAAN: Thank you.

22 Q. That's perfect.

23 MR. MOUSSEAU: Thank you very much. Thank you

24   for answering my questions.

25   Mr. Chair, those are my questions.

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1   Oh, however --

2   THE CHAIR: There's late breaking news?

3   MR. MOUSSEAU: No, Mr. Anderson is anxious to get

4   some exhibits on -- some numbers for some exhibits, so

5   I've been given a list.

6   THE CHAIR: Oh, ye of small faith, sir. I was

7   just going to turn to that.

8   MR. MOUSSEAU: I will check my list against

9   yours, sir.

10   THE CHAIR: I was going to start with the   13:32

11   Whitla Wind Project Environmental Evaluation Report,

12   and that will be Exhibit 284.

13   **EXHIBIT 284 - WHITLA WIND PROJECT**

14   **ENVIRONMENTAL EVALUATION REPORT**

15   THE CHAIR: And then I believe the only

16   document we have left to mark is the AUC aid to

17   questioning that Mr. Mousseau handed out, and that

18   would be Exhibit 285.

19   **EXHIBIT 285 - AUC AID TO QUESTIONING**

20   **THAT MR. MOUSSEAU HANDED OUT**   13:32

21   MS. OLENIUK: Actually, Chair, I think there was

22   two aids to cross that I presented to Mr. de Haan. One

23   was the environmental evaluation for Whitla, which you

24   already marked, and the second would be the second part

25   of the excerpt of the noise impact assessment for

1   Whitla.

2   THE CHAIR: Okay, now I'm confused.

3   MS. OLENIUK: So the first one -- I can't see

4   the writing from here.

5   THE CHAIR: Come on, you can see it from

6   there. It's the Whitla Wind Project Environmental

7   Evaluation Report. So there was that one.

8   MS. OLENIUK: Correct. And then there was an

9   additional one that was passed out as well that

10   indicated it was a noise impact assessment. We were   13:33

11   looking at both of them.

12 THE CHAIR: I think we didn't get it in paper

13   form. It was probably uploaded and brought up on the

14   screen.

15 MS. OLENIUK: No. So there was two excerpts

16   from the Whitla NIA. The first one was Mr. Fitch's aid

17   to cross, which was marked as an exhibit, and we pulled

18   it up onto the screen, and then there was a second

19   excerpt that I presented as an aid to cross. I think

20   Mr. de Haan --   13:34

21 THE CHAIR: I believe you, but we don't appear

22   to have it up here.

23 MS. OLENIUK: I'm going to blame Mr. Mousseau

24   for that.

25 THE CHAIR: It was 258 that had been uploaded,

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1   if I'm not wrong. Is that the one?

2   I just want to make sure that we know what we're

3   talking about. I thought the other one was number 258.

4   The other one that you referred to was already in the

5   system.

6   MS. OLENIUK: It is, but there was an additional

7   page that I included as a second excerpt to that Whitla

8   NIA.

9   THE CHAIR: Okay. Well, as long as

10   Mr. Anderson is on the same page with you, we'll mark   13:35

11   it as Exhibit 286. How about that? Even though I'm

12   confused, apparently staff isn't, as to where that

13   document lives.

14   **EXHIBIT 286 - ADDITIONAL PAGE INCLUDED**

15   **AS A SECOND EXCERPT TO THE WHITLA NIA**

16 MR. MOUSSEAU: And we have one more.

17   Dr. Fairhurst's opening statement, I don't think we

18   gave that an exhibit number either.

19 THE CHAIR: Looking to Mr. Fitch. I thought

20   he asked for it or did it but if we didn't give it to   13:35

21   him...

22 MR. FITCH: I did not ask for it. We marked

23   one of them. I believe we marked one opening statement

24   as an exhibit.

25 THE CHAIR: We definitely marked

1   Mr. de Haan's.

2   I'm just going to look to Mr. Anderson and make

3   sure that we do need one more.

4   Yes, we do. All right. 287. It's easy to get

5   confused with all the exhibit numbers. I'm clearly

6   proof of that.

7   **EXHIBIT 287 - DR. FAIRHURST'S OPENING**

8   **STATEMENT**

9   THE CHAIR: All right. So, with that,

10   hopefully having gotten everything appropriately   13:36

11   marked, we'll turn to any questions from the Commission

12   Panel. I'm just confer with my colleagues here.

13   We'll start with questions from Commissioner

14   Collins.

15 <u>MS. COLLINS QUESTIONS THE PANEL</u>:

16 Q. Good afternoon, panel. Dr. Fairhurst, I have one

17   question for you. And I was just wondering, there is a

18   240 kV transmission line that runs north through south

19   through the project. It passes by a number of the

20   turbines. And I don't recall any of your visual   13:36

21   assessments incorporating the overlay of the 240 kV in

22   with your renderings. Can you kind of give me a little

23   background why, or did you not think that was relevant?

24 **A. DR. FAIRHURST: They were visible in the photos.**

25   **And I addressed that issue as they were static and no**

1   more than I think it was -- I think 50 metres.

2   So, yes, they are there and they cross the roads.

3   You can see them in the distance.

4   However, I still think the turbines are dominant

5   where they are close in. That's all I have. This is

6   as far as I went with them. I know at one time that

7   was the big issue. I mean, not necessarily here at --

8   in that area, but I have worked on power lines and the

9   effects of that, and they are -- they can be

10   significant.   13:38

11   They were addressed in -- as I said, in the

12   photos. They are of a lesser scale.

13 Q.   And I'm referring to the transmission line itself, not

14   the lower voltage power pole. Is that correct?

15 A.   DR. FAIRHURST: Yes.

16 Q.   And just a follow-up question. In your opinion, is the

17   visual impact of any of the turbines reduced or

18   enhanced by the existence of the transmission

19   infrastructure in close proximity, or is it just not

20   relevant because it's so much -- in your opinion, it's   13:38

21   only 50 metres? Is that a fair assessment?

22 A.   DR. FAIRHURST: Well, of course, distance makes a

23   difference. And I do agree that a large power in the

24   foreground can overwhelm a turbine in the background.

25   I accept all that. But my analysis took -- and I can

1   see that there is a blending of objects in the view

2   that can somewhat offset the effects of a turbine.

3   But, in my assessment, when I found that nearly

4   all of the turbines could come within 1 kilometre of

5   the 88 kilometres of roads that I identified, I feel

6   that they are the dominant object. And the

7   transmission line's static. They will settle in by

8   comparison.

9   Q. Okay. Thank you.

10 A. DR. FAIRHURST: Thank you.   13:40

11 MS. COLLINS: Those are all my questions,

12   Mr. Chair.

13 THE CHAIR: Thank you very much.

14 **THE CHAIR QUESTIONS THE PANEL**:

15 Q. And I'll start with you, Dr. Fairhurst, because you

16   already have the mic.

17 A. DR. FAIRHURST: I do.

18 Q. And I have perhaps one question for Mr. de Haan.

19   So you indicated at one point that your objective

20   in the work that you do is to find acceptable   13:40

21   alterations to a landscape or a viewscape. Did I hear

22   that right?

23 A. DR. FAIRHURST: That would be pretty correct.

24 Q. Okay. And I think I also heard in some questioning

25   from Mr. Fitch that there are objective criteria for

1   what's acceptable. And I understood from your

2   presentation that the VLS rating form that you used, I

3   believe it's Exhibit 137, pdf 14 -- we can maybe pull

4   that up so we all know what I'm talking about -- that

5   that constitutes, from your perspective, the objective

6   criteria. Is that a fair --

7   A. **DR. FAIRHURST: Yes, biophysical --**

8   Q. -- understanding --

9   A. **DR. FAIRHURST: -- viewing distance and**

10   **significance and risk.**   13:41

11 Q. All right, sir. And is that sort of an -- some sort of

12   an industry standard objective criteria, sort of along

13   the lines that something like ISO 9613 would be when

14   we're talking about noise, or is this really objective

15   criteria that you have created?

16 A. **DR. FAIRHURST: No, I didn't create them. I**

17   **borrowed from existing systems in BC, the US, Alberta,**

18   **that guidebook, and the UK. I researched the BLM, the**

19   **US forest service. They are all honing in on the same**

20   **aspects: Biophysical, viewing distance, and -- I don't**   13:42

21   **have that in front of me, but that's a type of thing,**

22   **the biophysical aspects.**

23 Q. So it sounds, sir, like, because you borrowed from a

24   bunch of different approaches to a VLS, that you've

25   sort of kluged together the perspective of a number of

1   different practitioners to come up with this. Is that

2   a fair assessment of what you've done?

3 A. DR. FAIRHURST: I'm sorry, what word did you use

4   to say I --

5 Q. Kluged. That was perhaps not a good word. You have

6   combined into your approach approaches that have been

7   used by a number of other practitioners in BC and so

8   on. Is that what you've done?

9 A. DR. FAIRHURST: I have combined and been

10   influenced by the similarities that you find in these   13:43

11   various systems.

12 Q. Okay. So what you end up with in your form, then -- is

13   there an argument that's not really an industry

14   standard for an objective? It's your interpretation of

15   what an objective should be? It really is your

16   objective?

17   I'm not trying to beat you up on this. I'm just

18   really trying to understand where you got your

19   objective criteria from.

20   So is it really your objective criteria based on   13:44

21   objective criteria that have been used by other

22   practitioners? Is that a fair way to look at what

23   you've done, sir?

24 A. DR. FAIRHURST: It is an assimilation of these

25   approaches to make a workable assessment process, and

1   **that was for the Wood Buffalo region of CEMA.**

2 Q. Okay, sir, and that's a way better word than kluge.

3   So the last question that I have for you, sir, is

4   there may be a view that, well, it's not -- there is no

5   industry standard, it's not really an objective

6   criteria, it's your objective criteria and we

7   understand where it came from.

8   What can you tell us that would give us some

9   comfort that we should object -- that we should

10   object -- that we should accept the objective criteria   13:45

11   that you have used? What can you tell us?

12 A. **DR. FAIRHURST:**   **Well, the system itself, the**

13   **visual landscape system, is a fairly weighty document.**

14   **And you can track its -- you can track its literature**

15   **review and you can track each part of this, but it is a**

16   **legitimate approach.**

17   **Now, this was adopted, well, tentatively, by**

18   **various levels of CEMA. I was with the aesthetics**

19   **working group, and that was my hired purpose, to come**

20   **up with that document. It has been in effect and used**   13:46

21   **in at least one environmental impact assessment.**

22   **I have a -- I cannot say more, but that is mine**

23   **still. It is with CEMA. It exists online. And it's a**

24   **system that I find very workable.**

25 Q. All right, sir. Thank you. And just one other

1   question that comes to mind, because this Commission is

2   often faced with the challenges of trying to site wind

3   farms and applications that come to us.

4 A. DR. FAIRHURST: Yes.

5 Q. In your view, where is a wind farm an acceptable

6   alteration to the landscape or the viewscape?

7 A. DR. FAIRHURST: I would say it's an acceptable

8   alteration in a place that has already been zoned and

9   there is preparation for it to be there.

10   If there is no zonation -- and so you have high --   13:48

11   high value zones, high wind -- high wind zones, these

12   are identified. I can't speak for parts of the

13   population area, I don't know enough, but just like

14   in -- well, the visual landscape system was setting

15   objectives and it is to be part of a tradeoff system or

16   a zonation system, that there could be heavy

17   development, moderate, or light, or none. But I just

18   see that that does not exist, as far as I know, the

19   Special Areas -- and I regret I did not learn until

20   today that they actually have some plans -- by setting   13:49

21   development objectives and zoning for those, or saying

22   here's a high intensity area, here's a low intensity

23   area. I do feel, and I don't know where these are, in

24   BC, and including that wind farm assessment process

25   that Mr. Fitch had told me yesterday about, and, to his

1   chagrin, I did not get to it, but I was aware of it.

2   In BC they zone. They have visual quality

3   objectives. They have a large system of setting

4   throughout the province visual quality objectives. And

5   those -- those are word terms like preservation,

6   retention, partial retention, modification, maximum

7   modification.

8   They also come up with intensity by that VQO. So

9   the intensity would be much greater in a modification

10   zone, or maximum modification zone, than a partial   13:51

11   retention or retention zone.

12   So that gives the proponents the ability to say,

13   well, I'm going to stay out of this area. It is

14   just -- it seems it's going to be too restrictive for

15   me to get the number of wind turbines that I need. So

16   they are. And the maps exist provincially, not for

17   necessarily wind, but it was visual quality objectives,

18   period, typically guiding forestry intensity over the

19   many years to say where are we going to go.

20   And here, including the -- what I did with the   13:52

21   minor adaptation of that visual landscape system, found

22   that the numbers crunched down to high sensitivity and

23   restricted -- restriction on dominant alteration should

24   be subordinate.

25   Q. All right, sir. Thank you.

1   And then I just have one question for Mr. de Haan.

2   In the work that you've done, you've come up with five

3   turbines, so R14, R19, R25, R32, and R35A, that in the

4   analysis you've done may exceed the permissible

5   nighttime PSL under at least certain conditions. What

6   are you recommending the Commission do about those five

7   turbines given the results of the analysis that you've

8   done?

9 A. **MR. DE HAAN: I understand -- I understand that**

10   **you're referring to receptors and not turbines.**   13:53

11 Q. Maybe that's where I went wrong. That's right. I'm

12   thinking of specific receptors. Okay. What should we

13   do about those?

14 A. **MR. DE HAAN: At those receptors, the PSL is**

15   **predicted to be exceeded more than 20 percent of the**

16   **time. And I don't think that's in line with Rule 12,**

17   **at least the way I understand Rule 12. And I don't**

18   **know another solution to that than refusing the**

19   **application.**

20 Q. So would you refuse the entire application on the basis   13:54

21   of those five, or would you recommend making some

22   adjustments, or would you recommend doing

23   post-construction monitoring and perhaps putting into

24   place certain rules with respect to the turbines that

25   would affect the PSL at those five receptors?

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1   It's unclear to me what you're asking us to do?

2   A.   MR. DE HAAN: Okay. It's -- what Mr. Mousseau

3   provided to me, it's nine receptors. And R35

4   represents a community. I believe it's Sedalia. I

5   believe it's Sedalia. So it represents more

6   residences. Actually it represents a small hamlet.

7   Some of the other ones may represent more

8   residences as well. I've seen during my field trip

9   several farms that were pretty close together, like two

10   or three houses, or something.   13:55

11   I have no information seen in the whole procedure

12   to see that some specific turbines are responsible for

13   the exceedance. And I certainly did not do that kind

14   of analysis. So I can't really recommend on that, like

15   putting what kind of restrictions in place.

16   For those nine receptors representing a large

17   number of houses, it could be -- it could be that --

18   and I think they're very spread over the area. So I

19   think there's a large number, but it's just a thought.

20   It's not an analysis. A large number of turbines   13:56

21   responsible, sometimes a combination of turbines

22   already present, third-party facilities.

23   In part of my evidence I concluded that not all

24   relevant third-party facilities may be included. So I

25   can't recommend to limit the number of turbines to a

1   specific number of turbines or anything.

2   But like the exceedance under representative

3   conditions, for example R14 is in my -- I think it's

4   pretty substantial. It's predicted under the

5   representative conditions to be well over 41. The same

6   applies to R16, R19, R25, and R32 and R35. So the

7   exceedance is up to 3 dB. That's a lot.

8 THE CHAIR: All right, sir. Thank you. I

9   think that's all the questions we have. I'm just

10   looking at my colleagues, who appear to have no more.   13:57

11   I don't have any more questions, so, with that,

12   we'll return to any redirect that you might have,

13   Mr. Fitch.

14 MR. FITCH: Thank you, Mr. Chair. Until about

15   five minutes ago, I had none.

16 **MR. FITCH RE-EXAMINES THE PANEL**:

17 Q. Dr. Fairhurst, I just want to see if I can pursue the

18   idea that the Chair was trying to explore with you

19   about how can the Commission have confidence that, you

20   know, the objective criteria that you set out in your   13:58

21   rating form, VLS landscape unit rating form, it should

22   be adopted, I think is the way he put it. There was a

23   talk about the fact that your approach consists of

24   either a combination or assimilation of approaches in

25   the United States, the United Kingdom, British

1   Columbia, and Alberta.

2   So maybe another way to go at this is for me to

3   ask you are the approaches in any of those other

4   jurisdictions, that is the US, the UK, and BC, are

5   they, in any material way, different or inconsistent

6   with your approach?

7 A. DR. FAIRHURST: I would say no. I came up with

8   **some different acronyms and names. Sorry, landscape**

9   **integrity versus -- or objective landscape integrity**

10   **versus visual quality objective, but essentially**   13:59

11   **they're built on the same values, such as vegetation,**

12   **water, colour, adjacency. They use the same values.**

13 Q. They being these other jurisdictions?

14 A. **DR. FAIRHURST: Yes.**

15 Q. Okay.

16 A. **DR. FAIRHURST: I gave them different names,**

17   **probably to make it harder to learn.**

18 Q. Thank you.

19 MR. FITCH: That concludes my redirect.

20 THE CHAIR: Thank you very much. Thanks   13:59

21   to you both for spending a good part of the day with us

22   today, responding to any questions they have and

23   adding -- helping us to fill out the record. So with

24   that, and with our thanks, you are released.

25   And, Mr. Fairhurst, I couldn't help but notice you

1   actually have a gaming computer like my son's.

2 **A.   DR. FAIRHURST: This is off the record.**

3 THE CHAIR: That's fine, sir. You don't have

4   to respond.

5 **A.   DR. FAIRHURST: I was worried when I got this, but**

6 **it was the memory or the graphics that I use all the**

7 **time.**

8 THE CHAIR: That makes perfect sense, sir. It

9   is a very powerful laptop. My son has got one that was

10   worth a significant cost just so he could game with it.   14:00

11   I'm thinking you're sitting on planes gaming the whole

12   time.

13 **A.   DR. FAIRHURST: I don't game. I'm sorry.**

14 (PANEL STANDS DOWN)

15 THE CHAIR: So with that, we're going to break

16   for the lunch, but I just wanted to get views from

17   counsel about next steps. We wanted to complete oral

18   argument and reply by the end of the day, even if we

19   have to go late. This is the day we need to try to

20   wrap up and close the record.   14:01

21   So in terms of timing, can you both give me some

22   indication about how much time you need to prepare, at

23   least the first step, which is your oral argument?

24   We'll try and build it into the lunch break, but also

25   give you time to have lunch. So if you can give us an

```
 1        indication of how much time you need, we'll try to

 2        accommodate you as best we can.

 3   MS. OLENIUK:              Thank you, Chair.  As you probably

 4        maybe assumed, we have been working on argument over

 5        the last few days and I think we'll be able to wrap it

 6        up over the lunch break and be prepared to deliver it

 7        when we get back.

 8   THE CHAIR:                Mr. Fitch?

 9   MR. FITCH:                Well, it's 2:00 now.  I guess

10        normally we would take an hour.  You know, at this          14:02

11        point, I don't know that there's a lot more that can

12        really be done in terms of last-minute frantic

13        preparation.  So I would say 3:15 would be fine, just

14        an extra 15 minutes.

15   THE CHAIR:                All right.  We'll come back at

16        3:15 and hear the oral.  And then we'll take another

17        break to give you at least some opportunity for reply,

18        and then we'll do reply, and then hopefully be able to

19        wrap up the day.

20             So with that, we'll see you all back here at 3:15.    14:02

21        Thank you.

22   (PROCEEDINGS ADJOURNED AT 2:02 P.M.)

23   _____

24   PROCEEDINGS ADJOURNED TO 3:15 p.m.

25   _____
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1   Volume 5

2   June 13, 2018

3   P.M. Session

4   _____

5   (PROCEEDINGS RECOMMENCED AT 3:15 P.M.)

6   THE CHAIR: Welcome back, everyone.

7   Before we start, I'm going to warn you that I have

8   a hard stop at approximately 7. I'm hoping we'll get

9   through everything by that time. This is in no way

10   intended to restrict you in any way with respect to the   15:15

11   time that you want to take or with respect to the time

12   you think you need to prepare. But if we start bumping

13   into a situation where we don't think we can conclude

14   by then, we might have to explore a different type of

15   an approach. But it's not the Supreme Court. I don't

16   have lights. You can take as much time as you like.

17   And with that, I'm going to invite Ms. Oleniuk to

18   start with her oral. Thank you.

19   MS. OLENIUK: Thank you, Chair. I'm pleased to

20   be here to present final argument on behalf of the   15:16

21   applicant, EDPR, in its application to construct,

22   interconnect, and operate the Sharp Hills wind farm.

23   During my submissions today I will refer to the

24   Sharp Hills wind farm as "the project" and the

25   applicant as "EDPR."

1   As the Commission knows, EDPR's application has

2   been filed pursuant to Sections 11, 14, 15, and 18 of

3   the *Hydro and Electric Energy Act*, or HEEA, and in

4   accordance with AUC Rule 7 and 12.

5   EDPR respectfully submits the project and the

6   information it has provided in support of the project

7   during the course of this proceeding demonstrates that

8   the approval of the Sharp Hills wind farm is in the

9   public interest, having regard to the project's

10   compliance with regulatory requirements and   15:17

11   consideration of the social, environmental, and

12   economic effects of the project. And I will discuss

13   the reasons for this conclusion in greater detail in my

14   submissions.

15   The development of wind energy projects in Alberta

16   is consistent with the government's climate leadership

17   plan, which calls for up to 30 percent of annual

18   electricity generation to come from renewable sources

19   by 2030. It is estimated that meeting such a target

20   will require up to 5,000 megawatts of new renewable   15:17

21   energy projects to be built in the province.

22   With a capacity of nearly 300 megawatts,

23   Sharp Hills will significantly contribute to the

24   achievement of that goal and assist with the intended

25   reduction of emissions of over 600,000 tonnes of

1   greenhouse gases annually from Alberta's electricity

2   sector.

3   Further, since the project is located far from

4   many of the existing and proposed wind farms in the

5   province, it will provide diversification benefits to

6   the Alberta interconnected electric system.

7   Commissioners, during the course of this

8   proceeding you have heard concerns about EDPR's

9   relatively limited presence in Canada and suggestions

10   that EDPR's status as a subsidiary of a large and   15:18

11   experienced developer of renewable energy

12   infrastructure is somehow a negative thing. As EDPR

13   has explained, its parent company is the fourth largest

14   owner/operator of wind energy facilities in the world.

15   Present in 12 countries and operating over 10,000

16   megawatts of wind energy projects, it has the

17   experience and expertise to responsibly construct,

18   operate, and maintain the project in the public

19   interest of Albertans.

20   While it is true that the turbines proposed for   15:19

21   the project have the highest tip height that the

22   Commission has ever been asked to approve,

23   respectfully, there is nothing unique about this fact.

24   Since Canada's commercial wind energy industry

25   began right here in Alberta more than 20 years ago,

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1   turbine technology has continued to develop and the

2   Commission has been asked to approve larger and larger

3   turbines as the technology has progressed.

4   As described by Mr. LoTurco, EDPR's reasons for

5   selecting the Vestas V136-3.6 megawatt turbine model

6   were closely tied to the nature of the wind resource in

7   the project area, including wind shear and the wind

8   speed at hub height, and the ability to generate a

9   greater amount of electricity using a smaller number of

10   turbines.   15:19

11   By generating more power at a lower cost with

12   fewer turbines, EDPR has been able to minimize

13   landscape disturbance, both in terms of the number of

14   turbines and the extent of the collection systems and

15   access roads required for the project.

16   Indeed, from an environmental perspective, the

17   selection of turbines with larger individual nameplate

18   capacity is an important mitigation measure relative to

19   project impacts on birds and bats.

20   Further, the overall potential impacts from bird   15:20

21   and bat collisions are reduced for a given project when

22   the same amount of power can be generated using a

23   smaller number of turbines.

24   It has been suggested that this application will

25   require the Commission to choose between competing land

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1   uses. EDPR respectfully submits this is not the case.

2   As you heard, the special areas are a region with

3   a proud heritage of energy production and resource

4   extraction coexisting with agriculture, and the project

5   will contribute to that tradition.

6   Project infrastructure will utilize a minimal land

7   footprint while harvesting the abundant wind resource

8   in the area, enabling coincident use of the land for

9   agriculture, ranching, oil and gas activities,

10   aviation, and hunting.   15:21

11   EDPR has put significant time and effort into

12   designing a project that complies with technical,

13   environmental, and social constraints to ensure current

14   land uses can continue into the foreseeable future.

15   Based on a thorough assessment of these

16   constraints, EDPR is confident that the project has

17   been designed in a manner that, one, protects human

18   health by operating within the noise limits prescribed

19   in AUC Rule 12; two, minimizes effects on the

20   environment and wildlife by avoiding native habitats   15:21

21   and maximizing the setback of turbines and project

22   infrastructure from key habitats and environmental

23   features; and, three, is compatible with existing land

24   use and infrastructure.

25   By complying with all applicable provincial and

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1   municipal guidelines and setbacks, as well as

2   voluntarily adhering to federal aviation guidelines,

3   the project has been designed to ensure acceptable

4   project effects and interactions with current human use

5   in the area.

6   Mr. Chair, I will now provide a brief review of

7   the legal framework the Commission is operating under

8   in consideration of this project.

9   When considering an application for a power plant

10   and associated infrastructure, the Commission is guided   15:22

11   by Sections 2 and 3 of the HEEA and Sections 17 of the

12   *Alberta Utilities Commission Act*. Section 2 sets out

13   the purposes of the HEEA.

14   The purposes applicable to the project include:

15   To provide for the economic, orderly, and efficient

16   development and operation in the public interest of the

17   generation of electric energy in Alberta; to secure the

18   observance of safe and efficient practices in the

19   public interest in the development of hydro energy and

20   in the generation of electric energy in Alberta; and,   15:22

21   finally, and importantly, to assist the government in

22   controlling pollution and ensuring environmental

23   conservation in the development of electric energy

24   generation in Alberta.

25   Section 3 of the HEEA requires the Commission to

1   also have regard for the purposes of the *Electric*

2   *Utilities Act* when assessing whether a proposed power

3   plant and associated infrastructure is in the public

4   interest under Section 17 of the *Utilities Commission*

5   *Act*.

6   The purpose of the *Electric Utilities Act* include

7   the development of an efficient electric industry

8   structure, and the development of an electric

9   generation sector guided by competitive market forces.

10   The Commission's public interest mandate is found   15:23

11   within Section 17 of the *Utilities Commission Act*,

12   which states that: (as read)

13   "The Commission must consider whether

14   the construction and operation of the

15   proposed power plant is in the public

16   interest, having regard to the social

17   and economic effects of the plant and

18   the effects of the plant on the

19   environment."

20   Previous Commission decisions have confirmed that a   15:23

21   determination of whether a project is in the public

22   interest requires the Commission to assess and balance

23   the negative and beneficial impacts of the specific

24   project before it.

25   The existence of regulatory standards and

1   guidelines and the proponent's adherence to these

2   standards are important elements to consider in deciding

3   whether potential adverse effects are acceptable. Two

4   such regulatory standards are AUC Rule 7 and 12, and I

5   will discuss EDPR's compliance with these shortly.

6   Where such thresholds do not exist, the Commission

7   must be satisfied that reasonable mitigation measures

8   are in place to address the impacts. To the extent EDPR

9   has yet to receive approvals for the project required

10   pursuant to other applicable provincial or federal   15:24

11   legislation, EDPR has committed to applying for and

12   obtaining them in due course.

13   Before speaking to the evidence in this proceeding,

14   I would like to turn to an evidentiary matter that

15   warrants discussion in the context of this application,

16   expert independence and the treatment of expert

17   witnesses.

18   At the outset of the proceeding, my friend

19   presented the EDPR consultant witnesses with a number of

20   excerpts from news articles, press releases, as well as   15:25

21   from the websites of their respective consulting firms,

22   and CanWEA with a view to demonstrating that the

23   witnesses had only ever been retained by developers and

24   were paid by wind power developers with the intimation

25   that this somehow affected their ability to provide

1   independent and objective opinion evidence.

2   My friend went on to bring a motion for EDPR's

3   consultant witnesses to be dismissed from the hearing on

4   the basis that they lack the necessary independence and

5   objectivity required by Section 19 of Rule 1.

6   You dismissed this motion, noting that the

7   Clearview Group had not established that the EDPR

8   consultant witnesses did not meet the threshold test for

9   admissibility of expert evidence; namely, that the

10   expert must provide evidence that is fair, impartial,   15:26

11   and non-partisan.

12   The Commission also noted that pursuant to the

13   Supreme Court of Canada's decision in *White Burgess*, the

14   burden is on the party opposing the admission of expert

15   evidence to show that there is a realistic concern. The

16   expert's evidence will not be impartial when they attest

17   to that fact, as each of the EDPR witnesses has done

18   pursuant to Section 19.1(d) of AUC Rule 1.

19   The Commission further noted with respect to the

20   *White Burgess* decision that a mere employment   15:26

21   relationship between an expert witness and a party to a

22   proceeding will not constitute an interest or connection

23   to the proceeding that renders the expert unable to

24   provide objective evidence. Indeed, the Supreme Court

25   of Canada acknowledged in that case that, quote: (as

1   read)

2   "Experts are generally retained,

3   instructed, and paid by one of the

4   adversaries."

5   End quote, in a proceeding.

6   Prior to issuing its ruling on the motion, the

7   Commission made reference to the directions set out in

8   Bulletin 2016-07. In this procedural direction, the

9   Commission explains that the value to be ascribed to the

10   evidence of experts whose independence or qualifications   15:27

11   are challenged is a question of weight. The Commission

12   will assess the professional qualifications, specialized

13   knowledge, expert experience, relevant publications,

14   industry recognition, independence, and the objectivity

15   of the witness based on that witness's curriculum vitae

16   and oral evidence presented at the hearing.

17   With this procedural direction in mind, we will

18   make submissions regarding the weight that the

19   Commission is urged to accord to each of the expert

20   witnesses' testimony and evidence as we deal with the   15:27

21   specific subject matter of their evidence.

22   Turning now to project issues and impacts, starting

23   with noise. EDPR commissioned a noise impact

24   assessment, or NIA, for the project that was completed

25   by Ms. Drew of RWDI. In addition, RWDI reviewed and

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1 responded to the evidence of the Clearview Group's

2 expert Mr. Hank de Haan of dBA Noise Consultants.

3   EDPR submits that the project NIA was conducted in

4 accordance with all requirements of Rule 12. As

5 required by the rule, the maximum noise emitted when the

6 wind turbines operate under the planned maximum

7 operating conditions for both daytime and nighttime was

8 modelled.

9   The results of the NIA indicate that the project

10 will comply with the permissible sound levels specified   15:28

11 in Rule 12, having regard to ambient noise level and

12 contributions from third-party facilities, as well as

13 the contribution from the project.

14   Rule 12 specifies that NIAs must be prepared using

15 models that meet accepted protocols and international

16 standards, such as ISO 9613. The NIA for this project

17 was prepared using the ISO 9613 standard, which has been

18 accepted internationally as an appropriate standard to

19 be used for the modelling of various noise sources,

20 including wind turbine noise.   15:29

21   The ISO 9613 calculation standard integrates the

22 effect of stable atmospheric conditions on downwind

23 sound propagation such that Mr. de Haan's use of

24 specific downwind parameters in the CONCAWE model is

25 unwarranted.

1   Indeed, on cross-examination, Mr. de Haan

2   acknowledged that he has utilized the ISO 9613 standard

3   when completing a recent NIA for a proponent of a wind

4   power project, specifically capital power's Whitla

5   project on which he worked as a quality reviewer.

6   A great deal of attention was paid to the ground

7   attenuation coefficient or ground factor utilized for

8   the purposes of the project NIA. As the Commission is

9   aware, a ground factor of 0.7 was selected for the

10   project, having regard to the mixed prairie landscape   15:30

11   and degree of vegetation in the project area.

12   A ground factor of 0.7 has been used by other

13   practitioners in Alberta, including projects that have

14   been constructed and for which compliance with AUC

15   Rule 12 has been proven. An uncertainty of 1 dBA was

16   added to the turbine sound power level to account for

17   the fact that the turbine had not yet received IEC

18   certification at the time the NIA was completed. This

19   uncertainty was maintained even after certification was

20   received in order to provide for additional conservatism   15:30

21   in the NIA results.

22   You heard Mr. de Haan admit today in response to

23   questions from Commission counsel, that using a 1 dB

24   uncertainty for the turbine sound power would introduce

25   conservatism into the NIA, all else being equal.

1   My friend spent a lot of time during his

2   questioning of Ms. Drew identifying examples of NIAs in

3   which other practitioners have used a ground factor of

4   0.5, with or without using a ground factor of 0 for

5   mapped areas of tamped ground. However, it is not clear

6   what the significance of these different approaches is,

7   having regard to the fact that Mr. de Haan stated a

8   number of times during his remarks today that

9   practitioners are advised by peer-reviewed literature to

10   fiddle with the ground factor when using ISO 9613 for   15:31

11   wind turbines.

12   In response to an undertaking request from the

13   Commission, RWDI provided the Commission with the

14   results of the NIA using a ground factor of 0.5 rather

15   than 0.7. The results of this modelling demonstrate

16   that the project will continue to comply with the

17   permissible sound levels specified in Rule 12 when a

18   ground factor of 0.5 is used without the 1 dB

19   uncertainty and including at two-storey receptors.

20   On cross-examination, Mr. de Haan acknowledged that   15:32

21   at least for some receptors modelling using CONCAWE and

22   a ground factor of 0.5 indicated lower sound levels than

23   that determined using ISO 9613.

24   However, EDPR respectfully request that should the

25   Commission decide to rely on the project NIA using the

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1   0.5 ground attenuation factor, it would be more

2   appropriate to do so without adding the 1 dBA

3   uncertainty to the turbine sound power level, having

4   regard to the fact that the sound power for the Vestas

5   V136-3.6 has now been IEC certified.

6   The use of a 0.5 ground factor is similarly

7   conservative to the parameters used in the existing NIA,

8   such that the application of a 1 dBA uncertainty would

9   be overly conservative and not representative of planned

10   operating conditions for the project.   15:33

11   Mr. de Haan's evidence advocates for a further

12   reduction in the ground factor to 0 for areas within the

13   project area mapped as being reflective, which includes

14   wetlands, roads, and tamped ground.

15   EDPR notes that in a number of instances the level

16   of a conservatism advocated by Mr. de Haan does not

17   align with the reality of the project area. For

18   example, the suggestion that marshes should be

19   considered completely reflective is unreasonable, given

20   the large amount of vegetation contained in and around   15:33

21   the marsh.

22   In addition, Mr. de Haan acknowledged during

23   cross-examination that a global ground factor of 0.5 was

24   used for the Whitla NIA on which he worked. While

25   Mr. de Haan stated that he had not personally observed

1   wetlands in the Whitla NIA study area, the percentage of

2   wetlands in that study area appear to be greater than or

3   at least very similar to the percentage of wetland

4   coverage in the project area.

5   EDPR is confident that the modelling completed by

6   RWDI is conservative and accurately predicts the noise

7   levels that will be associated with the project. To

8   ensure this is the case, EDPR has committed to

9   undertaking a post-construction noise study at select

10 and suitably representative receptors to confirm the   15:34

11 project's compliance with Rule 12.

12   With regards to the specific receptors identified

13 by Mr. Mousseau during cross-examination of Ms. Drew,

14 EDPR notes that all of those receptors, with the

15 exception of Sedalia, have turbine contributions above

16 ambient noise levels and are appropriate for

17 post-construction noise monitoring.

18   With respect to the Sedalia receptor, we note that

19 any compliance monitoring would need to determine the

20 turbine contribution separate from any third-party   15:34

21 facility contribution, as the closest turbine to Sedalia

22 is approximately 2.6 kilometres away.

23   As such, turbine contributions are estimated to be

24 less than ambient and the cumulative sound level is

25 driven by the compressor station north of the receptor.

1   Turning now to visual impacts. EDPR acknowledges

2   that members of the Clearview Group are concerned about

3   the visual impacts of the project, particularly having

4   regard to the height of the proposed turbines. The

5   Clearview Group retained Ken Fairhurst of RDI Resource

6   Design to prepare a number of visual simulations of the

7   project, as well as a visual effects assessment that

8   purports to quantitatively and objectively demonstrate

9   that the project will adversely affect the visual

10   quality of the project area and local community.   15:35

11   With respect to the visual landscape system that

12   Dr. Fairhurst used to assess the existing landscape

13   integrity and significance of the project area for the

14   purposes of his impact assessment, Dr. Fairhurst

15   admitted that this was the first occasion in which his

16   VLS system had been used for wind farms. He also

17   acknowledged that it is not an industry standard

18   approach but, rather, a combination of approaches from

19   practitioners in a range of different jurisdictions.

20   You heard from Mr. McDonnell during the course of   15:36

21   the hearing that the visual simulations prepared by

22   Dr. Fairhurst are unrealistic and do not follow industry

23   standard protocols for the preparation of visual

24   simulations.

25   With respect to the locations of the visual

1   simulations and the turbine views they depict, you heard

2   my friend walk Mr. McDonnell through each of the 42

3   visual simulations prepared by EDPR's consultant WSP for

4   the project, noting the number of visualizations that

5   depicted turbines in the foreground, middle ground, and

6   background of the simulation. EDPR notes that none of

7   the Clearview Group members in the project area will

8   have turbines in their foreground views.

9   As described by Mr. LoTurco when preparing visual

10   simulations for the purposes of open houses, EDPR   15:37

11   directed WSP to select locations that would be

12   representative of the viewscape most likely to be

13   experienced by individuals that had filed statements of

14   intent to participate in the proceeding or who had

15   otherwise expressed concerns about the project. In

16   addition, locations were selected having regard to the

17   fact that members of the public are likely to routinely

18   view turbines from roadways within the project area.

19   The length of view from a road is much shorter than

20   that experienced when spending extended periods of time   15:37

21   at a residence near the project area. Turbines will

22   rarely be visible in the foreground from roadways, and,

23   as such, Mr. Fairhurst's decision to prepare the

24   majority of the simulations on the basis of a few

25   road-based foreground views is not representative. In

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1   addition, when assessing visual impact and the accuracy

2   of a visual simulation, as you heard from Mr. McDonnell,

3   it is important to consider the permanency of the view

4   being depicted.

5   The visual simulations prepared by RDI were not

6   realistic representations of the project in any way.

7   Many of the simulations excluded various existing

8   landscape features that may serve to turbine visuality

9   and contrast, such as trees, utility poles, transmission

10   lines, distribution lines, fence posts, and grain bins.   15:38

11   They present the turbines as dark against a white sky,

12   which maximizes contrast, resulting in an inaccurate

13   depiction of the project.

14   While Mr. Fairhurst clarified in his opening

15   statement that these existing landscape features would

16   still be subordinate to the turbines when viewing them

17   in the foreground, this is importantly not the case when

18   viewing the turbines from the middle or background.

19   During the portion of the hearing in Oyen,

20   Mr. McDonnell explained some of the concerns with the   15:39

21   accuracy of RDI's visual simulations as follows: The

22   topography is not modelled. A lot of the things in the

23   landscapes, vertical elements such as posts or signposts

24   or other power lines or things like that were not part

25   of the rendering. Vegetation was not part of the

1 rendering, other than sort of a symbolic figure for

2 grass that might be occurring in the ditch. The

3 roadways were not rendered. There was no texture shown

4 in it. It didn't really approach reality in any sense.

5   In fact, earlier today, you heard Dr. Fairhurst

6 admit the significant limitations in the software used

7 to develop his simulations. He acknowledged that

8 photomontages, such as those Dr. Fairhurst prepared

9 using the windPRO software work well and are more

10 realistic than his simulations.   15:40

11   While EDPR appreciates the time constraints that

12 are associated with participating in hearings such as

13 this one, we respectfully submit that it is

14 inappropriate to suggest that the simulations are

15 representative of the visual impact of the project that

16 will be experienced by the community.

17   The visual simulations prepared by WSP should be

18 preferred over those prepared by RDI for a number of

19 reasons, particularly because they adhere to industry

20 standard protocols, which emphasize the importance of   15:40

21 accurately depicting the existing environment when

22 simulating a proposed development.

23   The existing environment in WSP's simulations are

24 photo realistic rather than computer generated. As

25 described by Mr. McDonnell, photo realistic...

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1     THE CHAIR:                We'll take a short break while

2          they try and fix that.  I'm sorry.  We'll be back as

3          soon as we can.

4     (ADJOURNMENT)

5     THE CHAIR:                Welcome back.  It looks like we've

6          got that back up and working, so please continue.

7     MS. OLENIUK:              Thank you, Chair.

8               There's a saying that technology is a useful

9          servant but a dangerous master.  I think that's a

10         particularly appropriate saying.                      15:48

11              As described by Mr. McDonnell, photo realistic

12         simulations should be representative of the landscape,

13         viewsheds, and scale from which they will most often be

14         seen.

15              EDPR respectfully submits that the visual

16         simulations prepared by RDI are inaccurate and

17         misleading in a number of respects and that the

18         Commission should place limited weight on the visual

19         effects assessment prepared by Dr. Fairhurst.

20              Dr. Fairhurst admitted at a number of points      15:48

21         during his opening statement and direct evidence this

22         morning that there were inaccuracies and points that

23         needed to be corrected, both in his report and in his

24         visual simulations.  For example, Dr. Fairhurst

25         described how bright sun from June 21st was used to
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1 depict turbines on a winter landscape.

2   Dr. Fairhurst also acknowledged that there were no

3 visual quality objectives established by the provincial

4 government in the project area, as has been done in

5 other jurisdictions, like British Columbia, and that he

6 had not reviewed the Special Areas Board land use

7 order, which does address the issue of points of visual

8 significance in the project area and may indeed address

9 the zoning concern that Dr. Fairhurst identifies as

10 important to assess when siting wind power projects.   15:49

11   I would now like to move on to address the

12 environmental issues that were raised during the

13 hearing. I will start with a discussion of the natural

14 environmental siting conditions for the project,

15 followed by effects on wildlife, particularly

16 waterfowl.

17   Before moving into this discussion, however, it is

18 important to keep the overall context in mind. Unlike

19 most other developments, wind power projects have a

20 small terrestrial footprint and emit little to no   15:50

21 pollution into our air or water.

22   As you know, Alberta Environment and Parks, or

23 AEP, has issued two renewable energy referral reports

24 to EDPR, both of which concluded that the project posed

25 a low to moderate risk to wildlife and wildlife

1   habitat. These referral reports were issued based on

2   AEP's review of the environmental evaluations and

3   post-construction monitoring and adaptive management

4   plan prepared by EDPR's professional and independent

5   biologists, the underlying surveys and studies, which

6   were designed in accordance with AEP policy and in

7   close consultation with AEP.

8   When the Clearview Group questioned AEP's

9   conclusion, having regard to the fact that it not

10   completed any independent study of the project area,   15:50

11   AEP representatives affirmed the conclusions reached in

12   the referral reports and its decision not to

13   participate in this proceeding.

14   Survey adequacy. During the hearing in Oyen, each

15   of Mr. VanDerZee, Dr. Jones, and Dr. Whidden described

16   the numerous types of wildlife and vegetation surveys

17   completed in support of the 2016 and 2017 environmental

18   evaluations. In particular, Mr. VanDerZee described in

19   detail how EDPR had coordinated its study plans

20   directly with AEP from the beginning of project   15:51

21   development, approximately two and a half years ago,

22   and how this consultation will continue throughout

23   construction and operation of the project.

24   The company's wildlife survey and environmental

25   assessments efforts in the project area embody the

1   early and often approach to consultation with the

2   applicable regulatory authority, which EDPR submits is

3   a proactive, transparent, and responsible approach for

4   a developer, particularly having regard to AEP's

5   jurisdiction over the assessment of potential impacts

6   caused by the construction and operation of wind power

7   projects in the province.

8   As described by Mr. VanDerZee, we've worked with

9   AEP collaboratively, diligently. We've modified

10   wildlife study plans. We've made substantial   15:52

11   amendments to the project in accordance with their

12   direction.

13   EDPR respectfully submits that it is evident

14   surveys undertaken in support of the environmental

15   evaluations were adequate to enable AEP to assess the

16   potential risk posed by the project to wildlife and

17   wildlife habitat. The survey approach for the

18   environmental evaluations, including the number of

19   locations required for each type of survey, the

20   determination of what is a relevant and representative   15:52

21   subset of land use types, topographical features and

22   species abundance were all factored into the design of

23   the project in consultation with AEP.

24   While Mr. Wallis suggested that it would be the

25   terrain around various survey locations would be too

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1   hilly to permit detection within the diameter of that

2   survey area, Dr. Jones noted EDPR's experts would have

3   micro-sited each survey location to allow for maximum

4   visibility.

5   While there was much discussion during the hearing

6   regarding the extent to which the 2011 wind wildlife

7   guidelines, the 2011 land use guidelines for the

8   grassland and parkland areas, or the 2017 wildlife

9   directive should apply to the project, EDPR relied on

10   direct engagement with AEP to determine how to   15:53

11   appropriately adhere to regulatory guidance in the

12   province.

13   EDPR respectfully submits this level of

14   consultation is particularly appropriate in Alberta's

15   evolving regulatory environment. Indeed, the timing of

16   project development was such that each of the 2011

17   guidelines and 2017 directive apply to different

18   aspects of the project's lifespan.

19   In summary, the evidence is clear that the

20   consultation undertaken with AEP ensured that the   15:54

21   baseline wildlife surveys completed provided AEP with

22   sufficient information to evaluate the potential

23   project risk to wildlife.

24   EDPR sited the project in a manner that minimized

25   the area of wetlands and native grassland that would be

1   disturbed by project infrastructure. In fact,

2   82 percent of the project footprint is located on

3   previously disturbed or modified habitats.

4   Notwithstanding this fact, the Clearview Group

5   alleges that EDPR did not do enough to avoid wetlands

6   when siting project infrastructure and that it failed

7   to adhere to the Alberta Wetland Policy and the

8   setbacks recommended by the 2011 wildlife guidelines.

9   As articulated by Mr. VanDerZee during the hearing,

10   EDPR submits that the concept of avoidance needs to be   15:54

11   viewed in the context of all constraints on the siting

12   of project infrastructure so as not to render an area

13   sterile for development.

14   In addition to wetlands, EDPR sited the project to

15   avoid sharp-tailed grouse leks and other wildlife

16   features such as raptors nests to ensure compliance

17   with Rule 7 and to accommodate landowner considerations

18   as much as possible.

19   While EDPR acknowledges that having regard to the

20   wide range of setbacks under consideration, it was not   15:55

21   possible to design the project in a way that avoided

22   the 100-metre buffer from all Class 3 wetlands. EDPR

23   emphasizes that the project layout was designed in

24   close consultation with AEP and that the project will

25   comply with the requirements of the 2017 wildlife

1   directive applicable to stages 3 and 4 of the project;

2   that is, mitigation during construction and operation,

3   as well as post-construction monitoring and adaptive

4   management.

5   As acknowledged by Mr. Wallis during

6   cross-examination, AEP retains discretion under both

7   the 2011 wildlife guidelines and the 2017 wildlife

8   directive to consider and accept alternatives to the

9   recommendations outlined in those documents, including

10   the relaxation of setbacks on a case-by-case basis.   15:56

11   In the circumstances of the project, AEP

12   determined that the recommended wetland setback was not

13   required for all wetlands or all project infrastructure

14   and provided a referral report identifying the project

15   as having a low to medium risk for wildlife, having

16   regard to that determination.

17   EDPR notes that criticisms specific to the Alberta

18   Wetland Policy are unwarranted at this time, as the

19   policy applies in the context of applications for

20   authorizations under the *Water Act*. Pending detailed   15:56

21   engineering and micro-siting of project infrastructure,

22   EDPR has yet to confirm whether *Water Act*

23   authorizations will be required. In the event such

24   authorizations are required, EDPR will abide by the

25   Alberta Wetland Policy and all other directions

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1   received through consultation with AEP.

2   As identified in the 2017 referral report, EDPR is

3   committed to reclaiming all temporary workspaces in

4   order to reduce permanent impacts to wetlands and will

5   take actions to further avoid impacts within the

6   50-metre micro-siting allowance where feasible should

7   the project be approved by the Commission.

8   Turning now to native grassland. EDPR

9   acknowledges that Turbine 9 is located on native

10   grassland. However, it is important for the Commission   15:57

11   to recall that throughout the project development and

12   siting process EDPR considered and took active steps to

13   limit impacts on native grasslands. Through iterative

14   amendments to the project footprint, EDPR progressively

15   reduced the number of turbines and amount of project

16   infrastructure located on and near native grasslands.

17   Previous iterations of the project proposed siting

18   three turbines and associated infrastructure from four

19   turbines on native grasslands. As the Commission is

20   aware, Turbine 9 is on native grassland. However, this   15:58

21   location was effectively dictated by special areas

22   noise compliance considerations. EDPR notes that

23   Turbine 9 is located only 130 metres within the

24   property line of the native grassland parcel on which

25   it is located and further notes that it has committed

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1   to co-locate the collection line and access road for

2   this turbine in order to reduce impacts on native

3   prairie.

4   EDPR also notes that the use of a larger and

5   higher nameplate capacity turbine for the project has

6   enabled it to reduce the number of turbines for the

7   project and the amount of associated project

8   infrastructure that would otherwise be located on

9   native grasslands.

10   With respect to concerns raised regarding the   15:58

11   adequacy of surveys for rare plants in the project

12   area, EDPR notes surveys were designed to focus on

13   identifying those areas with potential overlap of

14   project infrastructure with native vegetation types.

15   Along with all environmental analysis undertaken for

16   the project, survey methods were reviewed and approved

17   by AEP.

18   Having regard to the foregoing, EDPR respectfully

19   submits that elimination of Turbine Number 9 from the

20   project layout is not warranted. EDPR has committed to   15:59

21   investigating micro-siting adjustments using minimum

22   disturbance techniques and to reclaiming and restoring

23   any disturbed native grassland areas in order to

24   minimize and mitigate project impacts.

25   EDPR acknowledges the challenges associated with

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1   reclaiming native grassland and expressed its

2   willingness to develop a reclamation and restoration

3   plan for the project for AEP approval prior to

4   commencing construction. Any such plan would identify

5   specific reclamation success criteria for impact of

6   native grassland and would be provided to the

7   Commission for review.

8   Finally, as stated by Mr. O'Connor and Mr. LoTurco

9   during the hearing, EDPR is willing to investigate

10   native prairie offsets for any residual native prairie   16:00

11   impacts experienced at Turbine Number 9, which

12   represents a commitment far in excess of any mitigation

13   requested by AEP.

14   With respect to potential impacts on wildlife,

15   specific concerns have been raised regarding

16   sharp-tailed grouse, bats, and waterfowl, in

17   particular. At the outset of this discussion, it is

18   important to note that EDPR has prepared a

19   post-construction monitoring and adaptive management

20   plan, which has been reviewed and accepted by AEP.   16:00

21   As identified in the AEP consultation material

22   filed by EDPR in response to information requests from

23   the Clearview Group, AEP issued information requests to

24   EDPR relative to this plan and requested various

25   amendments prior to its approval.

1   EDPR has taken care to minimize the impacts of the

2   project on sharp-tailed grouse, including the stripped

3   application of AEP's 500-metre setback for leks from

4   wind turbines and minimizing construction activities

5   during peak lekking periods for non-turbine project

6   infrastructure within the setback.

7   Indeed, members of the Clearview Group have also

8   acknowledged EDPR's willingness to relocate project

9   infrastructure, having regard to the identification of

10   leks in the project area.   16:01

11   While Mr. Wallis advocates for an 8-kilometre

12   setback from known sharp-tailed grouse leks, he also

13   admitted during cross-examination that the U.S.

14   guidelines that reference this setback are voluntary

15   and expressly state that they are not intended to

16   restrict the installation of turbines within the

17   8-kilometre setback.

18   Acoustic bat monitoring surveys for the project

19   recorded an average of 0.59 migratory bat passes per

20   detector night during the spring, and 0.54 migratory   16:02

21   bat passes per detector night during the fall, both of

22   which fall below the 1.00 migratory bat pass threshold

23   set by AEP for potentially acceptable risk. Indeed,

24   AEP evaluated the project as having low bat fatality

25   risk.

1   While EDPR acknowledges Mr. Wallis's suggestions

2   with respect to the use of radar for future bat

3   detection, EDPR submits that the methods set out in its

4   AEP-approved post-construction monitoring and adaptive

5   management plan are sufficient to adequately assess and

6   respond to bat fatality issues should they arise.

7   Further, Mr. Wallis acknowledged that radar has

8   been employed at wind-powered projects with mixed

9   results.

10   A number of concerns were expressed during the   16:02

11 hearing regarding the potential effects of the project

12 on waterfowl. EDPR does not disregard the importance

13 of the project area to waterfowl, nor does it take the

14 position that the project will not impact waterfowl to

15 a certain extent. These facts were acknowledged and

16 discussed in both environmental evaluations prepared

17 for the project. However, EDPR takes issue with the

18 magnitude and geographic extent of the impact alleged

19 by the Clearview Group and Dr. Petrie.

20   Dr. Petrie's report suggests that the size and   16:03

21 orientation of project turbines will have a barrier

22 effect causing waterfowl to avoid the entire project

23 area.

24   Dr. Petrie retreated from this hard line position

25 in his opening statement noting that the use of habitat

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1   within the project area by ducks, swans, and geese may

2   be reduced but acknowledged that the project will not

3   represent a complete barrier to movement.

4   As you heard from Dr. Jones, based on his

5   experience working in and around large-scaled wind

6   energy developments, there is no generalized barrier or

7   displacement effect associated with such developments

8   in North America.

9   Dr. Jones' review of the literature on this

10   subject, including the peer-reviewed studies and the   16:04

11   literature reviews cited by Dr. Petrie in his report,

12   suggests that the evidence for a generalized barrier

13   effect and/or displacement effect is highly equivocal.

14   You heard Ms. Macnab question Dr. Petrie regarding

15   some of the numbers of waterfowl breeding pairs per

16   square kilometre in the area of the province in which

17   the project is located. And you also heard that

18   Dr. Petrie was unable to confirm the manner in which

19   some of those numbers were derived. Similarly,

20   Dr. Jones was unable to determine the basis for many of   16:04

21   the figures referenced in Dr. Petrie's evidence and IR

22   responses regarding displaced waterfowl without

23   assuming full exclusion of waterfowl within the

24   500-metre area Dr. Petrie describes as an avoidance

25   zone.

1   As outlined in the expert report of Dr. Jones, the

2   conclusions set forth in Dr. Petrie's report are not

3   supported by the scientific literature he cites. Those

4   studies cited by Dr. Petrie do not support the

5   assertion that wind power projects result in widespread

6   avoidance by waterfowl, particularly not the 500-metre

7   avoidance zone identified in Dr. Petrie's report.

8   Conversely, many of the studies Dr. Petrie cites

9   document waterfowl use well within that distance.

10   Even if the Commission were to accept that the   16:05

11   150-metre and 500-metre exclusion and avoidance zones

12   identified by Dr. Petrie actually exist, which EDPR

13   argues would be incorrect and inappropriate, Dr. Petrie

14   fails to acknowledge that the spacing of turbines and

15   turbine rows in the project are sufficiently large to

16   permit the movement of waterfowl within and through the

17   project area. Indeed, Dr. Petrie did not cite any

18   literature to support his conjecture that larger

19   turbines will result in a larger avoidance effect for

20   waterfowl.   16:06

21   There is nothing in the evidence before the

22   Commission to suggest a linear response to turbine

23   size, particularly having regard to the increased space

24   between turbines associated with the project that uses

25   a smaller number of large turbines.

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1   Dr. Petrie makes reference to setback

2   recommendations by Danish researchers in the report he

3   filed in this proceeding as well as in his opening

4   statement. In particular, Dr. Petrie states that:

5   (as read)

6   "Danish researchers advocate that IWTs,

7   or industrial wind turbines, not be

8   placed within 1 kilometre of waterfowl

9   roosting areas."

10   And he cites Stelling and Petrie.   16:06

11   In EDPR's view, it is notable that Dr. Petrie

12   elected not to cite the document he coauthored with

13   Mr. Keith Stelling in his opening statement. The

14   unpublished document, which is available online, makes

15   reference to personal correspondence with one Danish

16   researcher, and no studies in support of the proposition

17   were provided in response to information requests from

18   the AUC regarding the applicability of the referenced

19   Danish research to species and landscapes in Alberta.

20   The Clearview Group and Mr. Larry Kaumeyer, in   16:07

21   particular, suggest that the Commission should be guided

22   by the Saskatchewan Ministry of Environment's decision

23   not to approve the Chaplin wind energy project when

24   considering EDPR's application.

25   EDPR notes that, other than the testimony of

1   Mr. Kaumeyer, there is no evidence on the record of this

2   proceeding to demonstrate why a comparison to Chaplin is

3   relevant or appropriate.

4   The location proposed for Chaplin was surrounded by

5   four nationally and globally recognized important bird

6   areas, located in close proximity to habitat used by

7   shorebirds identified as species at risk, and consisted

8   of landscape features that funneled for birds and bats.

9   None of these circumstances are similarly present in the

10   Sharp Hills wind farm project area.   16:08

11   Prior to leaving our discussion of environmental

12   issues, I would just like to draw the Commission's

13   attention to the following observations: First, the

14   concerns expressed by Mr. Wallis in this proceeding

15   focus more on his perceived failings of AEP than the

16   proponent.

17   EDPR has complied with all applicable environmental

18   standards and regulations in close consultation with

19   AEP. Any concerns the Clearview Group may have

20   regarding the decisions of AEP or other regulators with   16:08

21   jurisdiction over the project should have no bearing on

22   the Commission's assessment of whether the project

23   complies with applicable regulatory standards and is in

24   the public interest.

25   Second, it is notable that, of the four

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1   Clearview Group witnesses that spoke primarily about

2   environmental impacts during the hearing, three appear

3   to be primarily concerned about the potential impacts of

4   the project on the abundance of certain wildlife for

5   hunting purposes.

6   While EDPR acknowledges that hunting is a social

7   value, an important part of life for many people, it

8   also notes that the evidence you heard during the

9   proceeding indicates that hunting resources have

10   increased in recent years.   16:09

11   For example, Mr. Ross made the following comments

12   regarding the abundance of geese: (as read)

13   "There's a real problem with the numbers

14   that we have with our geese. Their

15   numbers have increased spectacularly and

16   they're destroying the habitat around

17   the Hudson Bay and every year they've

18   increased the bird limits to shoot them

19   because they're trying to control the

20   populations."   16:09

21   Similarly, Mr. Kaumeyer notes that there has been a

22   significant growth in the number of waterfowl in the

23   region, to the point that the length of the hunting

24   season has increased. EDPR submits that the evidence

25   demonstrates that hunting in the project area will not

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1   be negatively impacted by the project.

2   The Commission heard evidence about the private

3   airstrips in the project area and the extent to which

4   they are used by Clearview Group members. My friend has

5   suggested that the issue of aviation in this proceeding

6   is a complex one, and I respectfully disagree. The

7   evidence is straightforward, as are the guidance

8   documents.

9   It is important to note that there are no airport

10   zoning regulations in the vicinity of the project, nor   **16:10**

11   any provincial or municipal restrictions on the use of

12   land in proximity to the private airstrips. That is the

13   first point both experts appear to agree on.

14   As recommended, as agreed to by both Mr. Sutherland

15   and Mr. Hatcher, Transport Canada's aerodrome standards

16   and recommended practices, TP312, fifth edition, contain

17   recommended safety standards that aerodrome operators

18   are encouraged to follow. However, the TP312

19   recommendations are not enforceable against anyone

20   except operators of certified airports. The standards   **16:10**

21   in TP312 are not required to be met by anyone, including

22   the Nesses and the Jorgensons, who operate the

23   airstrips. This appears to be the second point the

24   experts agree on.

25   Notwithstanding this fact, EDPR has applied the

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1   obstacle limitation surface, or OLS, standards described

2   in Section 4.1 of TP312 to the airstrips in the project

3   area to ensure continued safe operation of the private

4   airstrips. As you heard, the standards set out in

5   TP312, including the OLS, are sufficient for all

6   aircraft regardless of size.

7   As I discussed with Mr. Hatcher, Transport Canada's

8   definition of OLS indicates it is a surface that

9   establishes a limit to which objects may project into

10   the aerodrome space so that aircraft operations at the   16:11

11   aerodrome may be conducted safely.

12   Mr. Chair, if you protect OLS, which EDPR has done,

13   operations at the airstrips may be conducted safely.

14   For this reason, EDPR's confident that it has taken

15   sufficient steps to ensure the safe operation of the

16   airstrips to the extent they are used now and into the

17   future.

18   EDPR wishes to assure the Commission that it is not

19   being put in a position where it is necessary to

20   prioritize one land use over another. The project has   16:12

21   been designed to coexist with airstrip use and in a

22   manner that maintains safe conditions for pilots in

23   compliance with Transport Canada's guidance.

24   In direct response to questions from Commissioner

25   Phillips, Mr. Sutherland expressed his opinion that the

1   Commission would not be putting pilots in harm's way

2   should you approve the project. By protecting the OLS,

3   EDPR has enabled safe arrivals and departures to and

4   from the airstrips. The OLS has been applied equally to

5   both ends of the airstrips and provides a standard

6   surface of protection from obstacles out to

7   2.5 kilometres off each end of the runway.

8   EDPR is confident that this measure will address

9   the concerns expressed by Mr. Len Jorgenson, who

10 emphasized the importance of a safe approach and   16:13

11 departure when flying into any airstrip. In addition,

12 it is notable that during cross-examination Mr. Hatcher

13 agreed that EDPR's intent was to protect the OLS such

14 that there was no infringement in that regard.

15   The Clearview Group disagrees that EDPR's proposed

16 turbine layout is consistent with the setbacks

17 established by TP312 because turbines have been sited

18 within the outer surface, which is an area 45 metres

19 above the aerodrome that extends a horizontal distance

20 of at least 4 kilometres from the runway. However, EDPR   16:14

21 submits that this argument is based on a fundamental

22 misunderstanding of the applicable Transport Canada

23 regulations and guidance.

24   As you heard from Mr. Sutherland, the outer surface

25 was an area defined in the fourth edition of TP312,

1   which was replaced and superseded by the fifth edition

2   of that document in 2015. Specifically, Mr. Sutherland

3   explained that the term "outer surface" is not used in

4   standards anymore. It's called an "outer identification

5   surface." And the reference made, even in the

6   Clearview Group's evidence, referred to TP312 fifth

7   edition.

8   The outer identification surface is not a

9   limitation surface. It's been taken out of that

10   definition, and it's intended for a different purpose: 16:14

11   to identify obstacles to see what impact they have, as

12   opposed to limiting them.

13   The concept of the outer surface continues to be

14   referenced in Transport Canada's guidance document for

15   land use in the vicinity of aerodromes, TP1247 E. This

16   is because TP1247 has not been updated since 2014 and,

17   therefore, continues to reference the contents of the

18   fourth edition of TP312.

19   Regardless, EDPR submits that the continued

20   reference to an outer surface in TP1247 should be of no   16:15

21   consequence for the Commission's assessment of whether

22   the project has been sited to safely coexist with

23   airstrip use.

24   First, as described by Mr. Sutherland, TP1247 is

25   not a regulatory document, it is a guidance document.

1   As agreed to by Mr. Hatcher during cross-examination, it

2   is a publication designed to assist planners and

3   legislators in becoming familiar with issues related to

4   land use in the vicinity of aerodromes. Like TP312,

5   there is nothing in TP1247 that indicates it is

6   enforceable or otherwise binding on a party.

7   Second, the current addition of TP312 includes the

8   outer surface in the definition of obstacle

9   identification surface, or OIS. The OIS is used to

10   identify obstacles that may require assessment and   16:16

11   inclusion in instrument approach procedures or any

12   visual circuit procedure associated with the instrument

13   approach procedure.

14   It is important to note that there are no

15   instrument approach procedures associated with any of

16   these private airstrips. It does not create any

17   prohibition or other limitation with respect to the

18   placement of structures in the vicinity of airstrips,

19   which fact was acknowledged by Mr. Hatcher during

20   cross-examination.   16:16

21   Further, EDPR notes that various objects are

22   currently located within the OIS for the Clearview Group

23   airstrips, including transmission towers and

24   transmission lines, highways, trees, and grain bins, and

25   that pilots using visual flight rules are presumably

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1   able to adjust their procedures accordingly.

2   Mr. Hatcher identified a concern regarding the

3   impact of turbulence caused by wind turbines on

4   aircraft. However, EDPR notes that Transport Canada has

5   not issued any guidelines regarding this issue, which

6   Mr. Hatcher acknowledged during cross-examination.

7   Transport Canada's release of TP1247 evidences the

8   fact that the agency has turned its mind to the

9   interaction between aircraft and wind turbines and, as

10   such, the fact that no such guidance has been issued   16:17

11   suggests that any turbulence that does exist is likely

12   to pose any significant risk.

13   With respect to the concerns raised regarding the

14   impact on the project of aerial spraying, EDPR notes

15   that aerial spraying is not common or frequent in the

16   project area. During the course of three participation

17   PIP rounds, EDPR was not made aware of any aerial

18   spraying operations in proximity to the project, and the

19   submissions of the Clearview Group indicate that aerial

20   spraying is a very rare occurrence. Mr. Ness stated   16:18

21   that it has only been used twice in the last ten years

22   on his lands, and Mr. Sheldon Kroker stated that aerial

23   spraying is a one in 10- or 15-year event.

24   Regardless, EDPR has committed to consult with

25   landowners and aerial applicators to discuss proposed

1   locations and timing of spraying activities and

2   associated safety considerations in the event such

3   activities are proposed.

4   EDPR respectfully submits that the evidence

5   presented by Mr. Sutherland regarding aviation matters

6   should be preferred over that of Mr. Hatcher. While

7   Mr. Hatcher is clearly an experienced pilot with

8   expertise in visual flight rules, he does not appear to

9   be familiar with the guidelines that are at issue in

10   this proceeding, and, indeed, his report is based on an   16:19

11   out-of-date version of TP312.

12   In conclusion, notwithstanding the fact that TP312

13   does not impose any restrictions on entities such as

14   EDPR, which are not aerodrome operators, EDPR made

15   significant efforts to voluntarily include OLS setbacks

16   in accordance with the fifth edition of TP312 as part of

17   its project design. By doing so, EDPR ensured that the

18   airstrips could continue to be used safely by aircraft

19   pilots. The Commission is, therefore, not in a position

20   where it needs to choose between competing land uses, as   16:19

21   turbines and airstrip use can safely coexist within the

22   project area.

23   EDPR heard the concerns of Mr. Barry Wagstaff and

24   other members of the Clearview Group regarding the

25   potential impacts of shadow flicker. Mr. Wagstaff

1   indicated he will experience 12 to 13 hours per day of

2   shadow flicker in the summer months and 7 to 8 hours per

3   day during the winter months. However, EDPR wants to

4   assure the Wagstaffs that their residences are well

5   outside the eight-hour per year contour of the shadow

6   flicker map commissioned by EDPR which was available to

7   stakeholders through the PIP.

8   Property values. During the course of the hearing,

9   you heard a number of Clearview Group members express

10   concerns about the potential effects of the project on   16:20

11   property values. Indeed, EDPR received these concerns

12   during the PIP as well as through statements of intent

13   to participate and submissions filed as part of the

14   Clearview Group's evidence in this proceeding. Having

15   regard to these concerns, EDPR advised in its reply

16   evidence that it had not identified any reliable

17   information that indicates that properties surrounding

18   wind projects suffer a loss and property value, and

19   specifically had no information that the project would

20   have any impact on property values.   16:21

21   Operations and safety. EDPR is committed to the

22   safety of those in the vicinity of its operations,

23   including residents, employees, and contractors. In the

24   very unlikely event of a wind turbine fire, the

25   fire-monitoring sensors located in the affected turbine

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1   will trigger fire alarms at both the onsite operations

2   and maintenance centre and the remote operation centre

3   to enable immediate response.

4   As indicated in its application and PIP materials,

5   EDPR has initiated consultation with the fire chief and

6   deputy director of emergency operations for the Special

7   Areas Board and is committed to developing a

8   site-specific emergency response plan prior to

9   commencing construction of the project. As part of the

10   emergency response plan, firefighting and detection   16:21

11   equipment will be available in all project buildings and

12   staff vehicles.

13   In addition, EDPR will maintain an up-to-date list

14   of residents in the project area, which will be used to

15   notify nearby residents of fire or other emergency

16   situations.

17   Decommissioning and reclamation. EDPR is committed

18   to fully decommissioning the project at the end of its

19   operational life. As discussed by Mr. LoTurco during

20   the hearing, EDPR expects to follow the deconstruction   16:22

21   for resale method of decommissioning in the future, such

22   that decommissioning costs can be covered by the salvage

23   value of project infrastructure including the large

24   quantities of steel which comprise the turbine towers.

25   In addition, EDPR has committed to establishing a

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1   decommissioning fund relative to all properties on which

2   project turbines are located. This fund provides

3   additional comfort to participating landowners that

4   funds will be available at the end of the project's

5   operating life for decommissioning and abandonment

6   costs.

7   In addition, EDPR acknowledges that following the

8   proclamation of the *Renewable Electricity Act* in

9   March 2017 and the resulting amendments to the

10   *Environmental Protection and Enhancement Act*, EDPR is   16:23

11   statutorily required to obtain a reclamation certificate

12   from AEP in accordance with the conservation and

13   reclamation regulation at the time the project is

14   decommissioned.

15   Finally, EDPR notes it will develop and submit a

16   decommissioning plan to the Special Areas Board in

17   connection with its application for development permits

18   in connection with the project.

19   EDPR is confident that all costs for

20   decommissioning the project will be available at the end   16:23

21   of its operating life and is committed to complying with

22   the statutory reclamation requirements in place at the

23   time of decommissioning.

24   I'm going to move on to discuss the public

25   consultation undertaken by EDPR and the participant

1   involvement program, or PIP, designed for the project in

2   accordance with Rule 7.

3   Given the nature of the project, EDPR did not have

4   any powers to compel or take the land rights required

5   for the project without the consent of the participating

6   landowners.

7   While you heard from some landowners that they

8   decided not to participate in the project, which is

9   their right, a number of landowners expressed an

10   interest in doing so, such that EDPR was able to secure   16:24

11   over 49,000 acres of land through lease and option

12   agreements and secure an additional 16,000 acres of land

13   through setback waivers, enabling EDPR to maintain a

14   further buffer between project infrastructure and

15   non-participating parcels.

16   EDPR developed its PIP with the intent of building

17   trust, credibility, and respectful relationships with

18   landowners and other stakeholders potentially affected

19   by or interested in the project, and with the intent of

20   meeting or exceeding the notification and consultation   16:24

21   requirements set out in Rule 7.

22   EDPR conducted an open, transparent, and thorough

23   public consultation process and respectfully disagrees

24   with the criticisms raised by some Clearview Group

25   members about the PIP.

1   As stated by Mr. LoTurco, what I can say is that we

2   have run three rounds of the participant involvement

3   program to identify concerns. We've made adjustments.

4   We have come back with the best information that we

5   could return to all interested entities and we've tried

6   to make the project better as a result. And so I think

7   that's what I can say that we've done, and I think it's

8   been a pretty rewarding process for us.

9   There was a great deal of discussion during the

10   hearing regarding different views in the communities   16:25

11   about the project.

12   As you heard from Mr. Fitch during his

13   cross-examination of Dr. Jones, reasonable experts and

14   scientists may disagree. I believe the same statement

15   applies to landowners as well. Reasonable people can,

16   and often, disagree.

17   You heard suggestions from the Clearview Group that

18   more landowners within the 2 kilometres of the project

19   boundary oppose the project that are participants in it.

20   However, when assessing the community context, it is   16:26

21   important for the Commission to consider that only 7 of

22   the individuals that testified at the hearing on behalf

23   of the Clearview Group have full-time residences within

24   2 kilometres of the project boundary and none who reside

25   within 1.75 kilometres.

1   A number of the individuals that testified at the

2   hearing were not members of the Clearview Group and many

3   others do not reside anywhere near the project area or

4   only do so on a seasonal or activity-specific basis.

5   In addition to concerns about visual impacts,

6   property values, and the other issues that I have

7   already discussed, EDPR made note of the following

8   specific concerns raised by Clearview Group members in

9   their evidence and in their remarks before the

10   Commission last week.   16:26

11   A number of Clearview Group members are speculative

12   about the economic benefits the project represents,

13   particularly the number of jobs it will create relative

14   to the oil, gas, and coal industries and the economic

15   implications of retiring coal-fired power plants in the

16   province, such as the Sheerness generating station.

17   While EDPR appreciates the differences in the

18   amount of direct employment available from different

19   types of energy facilities and the fact that there are

20   concerns about the implications of government policy,   16:27

21   these are unfortunately not the types of concerns that

22   EDPR or, with respect, the Commission, are able to

23   address. EDPR was, however, always open to providing

24   information relative to these concerns throughout the

25   course of its PIP.

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1   In addition, EDPR notes that the tax revenue that

2   will be paid by EDPR to the Special Areas Board, the

3   payments to participating landowners, and the operations

4   and maintenance jobs associated with the project are

5   each stable sources of revenue and resources that are

6   not subject to volatile commodity prices in the same way

7   as the oil and gas or coal industries are.

8   EDPR also heard concerns about construction noise

9   on livestock from Ms. Juanita Wagstaff in particular.

10   EDPR's committed to conduct construction activity   16:28

11   between the hours of 7 a.m. and 10 p.m., except in

12   unusual circumstances, and will consult with landowners

13   regarding the timing of activities to minimize

14   disruptions to the greatest extent possible.

15   EDPR is of the view that a fair and wholistic

16   assessment of the negative and beneficial impacts of the

17   project supports a finding that it is in the public

18   interest and will provide for the economic, orderly, and

19   efficient development and operation of the generation of

20   electric energy in Alberta.   16:28

21   The project's installed capacity of approximately

22   300 megawatts of renewable electricity will generate

23   power to close to 160,000 homes in Alberta and will

24   contribute to emissions reduction targets set out in

25   Alberta's climate leadership plan and under the

1   Renewable Energy Act to achieve 30 percent of annual

2   electricity in the province from renewable sources by

3   2030.

4   As one of four projects selected in the first round

5   of renewable electricity program, the project will

6   assist the province in reaching its commitment to

7   increase renewable electricity generation, diversifying

8   the provincial energy mix, and securing affordable

9   electricity prices for Alberta consumers. In this way,

10   approval of the project will help achieve one of the key   16:29

11   purposes of the HEEA, controlling pollution and ensuring

12   environmental conservation in the generation of electric

13   energy in Alberta.

14   At the outset of the hearing, you heard how the

15   project is expected to generate a significant number of

16   employment opportunities, including up to 300 jobs

17   during the construction phase and approximately 15 to 20

18   direct and permanent jobs during the 20- to 30-year

19   operational life of the project. EDPR intends to work

20   with local contractors for road maintenance, clearing,   16:30

21   vegetation management, catering, and other services

22   throughout the life of the project, ensuring long-time

23   investment in the community.

24   The project represents a highly significant capital

25   investment in the special areas and will contribute to

1   economic development in the region. Participating

2   landowners will be able to diversify the sources of

3   income for their families and spend additional income in

4   the community. Property taxes that will be paid to the

5   Special Areas Board will increase overall annual tax

6   revenue, enabling investment in local infrastructure,

7   such as schools, local roads, and other municipal

8   government services. The benefits created by the

9   project are therefore not limited to participating

10   landowners, but extend to all members of the community.   16:31

11   Further, as you heard from Mr. LoTurco and

12   Mr. O'Connor, EDPR has been involved in a number of

13   community initiatives over the last three to four years,

14   has donated to local organizations as part of its first

15   round of social investment in the special areas, and

16   looks forward to continuing to contribute to similar

17   organizations and causes in the future through future

18   rounds of community donations.

19   In conclusion, EDPR has taken care to design and

20   site the project in a manner that avoids or minimizes   16:31

21   potential negative effects to the greatest extent

22   possible and is committed to mitigating any residual

23   effects in accordance with applicable regulations.

24   Having regard to the beneficial social,

25   environmental, and economics of the project as I've

1   described, the applicant submits that the positive

2   effects of the project clearly outweigh any potential

3   negative impacts and respectfully request the Commission

4   approve the application and grant the requisite power

5   plant approval and substation permit and licence.

6   Subject to any questions the Commission may have,

7   those are my submissions.

8   THE CHAIR: Thank you. I'll just confer and

9   see if we have any questions for clarification.

10   Seeing as we have none, I'm just going to check in   16:32

11   with the court reporter, if she wants to have a little

12   break before we allow Mr. Fitch to start.

13   I thought that might be the case. Let's just take

14   about ten minutes, and then we'll invite Mr. Fitch.

15   Thank you.

16   (ADJOURNMENT)

17   THE CHAIR: Welcome back. Please be seated.

18   Mr. Fitch, whenever you're ready, please proceed.

19   MR. FITCH: Thank you, Mr. Chair and Panel

20   members. I want to begin by thanking you for a fair   16:45

21   and efficient hearing, but mainly I want to begin by

22   saying what an honour and privilege it has been for

23   Mr. Baldasaro and I to have been able to represent our

24   client the Clearview Group. Truly a group of wonderful

25   people, I'm sure you would agree, having heard from

1   many of them last week.

2   And I have to say, it is a real shame that we're

3   doing closing here in Calgary instead of Oyen. You saw

4   the turnout last week. People are very passionate

5   about this, and I know they would have wanted to be

6   here.

7   I want to particularly acknowledge Sheldon and

8   Kelly Kroker, who are here. They've been my main point

9   of contact for months now on this file and they've been

10   a tremendous support, and they're just two of the   16:46

11   greatest people I've ever met. So there you go.

12   Sir, this project, of course, is in Special Areas

13   3 and 4, and it truly is a special area, this Sedalia,

14   New Brigden area. It's a farming and ranching

15   community, but it -- it's teeming with wildlife. I was

16   amazed how much wildlife we saw driving back and forth

17   everyday between Oyen and Sedalia.

18   It's in the middle of nowhere, so to speak,

19   seemingly empty, yet home in fact to a close-knit,

20   thriving community. It's a part of the province   16:47

21   thought of, by us city slickers, as being flat and

22   dusty and dry, but, in fact, it's rolling, dotted with

23   ponds and sloughs and wetlands in the prairie pothole

24   region of North America, as you heard, and we'll be

25   talking more about that.

1   It's an area of I think understated but real

2   beauty, a quiet and peaceful area where, as

3   Kelly Kroker said, noise travels far. It's an area

4   that's rooted in history and in community, stretching

5   back five generations. You heard Mr. Wagstaff talk

6   about his great-great-great-grandfather, if that's

7   right, homesteading it 115 years ago. And all of this

8   is under threat by this project, by the tallest

9   turbines ever proposed in Alberta, turbines taller than

10   any operating anywhere in North America, by a proponent   16:48

11   that has proved to be tone deaf to the concerns of

12   local people and a local community.

13   It is the submission of the Clearview Group that

14   the Sharp Hills wind project will have a dramatic

15   impact on the landscape, it will have a significant

16   impact on wildlife, and it will have and, indeed

17   already has had, a profound impact on the community,

18   dividing it among participating and non-participating

19   landowners. This is a precedent-setting application.

20   There have been many wind power projects we know   16:49

21   that have been approved by the AUC in the last several

22   years. To a jaded outsider, it can appear like it's a

23   foregone conclusion; that it's just a rubber stamp.

24   But having regard to the size of these turbines

25   and this unique area that basically no one has ever

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1   heard of, we submit this application is different and

2   the AUC can and must take the opportunity to draw a

3   proverbial line in the sand, that it will not simply

4   rubber stamp any old wind project that comes along.

5   This one is too big and too impactful, and it is

6   the submission of the Clearview Group that the

7   application should be denied in whole or at least in

8   part, that is, in relation to certain turbines, and

9   I'll get into that later.

10   The outline of my argument will be as follows.   16:50

11   I'm going to start by talking about tower height and

12   visual impacts. I'm then going to move to the

13   environment, the impacts on the environment, and

14   decommissioning and reclamation. Third, I'm going to

15   deal with noise impacts. Fourthly, aviation and the

16   impacts on the local airstrips. And then last, but

17   really not least at all, the impacts on the community,

18   social effects, which this Commission is statutorily

19   bound to have regard to in carrying out its public

20   interest mandate.   16:50

21   So to begin on tower height, the record is clear

22   that if approved these turbines will be the tallest

23   ever built in Alberta. The hub height is 132 metres,

24   the rotor diameter is 136 metres, for a total height of

25   200 metres.

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1   I'm going to refer to certain exhibits, so I'm

2   going to ask that we call up Exhibit 147, pdf 3. While

3   we're doing that, you have heard members of the

4   Clearview group talk about the fact that at 200 metres,

5   or 650 feet, these turbines will be taller than the

6   Calgary Tower. And EDP has implied that it's somehow

7   unfair to compare the height of these proposed turbines

8   to the Calgary Tower. But it's not unfair. It is

9   simply a fact. When you look at this graphic that

10   Mr. Ross had done, it's actually shocking how tall   16:52

11   these towers are.

12   I'm sure some of you, like Mr. Baldasaro and I,

13   drove home from the hearing and came into the city from

14   the east, and you can see the Calgary Tower, which will

15   be shorter than these turbines, from like at least

16   20 kilometres in the distance, and it's surrounded by

17   the buildings of downtown.

18   These towers will be plunked down, 83 of them, on

19   a landscape primarily horizontal from a visual

20   perspective. So the impact, the visual impact, of   16:52

21   these turbines will be far worse than the Calgary

22   Tower.

23   Members of the Clearview Group have repeatedly and

24   consistently expressed that this is one of their

25   biggest concerns, the fact that the height of these

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1   turbines is unprecedented.

2   In its reply evidence in response to this concern,

3   EDP referred to a letter that I received from Alberta

4   Environment Protection, which characterized the size of

5   these proposed turbines as being "typical of most

6   current wind projects across the province." End of

7   quote. That's what AEP said. And I'm submitting that

8   is simply not true. And I can't for the life of me

9   think why AEP would say something like that.

10   And I would suggest it is completely disingenuous   16:53

11   of EDP to rely on an incorrect statement made by AEP.

12   EDP knows better than anyone that the size of their

13   turbines are unprecedented in this province.

14   I went through in cross-examination with EDP other

15   recently approved and pending wind farm applications in

16   Alberta. The gist of all of that is as follows.

17   Bull Creek, which I think was from 2014, a hub

18   height of 85 metres, rotor diameter of 103 metres,

19   total height of 136.5 metres. 65 metres shorter than

20   these turbines.   16:54

21   Next, Grizzly Bear Creek, which I believe was from

22   2016, hub height of 91 metres, rotor diameter of

23   116.8 metres, total height of 149.4 metres. So more

24   than 50 metres shorter than these turbines.

25   Halkirk 2, approved very recently by this

1 Commission, hub height of 95 metres, rotor diameter of

2 110 metres, total height of 150 metres.

3   Then there are the pending projects, the ones that

4 we went through in evidence. There's three of them.

5 Firstly, the RES Forty Mile project, hub height of

6 101.5 metres, rotor diameter of 132 metres, total

7 height 167.5 metres. So 33 metres, approximately,

8 shorter than these turbines.

9   Suncor Forty Mile, hub height of 90 metres, rotor

10 diameter of 116 metres, total height 148 metres.   16:55

11 Again, over 50 metres shorter than these turbines.

12   And, lastly, Capital Power Whitla, hub height of

13 105 metres, rotor diameter of 136 metres, total height

14 173 metres. So 27 metres shorter than these ones.

15   The fact is the Sharp Hills turbines are

16 significantly taller, 50 to 65 metres, than most

17 recently approved major wind farms in this province,

18 and they are also materially taller by 25 to 50 metres,

19 approximately, than the other currently applied-for

20 major wind farms in Alberta. And that's just fact.   16:56

21   In the submission of the Clearview Group, it

22 should be self-evident that these unprecedentedly tall

23 turbines cannot in any way be integrated into the

24 landscape of the Sedalia, New Brigden area, and they

25 will have a massive visual impact.

1   Unfortunately, in previous wind farm cases,

2   proponents have argued, and this Commission has

3   accepted, that visual impacts are largely subjective,

4   and, therefore, they have been dismissed, these

5   concerns. So, as a result, the Clearview Group

6   retained RDI, Resource Design Inc., Mr. Fairhurst, who

7   is a practitioner of visual impact assessments to do an

8   objective assessment of the impact.

9   His report is Exhibit 137. You heard him talk

10   about it this morning. His simulations are   16:57

11   Exhibits 135 and 136.

12   His conclusion is that the existing landscape

13   integrity of the area is high, and that's based on

14   landscape attraction and observability. In other

15   words, it's a beautiful area, and you can see a lot.

16   And he concluded that the area has high landscape

17   significance.

18   Now, my friend got into this and talked about how,

19   you know, you shouldn't believe what Mr. Fairhurst had

20   to say, but, in my submission, those are essentially   16:58

21   self-evident propositions. There's nothing far

22   reaching about what Mr. Fairhurst said.

23   He went on to say that this project, these

24   200-metre turbines, all 83 of them, will cause the

25   landscape integrity to drop significantly and that the

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1   alteration of the landscape by the turbines will be

2   dominant, and they will have low or very low landscape

3   conformity. And, again, I submit to you this ought to

4   be self-evident. And I don't think those fundamental

5   points, in my submission, were ever seriously

6   challenged by EDP.

7   Indeed Mr. McDonnell did not even critique

8   Mr. Fairhurst's assessment. He just really critiqued

9   the actual simulations. His whole report was, well, my

10   simulations are more realistic than yours. That was   16:59

11   basically what Mr. McDonnell said. But Mr. McDonnell

12   doesn't even do visual impact assessments. He's not a

13   VIA practitioner. By contrast, Dr. Fairhurst is a

14   leading and an established VIA practitioner.

15   Mr. McDonnell accused Dr. Fairhurst of being

16   biassed to the foreground, but of the 43 simulations

17   done by Mr. McDonnell's firm, WSP, only one was in the

18   foreground. All the rest were mid-ground or

19   background. And I suggested to him, and I'm submitting

20   to you, that the bias here is on Mr. McDonnell's part   16:59

21   and EDP's part in that they put out visual simulations

22   which clearly downplayed the visual impact of this wind

23   farm by only looking -- by only presenting to members

24   of the public, not just those who had expressed

25   concerns, but to all members of the public in the area,

1   only mid and background views.

2   You heard Mr. Fairhurst say that of all his

3   observation points, in fact only 38 percent are

4   foreground. That's not evidence of bias to the

5   foreground.

6   Mr. McDonnell said you should only consider views

7   from residences. Dr. Fairhurst, while he was very

8   polite, I'm going to be less so, I think he basically

9   said that's ridiculous. Members of the local community

10   travel on these roadways every day and they will be   17:00

11   exposed to these foreground views every single day.

12   And it is valid and appropriate to include those views

13   in a visual impact assessment.

14   Mr. McDonnell claims that the literature supports

15   the compatibility of a "working agricultural landscape

16   with wind turbines," but the article he cited was set

17   in, as I understand it, the northeast of the

18   United States, in an area with rolling hills and great

19   diversity, and even then his opinion, as Dr. Fairhurst

20   testified today, was qualified. But we're not in the   17:01

21   northeastern United States, we're in the west. And, as

22   you heard Dr. Fairhurst say, the literature that's

23   actually relevant is that the United States Bureau of

24   Land Management article looked at five different

25   turbines in Wyoming and Colorado and concluded that it

1   will have large, I think was the way they put it, large

2   visual impacts out to 40 kilometres. And that's

3   Exhibit 254.

4   Perhaps the most absurd proposition put forward by

5   Mr. McDonnell was that turbines with their moving

6   blades can "animate" an otherwise static environment.

7   Well, as you heard Dr. Fairhurst say, I don't

8   think this landscape needs animating, thank you very

9   much.

10   The fact is these massive turbines will have a   17:02

11   massive visual impact, and to pretend otherwise is

12   delusional and, I would submit, worse. It's just

13   willful blindness.

14   Environment. It is the submission of the

15   Clearview Group that EDP has ignored guidance documents

16   prepared by the Government of Alberta in relation to

17   the siting of wind projects. I hope the irony has not

18   been lost on the Commission that this impetus of

19   shifting to renewable energy, which is driven by a

20   concern for the environment, seems to be resulting in   17:03

21   the disregard by the proponent of environmental

22   standards set by the Government of Alberta.

23   To disregard environmental guidelines in siting a

24   wind project, is -- it's, well, ironic, as I said. But

25   yet this is precisely what has occurred in this case.

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1   And EDP, I think their principal argument or

2 defence in this regard is to say we got our referral

3 reports from AEP, so therefore it doesn't matter. And,

4 you know, from our perspective, Mr. Chair, there is a

5 fundamental problem with the way the environmental

6 effects of wind projects are assessed in Alberta.

7   You have the AEP, the wildlife management branch

8 of AEP, carrying out reviews that are desktop, they

9 just simply look at what's presented to them by the

10 proponent. They provide these referral reports. They   17:04

11 essentially won't answer any questions about the

12 referral reports. They won't come to hearings to -- to

13 AUC hearings to talk about it, even though the roles

14 and responsibility document agreed to between the AUC

15 and the AEP expressly provides that that can happen.

16   And then, of course -- and I don't blame EDP --

17 but, of course, they're going to come to the AUC and

18 say we've got a referral report.

19   It is impossible for an intervener in a proceeding

20 like this to meaningfully challenge or test those   17:04

21 referral reports in the absence of any witnesses from

22 AEP. The system is flawed.

23   And, in any event, the test that this Commission

24 must apply is not whether AEP has provided a referral

25 report. The test is whether the project is in the

1   public interest, having regard to its environmental

2   effects.

3   So there are these guidelines. You heard a lot

4   about them, the 2011 guideline, the wildlife

5   guidelines, and the 2017 wildlife directive, and they

6   speak to best practices, so as to ensure that wind

7   development is carried out in a responsible manner.

8   The Clearview Group asks how can a project that is

9   run in violation of so many aspects of these guidelines

10   be in the public interest? It's not. And I'm going to   17:05

11   start with environmentally significant areas, or what

12   are referred to as ESAs.

13   As you know, ESAs are areas that have been

14   identified as being of ecological, hydrological or

15   geological importance. The ESA designation does not

16   confer any special protection, but it is obvious, and

17   the whole point of them is that they are to be used for

18   planning purposes so as to allow projects to be sited

19   so as to avoid ESAs. That's just common sense.

20   So what is the point of identifying ESAs if we're   17:06

21   going to ignore them once they have been identified?

22   EDP has not avoided ESAs in siting this project.

23   In fact, we submit the evidence is that there has been

24   little attempt at avoidance. Fully 14 percent of the

25   project footprint directly overlaps environmentally

1   significant areas. EDP acknowledges this and there

2   will be residual effects to ESAs, but concludes, ah,

3   those residual effects are "not significant." But this

4   conclusion is based on, don't worry, at the end of the

5   day, we will reclaim the site, everything will go back

6   to the way it was. So that's why the effects are not

7   residual.

8   This opinion, this position, is also contingent on

9   the belief that siting portions of the project on

10 previously disturbed agricultural land may not actually   17:07

11 impact the integrity of ESAs. But we know that buffers

12 are established around areas like wetlands because

13 there is risk, real risk, that putting projects too

14 close to the ESAs will have an impact. That's why

15 buffers exist.

16   Siting turbines and access roads on -- in areas

17 that are buffer areas will impact the surrounding -- or

18 the adjacent environmentally significant areas. And

19 the evidence in this proceeding is that there are five

20 turbines, 27, 28, 29, 30, and 31, that fall within such   17:08

21 buffer zones. And it is the submission of the

22 Clearview Group that these turbines should be re-sited.

23   Turbines, and not just the turbines, but access

24 roads are all located within or immediately adjacent to

25 a high-risk wildlife zone.

1   The 2017 wildlife directive for Alberta wind

2   energy projects specifically recommends avoiding areas

3   identified as being high risk. EDP has failed to meet

4   that with respect to those five turbines.

5   As I said before, wildlife, the area is teeming

6   with wildlife. The expert evidence and the lay

7   evidence both support this.

8   You heard Mr. Kaumeyer say that in the fall you

9   can find fields with 15,000 geese in this area. You

10   heard him say that goldfinch paint the trees outside   17:09

11   his home yellow as they migrate through his yard.

12   Mr. Ross gave evidence that the area is known for its

13   abundance of waterfowl. He noted the large

14   concentrations of prairie chicken, which is the common

15   name for sharp-tailed grouse, Hungarian partridge,

16   owls, hawks, and recently eagles.

17   There's a healthy and growing elk and moose

18   population. There's a healthy antelope population.

19   Mr. Ross described the area as some of the best

20   mule deer hunting in southern Alberta. All of this   17:10

21   evidence is uncontradicted.

22   The bird migrations noted by Mr. Kaumeyer and

23   Mr. Ross have not been accounted for in the very

24   limited survey work performed by EDP. In fact, it was

25   Mr. Kaumeyer's evidence that much of the bird migration

 1   he observes takes place at night as he sits out on his

 2   deck, as the geese travel between Dry Lake to the west

 3   of the project area and Grassy Lake to the east.

 4   This type of bird activity clearly was not

 5   observed by EDP in its surveys, and, as such, we submit

 6   the survey results that form part of the evidence

 7   before you, that they grossly underestimate the number

 8   of wildlife in the area.

 9   Mr. Wallis confirmed this in his evidence. He

10   noted as an example that the results of the bat survey   17:11

11   are dramatically different from the surveys conducted

12   in relation to the nearby Lanfine project near

13   Bull Creek. This raised a red flag for Mr. Wallis, you

14   heard him say, and it should raise a red flag for the

15   Commission as well.

16   And despite the fact that their wildlife surveys

17   were clearly inadequate, EDP still detected over 9,000

18   birds in the area representing 85 different species,

19   and the most common were waterfowl and songbirds. I'll

20   get to waterfowl later. Of these, 19 are species of   17:11

21   management concern. Of the 89 raptors observed, 4 of

22   the 7 species are species of management concern.

23   During the spring 2016 survey, 23 percent of all

24   birds were observed in flight flying within the rotor

25   sweep area. 40 percent of the raptors observed in

1   flight were flying within the rotor-swept area.

2   Because of this, EDP could hardly deny that the project

3   will result in mortality to a number of species.

4   So the project will kill birds, it will kill bats,

5   and likely other wildlife, but don't worry, EDP says,

6   not in sufficient numbers to affect their population.

7   But without proper surveys of the area, how do we know

8   that? We don't.

9   And troublingly, EDP has failed to account for the

10   uncontradicted evidence of Mr. Kaumeyer that the area   17:12

11   is quite often blanketed in fog in the fall. So you

12   will have large flocks of birds migrating through the

13   area at times completely blind to the existence of

14   these turbines. Mr. Kaumeyer predicted at such times

15   the area will be a killing zone.

16   Now, as part of its mitigation strategy, EDP has

17   committed to a post-construction monitoring plan, but

18   the specific details of the plan have not yet been

19   determined. However, EDP says it will look for bird

20   carcasses underneath the turbines to see if their   17:13

21   predictions are correct. Yet, EDP acknowledged under

22   cross-examination the difficulty of locating birds in

23   grassland beneath a 200-metre tall turbine. It also

24   acknowledged that coyotes and other scavengers in the

25   area may prevent carcasses from being found.

1   Moreover, the commitment is time limited, for

2   three years. So if there is a spike in fatality any

3   time after that, say in five years, we'll never know.

4   No one will be looking. And this notwithstanding that

5   the project will be in place for a generation at least.

6   Similarly, no one will be monitoring to find out

7   whether birds are simply avoiding the area. There will

8   be no ability to determine whether this project is

9   contributing to a larger population decline.

10   You heard a lot from Mr. Wallis about the need for   17:14

11   adequate surveys. At a minimum, additional wildlife

12   surveys are required prior to construction to determine

13   whether the residual impacts of the project are indeed

14   not significant as EDP says. We need a reliable

15   baseline. Construction should be contingent upon the

16   results of surveys. We need to be confident that the

17   anticipated impact truly is not significant before

18   approval is granted for the project.

19   You heard both Mr. Wallis and Mr. Kaumeyer, who

20   testified that he was the past chair of the Delta   17:15

21   Waterfowl, that radar is increasingly being used as a

22   device. And, yes, Mr. Wallis did acknowledge that it's

23   not perfect and has some shortcomings, but it's better

24   than the tools that we've had to date.

25   So construction, in our view, should be contingent

1   or conditional upon the implementation by EDP, not just

2   of curtailment measures, but also the permanent use of

3   radar detection.

4   Mr. Wallis gave evidence, and I don't think anyone

5   would disagree with this, that bird and bat fatalities

6   can be reduced by slowing or stopping turbines during

7   peak migration periods. Radar can help detect

8   approaching flocks. So permanent implementation of

9   radar, along with curtailment measures, will go a long

10   way to providing this Commission and our clients with   17:16

11   some measure of comfort and should be a condition of

12   project approval. If implemented, this could

13   significantly help to minimize fatalities, particularly

14   in the event of fog during migration.

15   And to the extent these concerns that have been

16   overstated, what is the harm? If EDP is correct, the

17   need for curtailment will be minimized or potentially

18   eliminated. So if birds don't actually use the area,

19   they won't have to curtail or stop their turbines. So

20   there's really no hardship to EDP and potentially great   17:17

21   benefit to the environment.

22   Finally, the Clearview Group submits that any

23   approval should be conditional upon post-construction

24   carcass monitoring continuing for the duration of the

25   project. How will we know there's an issue if no one

1   is even bothering to watch?

2   I now want to move to native grass.

3   Mr. Wallis's evidence is that native grassland is

4   threatened in Alberta. Again, I don't think there's

5   really any controversy about that. Through human

6   activity, it has become fragmented and degraded. In

7   fact, it is among the most threatened biogeographic

8   regions in the Canadian plains. And as more is lost,

9   the remaining parcels become more important to protect.

10   Despite clear guidance to the contrary from AEP,   17:18

11   18 percent of the project is located on native

12   grassland. So native grassland has not been avoided.

13   Neither, we expect, have rare plants, but we don't

14   really know because, again, EDP survey efforts have

15   been limited and we don't really know what the baseline

16   is for rare plants. How do you know there are rare

17   plants or rare ecological communities if you don't

18   look?

19   EDP, again, has deemed the residual impact on

20   native grassland and rare plants as "not significant."   17:19

21   And, again, we submit this assertion does not hold up

22   to scrutiny.

23   Reclamation is unlikely to be successful with

24   respect to native grassland and plains rough fescue.

25   As observed in the 2017 wildlife directive for Alberta

1   energy wind projects, quote: (as read)

2   "There is an inability to recreate some

3   unique vegetation community types, for

4   example, rough fescue grasslands, post

5   disturbance resulting in permanent

6   habitat loss which can negatively impact

7   wildlife and wildlife habitat."

8   Again, I don't think any of that is particularly

9   controversial, and EDP acknowledged as much in its

10   environmental evaluations. It states, quote: (as read)   17:20

11   "Reclamation practices are unlikely to

12   achieve a state consistent with

13   pre-construction conditions."

14   The fact is once -- someone said last week, once you

15   break the native prairie -- I think it was Mr. Wallis --

16   it never -- you just can't put it back again.

17   So EDP's assurances about reclamation are entirely

18   hollow when it comes to native grass. And there's no

19   plan. They just say we'll come up with one in the

20   future. There's no information about how revegetation   17:20

21   of native grass will be undertaken, what species will be

22   used, and how it could realistically be achieved given

23   the dismal track record of reclaiming native grass.

24   And this is particularly troubling because there

25   just aren't examples in the literature of successful

1   restoration of rough fescue grassland. And that's from

2   Mr. Wallis's report.

3   And, moreover, as noted by Mr. Wallis, reclamation

4   of native grassland and rough plains fescue, if it's to

5   succeed at all, will take years.

6   The vague post-construction monitoring proposed by

7   EDP is, frankly, laughably short term in terms of its

8   duration and highly unlikely to be successful.

9   For the foregoing reasons, the Clearview Group

10   submits it is clear that Turbine 9 must not be approved   17:21

11   in its current location.

12   Micro-siting, which was my friend's suggestion in

13   her argument, will not do the trick. It will still be

14   on native grassland.

15   I'm going to move now to wetlands and waterfowl.

16   Sharp Hills wind farm, as we've heard frequently in the

17   past week, is located in the prairie pothole region of

18   North America. This region is characterized by small

19   shallow wetlands, which are clearly visible from

20   roadways throughout the area. We all saw them last   17:22

21   week.

22   As you heard from Dr. Petrie, the prairie pothole

23   region is the most important waterfowl breeding area in

24   North America for ducks. Over 50 percent of all

25   North American ducks are hatched in the prairie pothole

1   region.

2   Dr. Petrie also testified, and again I don't think

3   there's any controversy about this, that the Sharp Hills

4   project area is located along the central flyway where

5   millions, literally millions of waterfowl migrate during

6   spring and fall. You heard Dr. Petrie characterize it

7   as being "international significance." And that's not

8   seriously in dispute.

9   You heard Dr. Petrie talk about the annual

10   waterfowl breeding population and habitat survey   17:23

11   undertaken since, I think he said, the forties or the

12   fifties by the Canadian Wildlife Service and the

13   U.S. Fish and Wildlife Service. This is the largest

14   wildlife survey conducted anywhere in the world on an

15   annual basis.

16   According to that survey, that annual survey, the

17   waterfowl breeding density for this area, the

18   Sharp Hills area, is the second highest in Alberta.

19   Dr. Petrie testified that waterfowl breeding densities

20   in proximity to the turbines in the project area is even 17:23

21   higher because of the high density of wetlands in the

22   Sharp Hills project area. The density is 10.6 wetlands

23   per square kilometre, which is above -- well above

24   average for the stratum -- that's the term used in the

25   survey -- that Sharp Hills is located in.

1   So you heard Dr. Petrie testify and it's in his

2   report, that while breeding densities in Stratum 27, the

3   specific stratum we're talking about, is 18.5 -- sorry,

4   18.15 breeding pairs per square kilometre in the project

5   area owing to this higher density of wetlands. It could

6   be up to 25 breeding pairs per square kilometre, which

7   Dr. Petrie characterized as being very high. Even

8   Mr. VanDerZee talked about the, quote, "sheer magnitude

9   of the wetlands in the area."

10   So this is critically important habitat. Large   17:24

11   portions of the prairie pothole regions have been

12   drained or degraded already. This area is unique in

13   that it remains largely intact.

14   So you have this prairie pothole region that

15   provides critical breeding and staging habitat for

16   waterfowl and you have it located right in the middle of

17   a migratory flyway.

18   So Dr. Petrie, in his report and in his evidence,

19   stated very clearly that for waterfowl, the chief

20   concern is not collision with turbines, it's avoidance.   17:25

21   And avoidance means essentially the loss of highly

22   productive habitat because the birds are no longer using

23   it. And this, as I said, is critically important

24   breeding, feeding, and staging habitat.

25   And contrary to what my friend would have you

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1   believe, this is supported by all of the literature.

2   Dr. Jones in his reply evidence attempted to

3   discredit Dr. Petrie's report by looking at all the

4   articles, went through each one cited by Dr. Petrie, and

5   he tried to distinguish them on various grounds, but, on

6   any fair reading, they all, every one of them, support

7   the basic point that waterfowl avoid wind turbines.

8   The reason Dr. Jones said he disagreed with

9   Dr. Petrie is that he interpreted Dr. Petrie to be

10   saying that this project would be something like a   17:26

11   physical barrier, like a wall, that birds would fly up

12   to it, turn around, and go back south again. And, of

13   course, that's not what Dr. Petrie said. And what he

14   clarified in his direct evidence is that the barrier

15   effect, as he put it in his report, means that because

16   waterfowl will avoid the project area, there will be a

17   substantial reduction of the habitat on which the --

18   which can be utilized by the waterfowl because they're

19   going to be flying around the wind farm.

20   So specifically in his report he talked about the   17:27

21   literature supporting the concept that there is what he

22   called an exclusion zone of around 150 metres around

23   wind turbines. And there are larger zones around

24   turbines of approximately 500 metres, which he called

25   avoidance zones.

1   So Dr. Petrie's evidence is that for the 83

2 Sharp Hills turbines, the small exclusion zone alone

3 constitutes 586 hectares of high quality habitat,

4 contains 66 wetland basins, 42 hectares of --

5 specifically of wetland habitat. This will be a major

6 loss of usable habitat for waterfowl.

7   With respect to the larger avoidance zone that he

8 talked about, that is more than 5,000 hectares

9 encompassing 533 wetland basins and 868 hectares of

10 wetland habitat.   17:28

11   This is area that is great habitat that is

12 currently used by waterfowl that will be avoided, which

13 is not to say there won't be the odd duck or goose or

14 swan in there, but, on a population basis, they will be

15 avoiding the area and so they will lose this

16 high-quality habitat. This will impact feeding, and, in

17 turn, it will impact breeding and ultimately population.

18   EDP has acknowledged that 36 percent of the project

19 footprint is within 100 metres of the closest wetland,

20 despite all guidance to the contrary from the provincial   17:28

21 government. So that would fit within Dr. Petrie's

22 150-metre exclusion zone.

23   24 of the 83 turbines are within the 100-metre

24 wildlife buffer; more than one quarter.

25   And with regard to the figure of 36 percent being

1   within 100 metres of the closest wetland, this figure is

2   likely low because it does not take into consideration

3   temporary wetlands. And you heard very clearly from

4   Dr. Petrie that temporary wetlands are critically

5   important, particularly in an area like this.

6   I'm going to quote from Dr. Petrie's testimony,

7   transcript Volume 4, beginning at pdf 893. Dr. Petrie

8   said:

9   "So Class 1 and 2 are seasonal and

10   ephemeral, like temporary wetlands. And   11:24

11   so if you go on that landscape now,

12   they'll all be dry, you know, unless

13   you've got a really wet year, which this

14   is not. So those Class 1 and 2 wetlands

15   are the first wetlands in the spring to

16   thaw out and have water and they're the

17   first ones to have an emergence of

18   insects.

19   So they're critically important at

20   that time of year for not just waterfowl   11:24

21   but several different species of birds

22   and shorebirds to get the protein and

23   calcium needed, and fat reserves, one

24   for egg laying but also for migration.

25   So a lot people don't realize that

1   they're as important as they are,

2   because if you go out on the landscape

3   now, some of them are dry depressions

4   and other ones have even been farmed

5   through, which is fine, because they

6   served their purpose already. But when

7   we lose those wetlands or compromise

8   those wetlands, we really compromise our

9   waterbird populations."

10   So 36 percent of the project footprint within 100 metres   17:30

11   of wetland, that's Class 3 wetlands and up. If you

12   include Class 1 and 2, these critically important

13   wetlands Dr. Petrie talked about, who knows how large

14   the figure is. Well, I can tell you one entity that

15   doesn't know, and that's EDP.

16   Whichever figures are used, there are extensive

17   infringements or impingements on setback buffers,

18   including wetland buffers, prescribed by AEP. So this

19   does run contrary to clear guidance from AEP set out in

20   the 2011 wildlife guidelines for Alberta wind energy   17:31

21   projects, set out in the 2011 recommended land use

22   guidelines for protection of selected wildlife species

23   and habitat within grassland and parkland natural

24   regions of Alberta, and, lastly, the 2017 wildlife

25   directive for Alberta wind energy projects.

1   Indeed, the 2011 directive notes: (as read)

2   "For major wetlands providing habitat

3   for large numbers of migrating or

4   breeding waterfowl, the setback may need

5   to be greater."

6   This is clearly an area of major wetlands. It provides

7   habitat for a large number of migrating and breeding

8   waterfowl. The setbacks not only shouldn't be impinged

9   upon but arguably should even be larger.

10   The Alberta Wetland Policy effectively becomes   17:32

11 meaningless if the default is to build in and adjacent

12 to wetlands simply when it is convenient for the

13 proponent. Wetlands are a public resource and need to

14 be treated in the public interest.

15   The Alberta Wetland Policy clearly states that

16 where avoidance is deemed impracticable and a negative

17 wetland impact is likely to occur, wetlands of higher

18 relative value should require stronger evidence of

19 effort to avoid.

20   We are dealing here with an area of high quality   17:33

21 wetlands. Where is the strong evidence of avoidance

22 attempts? There is no such evidence.

23   So, in our submission, this project fundamentally

24 needs to be revisited by EDP so that turbines are

25 re-sited to respect these important wetland buffers that

1 are recommended in all of the guidance documents

2 prepared by the Alberta government. At the very least,

3 we submit the 24 turbines located within the 100-metre

4 wetland buffer should be relocated, along with the

5 associated impinging access roads and underground

6 collector lines.

7   I now want to finish environment by talking about

8 decommission and reclamation. The starting point is

9 that there is no plan. The plan or the proposal,

10 whatever you want to call it, is essentially "trust us."   17:34

11 "When it comes time, we will do it." "At some point in

12 the future, we will prepare a plan and even later on

13 into the future we will carry out that plan."

14   And I question how, in light of this, can anyone

15 come to these findings of no significance, adverse

16 effect. There is no evidence, zero, actually supporting

17 that decommissioning and reclamation will be carried out

18 in a manner so as to eliminate residual impacts. It's

19 all "We've committed to do this," "Trust us, we'll do

20 that."   17:35

21   You, Commissioners, need actual evidence to base

22 your public interest decision on, and there is no such

23 evidence. There's no plan. It's just "Trust us, we'll

24 do it."

25   The second point I would like to make is one that

1   of course is of great concern to my clients and

2   landowners in the area, which is what if, as happens

3   with industrial facilities, particularly mines, what if

4   EDP is long gone by the time decommissioning and

5   reclamation is required? And what if the last man

6   standing, so to speak, doesn't have the resources to

7   carry it out? Bankrupt or in receivership?

8   EDP says it will deal with that situation by

9   placing money in escrow to cover the cost of turbine

10   decommissioning and reclamation in the event the company   17:36

11   no longer exists in the future. Again, sounds good, but

12   it seems, to the Clearview Group, that there are several

13   catches here.

14   The first is we don't know, and therefore the

15   Commission doesn't know, how much money in fact is going

16   into this escrow fund. I gather this is something

17   that's part of the contractual arrangement between the

18   landowners and the company. So, Commissioners, you

19   don't know if there's going to be enough money in that

20   fund.   17:36

21   Secondly, as we understood it, the money won't be

22   actually placed in escrow for 15 years. So if something

23   happens before then, whatever, we're out of luck.

24   Thirdly, and I think most importantly, we know,

25   because EDP testified to this, that the money in escrow

1   is not going to be enough to cover the cost of

2   decommissioning and reclamation. Instead, EDP says that

3   the balance will be paid for by the scrap value of the

4   turbines and that this will cover any shortfall.

5   Well, this raises a number of additional concerns.

6   How can anyone forecast the market for scrap metal 25

7   years from now? No one, not EDP and not the Commission,

8   has any way of knowing whether the scrap value of the

9   turbines will be enough at the critical time to actually

10   pay for decommissioning and reclamation. EDP has   17:37

11   acknowledged it has no ability to forecast whether the

12   project will still be required in 25 years due to

13   changing market conditions, so how on earth can they be

14   counted on to predict the market for scrap metal 25

15   years into the future.

16   Secondly, and this of course is the greatest

17   concern to landowners, is who is going to pay for this?

18   So there's money in escrow. Will landowners be expected

19   to pay for turbines to be disassembled out of their own

20   pocket or this fund and then hope that there's enough   17:38

21   money in the value of the scrap metal to cover the total

22   cost? It is hard to imagine, if not completely

23   unimaginable, a landowner taking on the risk of

24   decommissioning a Calgary Tower sized turbine, much less

25   two, three, four, or five.

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1   So whose responsibility in the event of

2   receivership or bankruptcy is it to deal with

3   decommissioning and reclamation? What legal entitlement

4   will landowners have to scrap metal in the event of a

5   bankruptcy?

6   So the problem is, again, this is one of the cases

7   where it's all vague commitments, no plan. And these

8   concerns are not far-fetched.

9   You heard Mr. Ross talk about the fact that we have

10   an orphan well epidemic in Alberta right now. And he   17:39

11   should know because he makes his living in the oil and

12   gas industry. And he asked what I thought was a very

13   important question: Do we really want to make the same

14   mistake twice?

15   Decommissioning and reclamation has to be addressed

16   at the front end. There has to be provision made to

17   ensure that it's going to happen and going to happen in

18   a way that will actually reclaim the land to as close as

19   possible a state that it is in today.

20   It is the position of the Clearview Group that it   17:39

21   should be a condition of project approval, should

22   approval, in fact, be granted, that EDP fully fund cost

23   of decommissioning and remediation, and that the full

24   amount of this cost should be placed in some kind of an

25   account to make sure that it's actually there if and

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1   when needed.

2   I'm going to talk now about noise. I think I can

3   be relatively quick on this subject because I think by

4   the end of the hearing, the positions of the experts

5   were pretty clear. So I think I can get through this

6   fairly quickly.

7   So obviously a noise impact assessment for the

8   project was prepared by Ms. Drew of RWDI. Everyone

9   knows that the results of a noise impact assessment are

10   dependent on the inputs into the model.   17:40

11   It is the submission of the Clearview Group that,

12   on several key inputs or parameters, RWDI appeared to

13   consciously choose to be less, not more, conservative.

14   Ms. Drew tried to characterize this as, quote,

15   "realistic conservatism." End quote. But the truth is

16   is that realistic means being less conservative.

17   So what are these key inputs? Well, the one we

18   heard a lot about is the ground factor and the fact that

19   Ms. Drew used 0.7 instead of 0.5.

20   Secondly, still on ground factor, there is the   17:41

21   issue that 0.7 was applied to the entire study area

22   instead of separately modelling highly reflective

23   surfaces like water, notwithstanding the high percentage

24   of water and wetlands in the area.

25   Remaining on ground factor, again 0.7 was applied

1   by RWDI to the entire study area instead of separately

2   modelling highly reflective surfaces like tamped ground

3   at third-party energy facilities.

4   Fourth, there was the problem of the selection of

5   the third-party facilities, and, in particular, the fact

6   that RWDI's noise impact assessment excluded a number of

7   potential noise sources by only including pumping wells.

8   Next, the issue of receptor height, the NIA did not

9   include second storeys whereas Mr. de Haan was very

10   clear, the noise impact is greater.   17:42

11   And then, finally, noise propagation conditions.

12   The NIA done by RWDI did not consider stable atmospheric

13   conditions, notwithstanding they are apparently

14   representative in the area.

15   So these problems with the NIA were all identified

16   by dBA Noise Consultants, Mr. de Haan, who was retained

17   by the Clearview Group to carry out a review of the

18   noise impact assessment. And his report is Exhibit 138.

19   So having made all of those findings, identified

20   those shortcomings in the NIA, dBA carried out its own   17:42

21   calculations at a selection of receptors, 16 to be

22   exact. And this is in Exhibit 138.

23   So basically keeping all other inputs the same,

24   Mr. de Haan used what in our submission is a more

25   appropriate ground factor of 0.5 instead of 0.7 and he

1   used 0 for water and for third-party energy facilities.

2   And the result is his modelling shows that the PSL may

3   be exceeded at 6 dwellings.

4   He just looked at 16, and of the 16 he looked at,

5   the PSL may be exceeded at 6 dwellings. And that's the

6   nighttime PSL of 40 dBA.

7   Mr. de Haan also carried out calculations taking

8   into account stable atmospheric conditions, and in his

9   report he looked at stability Class F, and the result of

10   those -- of that modelling exercise was of the 16 -- the   17:44

11   sample of 16 that he modelled, 11 exceeded the PSL, the

12   nighttime PSL of 40 dBA.

13   And then, as you know, we heard about it this

14   morning, as a result of the reply evidence filed by EDP

15   that stated stability Class E, not F, is representative

16   of conditions in the area, Mr. de Haan reran his model

17   using stability Class E, and five exceedances are

18   predicted.

19   So it's our submission that, you know, you have

20   three different ways when Mr. de Haan did modelling and   17:44

21   showed between 5 to 11 exceedances of the 16 that he

22   looked at. We submit that RWDI's noise impact

23   assessment is not, in fact, conservative and almost

24   certainly under-predicts noise from the turbines and

25   that there is a very real risk of non-compliance with

1   Rule 12.

2   And, of course, whose problem does it then become?

3   Well, it becomes my clients' problems because they're

4   out there living with these turbines that are exceeding

5   the PSLs in Rule 12.

6   So to begin on the ground factor of 0.7 instead of

7   0.5, the evidence is quite clear. At basically every

8   recent AUC wind farm application that at least we have

9   evidence about in this proceeding, and that includes

10   Bull Creek, Grizzly Bear Creek, Halkirk 2, and then the   17:45

11   three that are currently being proposed for the

12   Forty Mile area, that's the RES Forty Mile, Capital

13   Power, Whitla, and Suncor Forty Mile, all of them, every

14   one uses a ground factor of 0.5, not 0.7.

15   With respect, Ms. Drew is an outlier on this issue.

16   And it was interesting -- I took Ms. Drew through

17   this -- that for Suncor Forty Mile, she did -- that is,

18   RWDI did -- the noise impact assessment and she

19   initially used her 0.7 that she's used at Sharp Hills.

20   But then when the Commission said no, we want the three   17:46

21   proponents to agree on a common parameter, it changed.

22   And now the RWDI NIA for Suncor Forty Mile uses 0.5

23   instead of 0.7, which Ms. Drew characterized as, well,

24   that was just done for expediency. Well, I submit that

25   hardly installs -- or instills confidence. And I think

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1   that's why the AUC, through its counsel, asked Ms. Drew

2   to remodel using the ground factor of 0.5.

3   So, in our submission, it's clear that the ground

4   factor, the general ground factor, should be 0.5.

5   And the remodelled results are interesting. And

6   I'm going to ask that we call up Exhibit 273. Go down a

7   couple of pages. We should be dealing with the -- this

8   doesn't look right. Oh, there we go. Okay, let's go

9   down to the next page, please.

10   It's hard to see, but one of the interesting things   17:47

11   about these remodelled results is that the -- if you

12   ignore the uncertainty column and you just look at what

13   it was before and what it is now, so before was 0.7, now

14   is 0.5, the increases in the predicted noise levels are

15   quite dramatic at some of these -- at some of these

16   receptors. I can't really see it very well, but I know

17   that the first three or four of them, there are

18   increases of like 3 or 4 decibels.

19   And this is interesting, I submit, because Ms. Drew

20   would have you believe that using this "uncertainty   17:48

21   factor of 1 decibel" introduces some great level of

22   conservatism into her model, but the fact is changing

23   the ground factor from 0.7 to 0.5 created increases

24   significantly greater than 1 decibel. So her allegedly

25   conservative uncertainty factor really wasn't

1   conservative at all.

2   The bottom line, in most recent wind farm

3   applications, the proponents have used 0.5 as a ground

4   factor and, most importantly, this Commission has

5   accepted it as being reasonable.

6   So next, in terms of the ground factor being

7   applied to the entire study area instead of being

8   separately modelled, this again, in our submission, is

9   an example where RWDI consciously chose to be less

10   conservative than other NIA practitioners. We know that   17:49

11   at Grizzly Bear Creek 0.5 was used generally and 0 was

12   used for water and wetlands, and at Halkirk 2, same, 0.5

13   generally and 0 for water and wetlands. And, again,

14   that was accepted as reasonable by the AUC.

15   Mr. de Haan fairly acknowledged that using an

16   average ground factor for an entire study area may be

17   appropriate in conditions where the propagation between

18   the source and the receptor is comparable. So it's

19   basically all the same. But that is clearly not the

20   case here.   17:50

21   We heard it many, many times, but the evidence is

22   that 12 percent of the project area is in wetlands and a

23   lot of that is not marsh, a lot of it is open water.

24   And then there's this whole issue of whether that

25   includes Class 1 and 2 wetlands. I don't think it does,

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1   although, having reviewed the evidence, it is not clear

2   to me, but I don't think it does. I think it's just

3   Class 3 and above.

4   So knowing all of that, we submit there was ample

5   evidence for an NIA practitioner who really wanted to be

6   "realistically conservative" that in this case using a

7   ground factor of 0 for water would be appropriate.

8   And, again, Ms. Drew attempted to say, "Well, a lot

9   of these wetlands are marshes," and the suggestion of

10   course was that the vegetation associated with the   17:51

11   marshes is more absorptive, but that justification, with

12   respect, doesn't fly. You heard Mr. de Haan this

13   morning quote from one of the acousticians' manuals,

14   basically saying that the foliage of trees and shrubs

15   provides only a small amount of attenuation and only if

16   it is sufficiently dense to completely block your view.

17   And anyone who drove around the project area last week

18   knows that's not what we're dealing with here in the

19   project area.

20   So, again, the fact is a practitioner who was truly   17:51

21   interested in being conservative would have modelled

22   water separately as a reflective surface in light of the

23   high percentage of the project area that is in wetlands,

24   including open water.

25   So the last point about the ground factor is

1   whether it was conservative to not separately model

2   highly reflective surfaces like tamped ground at

3   third-party energy facilities. And you recall when I

4   was cross-examining Ms. Drew about this, I put to her

5   the text of ISO 9613, which is very clear. Hard ground

6   includes "tamped ground." And it uses as an example

7   ground such as often occurs around industrial sites. So

8   ISO 9613 says that should be modelled as 0 because it's

9   highly reflective.

10 And the wisdom of treating hard ground around   17:52

11 facilities as reflective, so using 0 ground factor, has

12 been demonstrated by Mr. de Haan. He both modelled and

13 measured noise from the Baytex 9-29-35-5 West 4

14 facility, and the modelled results using a ground factor

15 of 0 perfectly matched the measured results; whereas the

16 modelled results using the ground factor of 0.7 resulted

17 in an under-prediction of noise by 1.7 dBA.

18 If being "realistically conservative" means

19 striving to be accurate, you have your answer. You

20 should be using the ground factor that ISO 9613 says you   17:53

21 should use for tamped ground and you should do the sort

22 of thing that Mr. de Haan did, which demonstrates that

23 that's the right approach. It is the conservative

24 approach; not the approach taken by RWDI.

25 With regard to the selection of third-party

1   facilities and the fact that only pumping wells were

2   included, again, we submit this was clearly not a

3   conservative choice made by RWDI. Again, to use this

4   concept of whether it's realistically conservative, all

5   it does is it presents you a snapshot in time, what's

6   actually pumping right now. The fact is wells are

7   brought on and taken off production all the time.

8   It is a gross generalization, in our submission, on

9   RWDI's part to assume that a well that is suspended now

10   will not at some point be brought back on production.   17:54

11   Wells are sold and purchased all the time. Often a new

12   owner will re-enter to drill to a deeper zone and then

13   start producing. Wells are taken off production when

14   prevailing gas or oil prices are not economic and then

15   they're brought back on again when the economics

16   improve. Wells are drilled, but they may sit suspended

17   for sometimes long periods of time because, for whatever

18   reason, there's not available pipeline capacity. And

19   there are many other reasons why wells are drilled but

20   sit suspended. It doesn't mean they're abandoned. So   17:55

21   this, again, was not a conservative assumption to make.

22   With respect to receptor height, in her reply

23   evidence Ms. Drew acknowledged that 4.5 -- so that's the

24   proxy for a second storey -- may be used for

25   post-construction monitoring in the event of a

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1   complaint. She also acknowledged that some

2   practitioners in Alberta choose to use a receptor height

3   of 4.5 metres in an NIA. She simply chose not to.

4   Again, she could have but did not. She chose the less

5   conservative option.

6   She also tried to downplay the significance of this

7   by saying only three receptors have two storeys. But of

8   course two of those receptors are the hamlets of Sedalia

9   and New Brigden. The fact is there are at least six

10   residences within the project boundary that have second   17:56

11   storeys. Again, not a conservative choice.

12   With regard to noise propagation conditions and

13   RWDI's failure to consider stable atmospheric

14   conditions, notwithstanding that they are apparently

15   representative in the area, dBA, in an effort to

16   actually be conservative, looked at what the results

17   would be if you modelled stable atmospheric conditions.

18   And of course, as you heard from both experts, ISO 9613

19   can't do this because it's got these sort of baked-in

20   meteorological conditions.   17:56

21   So dBA used this other model that you can input

22   meteorological data into, and that's the CONCAWE model.

23   And it is an accepted model used around the world, just

24   like ISO 9613. And, as I've indicated, he modelled a

25   selection of 16 receptors, initially using a stability

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1   Class F, and he had 11 exceedances. And then when

2   through the reply evidence it came out that perhaps

3   stability Class E is in fact representative, as you

4   heard today, Mr. de Haan remodelled, and we still have

5   five exceedances.

6   So, again, you know, we realize that every

7   practitioner can choose which model they want to use.

8   But if you know, as RWDI apparently did know, that

9   stable conditions are representative in the area, the

10   conservative thing to do would be to try to model them.   17:57

11   RWDI chose not to.

12   So with regard to noise, RWDI clearly was not

13   conservative, realistically or otherwise. As I've

14   indicated, dBA, when it changed just a few things, the

15   ground factor and the atmospheric condition, three

16   different times came up with exceedances: 6 initially,

17   then 11, then 5.

18   I think what you can conclude from that, Mr. Chair,

19   is that there are numerous conservative scenarios

20   different from those modelled by RWDI which result in   17:58

21   PSL exceedances. And the result of that is that the AUC

22   cannot, in our submission, rely on the RWDI noise impact

23   assessment and determine that Rule 12 will be complied

24   with.

25   And, Mr. Chair, you asked Mr. de Haan today, well,

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1   what do we do with that? What are you recommending that

2   we do? Well, firstly, you know, Mr. de Haan is here as

3   an expert. I don't think it's his job to tell you what

4   you should do with his evidence, but what I want to

5   submit is the wrong thing to do with that evidence is to

6   simply say, ah, we'll approve them and you can just do

7   post-construction monitoring.

8   If that's the answer, you know, don't worry, if

9   there's an exceedance, we'll catch it in

10   post-construction monitoring, then what's the whole   17:59

11   point of this exercise? Because you could do that

12   without hearing from any noise expert. It could just

13   simply be a rule of the AUC that you get your

14   approval -- you don't even need to file an NIA, but,

15   proponent, you need to understand that you have to do

16   post-construction monitoring. And if you exceed the

17   PSL, then you're going to have to fix it.

18   So that's essentially what you would be doing here.

19   There's, in my submission, compelling evidence that the

20   PSL will be exceeded at a number of residences. It's   18:00

21   not sufficient to simply say post-construction

22   monitoring is the answer.

23   The answer, in our submission, is to tell EDP to do

24   what it should have done in the first place, to design

25   the project in a manner such that it actually complies

1   with Rule 12. That's what you should tell EDP based on

2   this evidence.

3   Aviation. Three members -- as you heard last week,

4   three members of the Clearview Group have airstrips in

5   the Sharp Hills project area: Jim and Larry Ness and

6   the Jorgenson family. You heard the testimony of Chris

7   and Len Jorgenson and Jim Ness. The testimony was

8   clear, unchallenged, and we can run through the facts

9   quite quickly. The airstrips are active and they are

10   used today.   18:01

11   With respect to the Jorgenson airstrip, it was

12   built in 1975 by their father Ralph. It was built using

13   tractors with blades and earth movers so that there's a

14   crown on it to ensure proper drainage. It's a grass

15   strip in the southwest quarter of Section 34, Township

16   31, Range 4, west of the 4th. It's oriented in a

17   east-west direction and it's 2300 feet long. It was

18   used on a weekly, if not daily, basis by Ralph Jorgenson

19   from 1975 to 2010. Since then it has been used by

20   Len Jorgenson and, in fact, was used the night before he   18:01

21   gave testimony to get here, and it had been used by

22   Mr. Jorgenson two weeks prior to that as well.

23   The strip is maintained by Chris Jorgenson cutting

24   the grass twice a month. I asked Mr. Hatcher to comment

25   on the quality of the strips, and he basically said the

1   Jorgensons' grass strip is one hell of a nice grass

2   strip.

3   Mr. Len Jorgenson owns a plane. It's actually his

4   father's old plane. In response to information requests

5   from both the EDP and the AUC, Len provided estimates

6   that there's an average of 67 flights annually, and that

7   was based on him looking back at his father's logbooks

8   dating back to 1984, which indicated 2255 takeoffs and

9   landings since 1984. Len testified that when he flies

10   to the farm from Springbank where he keeps his plane, he   18:02

11   approaches from the south-southwest.

12   He testified that when he flew in the night before

13   giving evidence, he started his descent at Youngstown,

14   30 miles southwest of New Brigden. He testified that

15   between Youngstown and New Brigden, he dropped from a

16   cruising altitude of 7500 feet to the target altitude of

17   1500 feet, which is the altitude he was at. And that's

18   1500 feet, of course, above ground level. That was the

19   altitude he was at when he did his windsock check

20   basically and did the circuit.   18:03

21   With regard to the Ness airstrips, Jim Ness

22   testified briefly on behalf of he and his brother Larry.

23   His testimony is that he has been flying 40 years.

24   Larry has been flying that long, if not longer, because,

25   according to Jim, Larry's grass strip was constructed in

1   1972, 46 years ago, and it is 2500 feet long with an

2   orientation of north-northwest to south-southeast.

3   With regard to Jim's airstrip, he built that grass

4   strip in 1978, and it has an orientation of northwest to

5   southeast.

6   Both of the Ness airstrips were built with a grader

7   pulled by a tractor to level and crown, again so that

8   there would be runoff of water. They were seeded to

9   grass, maintained in a similar way.

10   With regard to current use, by way of response to   18:04

11   information requests, Larry Ness estimates 150 takeoffs

12   and landings a year at his strip, and Jim estimates 80

13   at his strip.

14   Between them, Jim and Larry own eight or nine

15   planes, stored in six different hangars, five at Larry's

16   place and one at Jim's place. And you heard Jim testify

17   that he has two -- that they, that the brothers, have

18   two friends who store planes at Larry's -- in one of

19   Larry's hangars.

20   None of these three strips are registered with   18:05

21   Transport Canada, but all three are registered with the

22   Alberta Aviation Council, which means that they appear

23   on public maps that pilots can use for reference.

24   Finally, contrary to EDP's evidence, all the strips

25   have windsocks. And contrary specifically to what

1   Mr. O'Connor testified under oath, it is not true that

2   there has been no windsock at the Jorgenson airstrip for

3   the past four years. You heard that directly from

4   Chris Jorgenson.

5   So those are the basic facts about the airstrips,

6   but I think it will be useful now if we can pull up

7   Exhibit 106 and go to pdf 37. And just scroll down,

8   please. No, too far. There we go. Perfect.

9   Thank you.

10   So we can see in Section 18 -- sorry -- yes,   18:06

11   Section 18, the Ness Ranches Ltd. strips, there's

12   actually two of them. The main one used by Larry Ness

13   is the north-northwest, south-southeast trending strip.

14   There's water around it, as you can see.

15   And then if we go down to Section 1, there's a

16   northwest to southeast oriented strip, and that is

17   Jim Ness's strip. And you can see that -- if we can go

18   back up to the Larry Ness strip, you can see that the

19   nearest turbines are 90 and 91 to the southeast, and 53A

20   and 54 to the south -- sorry -- to the west-southwest.   18:07

21   And then if we go back town to Jim's strip, you can

22   see Turbines 62 to 64, the three of them, to the west,

23   and 90 and 91 to the northeast.

24   So now if we go to pdf 17. Sorry, pdf 38. My

25   apologies. Go down. Farther. There we go. No, a

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1   little bit up.

2   So you can see the Jorgenson airstrip. It runs

3   east-west. And you can see that in the vicinity of that

4   airstrip, there are Turbines 75 -- 74, 75, 76, and 77 to

5   the south-southeast.

6   Now, if we can go to pdf 17, the same document.

7   And just magnify that, please.

8   So in the first column under the red column, that's

9   where you'll see information about the -- I think that's

10   the Larry Ness strip at the top there, Number 1. And   **18:08**

11   you can see that the nearest turbine is Turbine 90, and

12   it's 2435 metres from the Larry Ness strip.

13   And if you go down to the third row, that's the

14   Jim Ness strip, you can see that the nearest turbine to

15   the Jim Ness strip is Turbine 64, which is 2393 metres.

16   And then the Jorgenson strip is Number 6, towards

17   the bottom of the table. And the nearest turbine to the

18   Jorgenson strip is Turbine 75, and it is 1693 metres

19   from the Jorgenson strip.

20   So those are the basic facts about the strips,   **18:09**

21   which turbines are nearby, and how close the turbines

22   are.

23   More generally, in response to an undertaking

24   request made by Commission counsel, EDP testified that

25   there are 21 -- of the 83 turbines in the project area,

1   there are 21 within 4 kilometres of these three strips.

2   There are 11 within 4 kilometres of the Jorgenson strip,

3   and that's Turbines 71 through 77, 84, 85, and 86, and

4   STW 4. So 11 turbines within 4 kilometres of the

5   Jorgenson airstrip.

6   With regard to the Jim Ness strip, there are

7   6 turbines within 4 kilometres of it, and those are

8   Turbines 53, 54, 63, 64, 65, and 66.

9   And with regard to the Larry Ness strip, there are

10   four turbines within 4 kilometres of it, and those are   18:10

11   Turbines 90, 91, 92, and 93.

12   So I now want to talk briefly about something you

13   heard about from both Mr. Sutherland and Mr. Hatcher,

14   and that's the circuit. You heard Mr. Hatcher testify

15   that the circuit is the standard traffic pattern used at

16   aerodromes around the world under visual flight rules.

17   So that, of course, would be for aerodromes like this

18   where there's no instrument approach. And it's used

19   when aircraft are approaching and landing at the

20   aerodrome.   18:11

21   Mr. Hatcher testified that pilots are taught to fly

22   the circuit. The circuit can either be left-hand or

23   right-hand, but the evidence is clear that the standard

24   and preferred circuit is the left-hand circuit because

25   most planes have two seats in the cockpit and the pilot

1   sits in the left-hand seat, so the left is convenient

2   because it's like driving a car, you just look out your

3   window and you have unobstructed vision. Whereas if

4   you're doing the right-hand circuit, you have to look

5   across the cockpit to the other side of the airplane.

6   You heard Len Jorgenson compare doing the

7   right-hand circuit to like driving a right-hand drive

8   car in a left drive jurisdiction like North America.

9   You heard Len Jorgenson say that he flies the left-hand

10   circuit whenever possible, and that in fact he flew the   18:12

11   left-hand circuit the night before to get to the

12   hearing.

13   Now, the experts, Mr. Hatcher and Mr. Sutherland,

14   disagreed on several matters, but they had one point of

15   agreement: The turbine layout proposed by EDP will

16   affect the ability of pilots to do a left-hand circuit

17   into all three of these airstrips. Mr. Sutherland,

18   again in response to questions from Commission counsel,

19   testified with respect to the Jim Ness airstrip, that if

20   you're travelling northwest onto that strip -- and maybe   18:12

21   we can go back to pdf 37, the same document.

22   Pdf 37 of that document. All right. And if we can

23   go down and off. We need to see more. There we go.

24   And can we make it smaller?

25   So Mr. Sutherland, not Mr. Hatcher, Mr. Sutherland

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1   testified that if you're travelling northwest Turbine 64

2   will impede your ability to do the left-hand circuit.

3   So you'll have to do the right-hand circuit instead. So

4   that's with respect to the Jim Ness strip.

5   With respect to the Larry Ness strip, again

6   Mr. Sutherland testified that if the pilot is flying

7   south-southeast, they won't have the ability to do the

8   left-hand circuit, they'll have to do the right-hand

9   circuit instead.

10   If we go to the next pdf, please, 38. Thank you.   18:13

11   And with regard to the Jorgenson strip, again

12   Mr. Sutherland, not Mr. Hatcher, testified that if

13   you're travelling west Turbine 66 and 67 will impede

14   your ability to do the left-hand circuit; you'll have to

15   do the right-hand circuit instead.

16   I asked Mr. Hatcher, "Do you agree with all of

17   that?" He said he did. I asked Len Jorgenson whether

18   he agreed with that, and he said, "I do but I would also

19   add Turbine 75." So Len Jorgenson, the actual pilot

20   that actually uses that airstrip, has told you that he   18:14

21   believes Turbine 75, 76, and 77 will impede his ability

22   to do the standard, normal, left-hand circuit into his

23   farm's airstrip.

24   And then you recall I asked Mr. Hatcher, and

25   Mr. Jorgenson, Len Jorgenson, about Len's normal way of

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1   getting to the airstrip, which is he leaves Springbank

2   and he flies -- and I think he said New Brigden is

3   30 miles north of Springbank. So he flies east and then

4   he approaches from the south-southwest. I asked

5   Mr. Hatcher to assume that Len was flying towards his

6   airstrip as normal from the southwest. And I asked him

7   specifically: "Is this turbine layout going to be a

8   problem?" Mr. Hatcher answered, "Yes." When I asked

9   him why, he said, quote: (as read)

10   "It's going to do a couple of things.   18:15

11   One is it's going to, as it's laid out,

12   it will negate him joining a normal

13   circuit."

14   So we just talked about it. (as read)

15   "The other problem we have is that these

16   turbines are especially high and if he's

17   approaching from the southwest or the

18   south, as he often does, they're going

19   to actually form a barrier and he's

20   going to have to come over the aerodrome   18:16

21   at a higher than desirable altitude and

22   then he's going to have to lose a bunch

23   of altitude to join the traffic

24   pattern."

25   I asked Len whether he agreed with that. He said he

1   did. And then he added the following critical point,

2   this is Len Jorgenson: (as read)

3   "When we talk about altitudes in the

4   small aircraft, winds aloft can have a

5   huge impact on your ability to maintain

6   a constant altitude. As an example, on

7   my flight out last night it was quite

8   windy between Calgary and New Brigden,

9   and it was not uncommon for me to be

10   losing or gaining 2 or 300 feet in   18:16

11   altitude while trying to maintain a

12   level flight. And that's a factor you

13   have to deal with as a pilot.

14   Controlling your altitude is a continual

15   challenge."

16   Len Jorgenson also testified that on a hot summer day

17   the climb capability of his aircraft is low. So he

18   expressed the concern about climbing over tall obstacles

19   on a hot summer day.

20   Len Jorgenson testified that his general feeling as   18:17

21   a relatively low-hours pilot, as he put it, is that he

22   is simply, quote, "not comfortable with this at all"

23   end quote. He said with respect to Turbine 75 to 77,

24   quote, "This is a very serious concern for me." End of

25   quote.

1   So then I asked Mr. Hatcher about the Larry Ness

2   strip, and he said: (as read)

3   "Well, again, we have turbines that are

4   fairly close to the traffic pattern.

5   They're not quite as close as the

6   Jorgenson strip."

7   And maybe we should go back to 37, please, pdf 37.

8   That's good.

9   But the type of aircraft that the Nesses fly,

10 because of the rough conditions, they tend to be smaller   18:17

11 and lower horsepower. "Tail-dragger airplanes" as Jim

12 Ness called them. They do not have a great climb rate,

13 and that could be a problem trying to get out of those

14 strips and go anywhere. (as read)

15   "And in particular, if we were landing

16   and taking off in a more southerly

17   direction and trying to do a left-hand

18   circuit, we're going to have wind

19   turbines as a barrier. And even if we

20   were to switch to a right-hand circuit,   18:18

21   we have Turbines 5e and 54 that are

22   going to produce an impediment."

23 So that's what Mr. Hatcher said about the Larry Ness

24 strip. Then I asked him about the Jim Ness strip, and

25 his evidence was, quote: (as read)

1   "On the one --" that's labelled Ness

2   Ranches, so that's the Jim Ness strip,

3   "-- it has a different orientation. It

4   goes northwest-southeast, and if I was

5   departing in a northwest direction, I'm

6   sort of aimed at those two wind

7   turbines, 53 and 54. And there are a

8   couple of concerns about that. One of

9   them is the airplane is in a low energy

10   state. I'm downwind of the wind   18:19

11   turbine, and that's not a wonderful

12   situation because they create a lot of

13   turbulence.

14   The other problem is I may have

15   difficulty climbing above them, and I'm

16   sort of boxed in on this airstrip.

17   Really, any direction I turn, there's a

18   wind turbine. So it leads to an unsafe

19   situation. There's no real clear way

20   out and it's going to be like an   18:19

21   obstacle course."

22   That was Mr. Hatcher's evidence.

23   And this, I think, might be a good point for me to

24   maybe discuss the difference -- what I would consider

25   the fundamental difference between Mr. Hatcher and

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1   Mr. Sutherland as expert witnesses.

2   Mr. Sutherland is an airport expert. Mr. Hatcher

3   is a flying expert. He's a pilot. Mr. Hatcher -- or

4   Mr. Sutherland said, well, I grew up at airports and I

5   had a private pilot's licence a long time ago. But

6   that's not his area of expertise. His area of expertise

7   is airports, which I would submit is really the least

8   relevant point in this whole consideration because no

9   one is saying that any of these three airstrips are

10   airports. They're clearly not. They're grass strips.   18:20

11   So Mr. Sutherland's expertise about airports is,

12   frankly, neither here nor there in relation to these

13   airstrips.

14   So I want to return to -- I mentioned that when

15   Len Jorgenson was giving evidence, he flew in the night

16   before from Springbank. I remember he said his target

17   altitude before landing was 1500 feet. So that would be

18   less than 900 feet above turbines that are 650 feet

19   tall. So this brings me to the first area in which

20   Mr. Hatcher and Mr. Sutherland disagree, and that's the   18:20

21   safe level of clearance over obstacles like wind

22   turbines.

23   Mr. Hatcher said it's a 1,000 feet. You want to be

24   at least 1,000 feet over these sorts of obstacles.

25   Mr. Sutherland said it's 500 feet. And the difference

1   between those two opinions comes from an interpretation

2   of Section 602.14(2) of the Canadian aviation

3   regulations.

4   Mr. Sutherland, in his reply evidence, cited

5   paragraph (b) of that section. And basically it says

6   that you need to be flying at least 500 feet from any,

7   quote, "person, vessel, vehicle or structure."

8   Mr. Hatcher, by contrast, relied on paragraph (a)

9   which says that when you are flying over a, quote,

10   "built-up area, you need to be 1,000 feet above the   18:21

11   highest obstacle located within a hazard distance of

12   2,000 feet."

13   So Mr. Hatcher's interpretation basically is this:

14   You develop 83 200-metre tall turbines. That means

15   there's now a built-up area around these airstrips. If

16   you're going to fly over those turbines, you've got to

17   be 1,000 feet. And this is how he put it in his

18   evidence. (as read)

19   "When we have a collection of these tall

20   obstructions, by definition, you know,   18:22

21   that's going to be a built-up area. I

22   wouldn't teach anybody -- I wouldn't

23   counsel anybody to fly less than

24   1,000 feet above windmills because it is

25   a safety issue. So, therefore, we need

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1   to be 1,000 feet above them. We've got

2   to be 2,000 feet horizontally away from

3   them. All of that, you know, with the

4   exception of takeoff and landing

5   because, of course, we do have to get

6   the airplane to the ground, but that's

7   where, I guess, Mr. Sutherland and I

8   disagree. And certainly I would never

9   train anybody to fly over windmills at

10   less than 1,000 feet."   18:22

11 The submission of the Clearview Group is that

12 Mr. Hatcher's evidence on this point -- well, should be

13 clearly preferred to Mr. Sutherland's. Mr. Hatcher is

14 the pilot, Mr. Sutherland is an airport guy.

15   If Turbines 74 to 77 are approved, Len Jorgenson is

16 going to have to fly over those turbines at less than

17 1,000 feet. Either that or he has to go up higher and

18 then he's got a much greater and more rapid descent to

19 get down to his landing altitude.

20   So now I want to deal with the other area of   18:23

21 disagreement between Mr. Sutherland and Mr. Hatcher, and

22 that's the relevance and application of Transport Canada

23 Document TP1247.

24   Mr. Sutherland was quite categorical about this.

25 He said TP312 governs, it has done away with the outer

1   surface of 4,000 metres, which is the radius around an

2   airstrip. Instead, what now governs is 2500 metres from

3   either end of the airstrip. That is what has been,

4   quote, "voluntarily applied" by EDP to these airstrips.

5   So to begin, let's just talk about what are these

6   documents exactly? Well, TP312, which is in evidence as

7   Exhibit 175, is titled "Aerodrome Standards and

8   Recommended Practices." And if we could call up

9   Exhibit 175, please. I need to go down one more

10   page just to identify the document. Can we shrink the   18:24

11   image?

12   All right. So there it is, Aerodrome Standards and

13   Recommended Practices. So now can we go down a page or

14   two to the Table of Contents. That's good.

15   The point here is look at the Table of Contents of

16   this document. You will see that it deals with all

17   kinds of things. It has zero relevance to these grass

18   airstrips: Aprons, taxiways, that sort of thing.

19   Now, Mr. Sutherland says, ah, but this is a

20   regulatory document whereas TP1247 is not. Well, that's   18:25

21   true, but it's not relevant. And the reason it's not

22   relevant is because it's only mandatory for certified

23   aerodromes, i.e. airports. So it's not -- it's just a

24   recommended practice for an uncertified aerodrome and an

25   unregistered aerodrome, like the Ness and the Jorgenson

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1   aerodromes, but 99 percent of what's in there just

2   simply don't apply to a grass airstrip.

3   So TP312, yes, it's a regulatory document. All

4   that means is that Transport Canada actually has

5   jurisdiction over an aerodrome operator. Of course, you

6   know, right now, there's no jurisdiction with respect to

7   these grass airstrips because they're unregistered and,

8   frankly, Transport Canada probably doesn't know about

9   them, but that's not the point.

10   The point is that 1247, by contrast, is titled   **18:26**

11   "Aviation, Land Use in the Vicinity of Aerodromes."

12   That's the title of TP1247, and it's in evidence in a

13   couple of different places. I've been referring to

14   Exhibit 38.

15   On the first page, I guess it's the introduction of

16   the document, it states that: (as read)

17   "It is designed to assist planners and

18   legislators at all levels of government

19   in becoming familiar with issues related

20   to land use in the vicinity of   **18:26**

21   aerodromes."

22   It goes on to say that: (as read)

23   "Land use around aerodromes can have

24   significant impacts on safety at the

25   aerodrome and can negatively impact

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1   operational viability of the aerodrome

2   to the detriment of the local community

3   that depends upon it."

4   As I said, Mr. Sutherland was very strong on the fact

5   that this is only a guidance document. But the question

6   is to whom does this document provide guidance? Well,

7   it provides guidance to planning authorities and, in

8   this case, a body like the AUC, because essentially what

9   you're here to do is to decide whether to approve a

10 development. And we know from Section 619 of the   18:27

11 *Municipal Government Act* that if you approve this

12 project, the municipal approvals, or, in this case, the

13 approval by this Special Areas Board is effectively a

14 rubber stamp because Section 619 of the *Municipal*

15 *Government Act* effectively gives paramountcy to a

16 decision of the AUC.

17   So if you approve this, you're essentially

18 approving a development in the vicinity of an aerodrome.

19 So this is the critical document that you should be

20 looking to for guidance. It's not been repealed. It's   18:28

21 still in effect. Mr. Sutherland acknowledged that.

22   So you are precisely the type of body who should be

23 paying attention to TP1247. And it's all about safety.

24 It's so that someone like the Commission can be

25 satisfied that, in approving a development, it's not

1   going to compromise the safety of an aerodrome.

2   And it's particularly relevant to wind farms

3   because the evidence is, and it's right in the document,

4   TP1247, the ninth edition from 2014, was specifically

5   revised to take into account new land uses like wind

6   farms.

7   So, far from being outdated, this document in fact

8   was specifically revised to address wind farms. And it

9   applies to all aerodromes: certified, uncertified,

10   unregistered. It applies to the Ness and the Jorgenson   18:29

11   strips. And the reason it does is because it's

12   fundamentally about safety.

13   So why is this a big issue? The reason is because

14   Section 1.3 of TP1247 -- so if we could go to Exhibit 38

15   and turn to pdf 9 -- 10, sorry.

16   Okay. So this is kind of the core of the

17   disagreement between Mr. Sutherland and Mr. Hatcher,

18   because this is where in TP1247 Transport Canada is

19   talking about this concept of an outer surface, which,

20   as you can see, it establishes the height above which it   18:30

21   may be necessary to take one or more of the following

22   actions, and the first is to restrict the erection of

23   new structures which would constitute an obstruction.

24   And then it talks about what the dimensions of an

25   outer surface are, and the key one for the purposes of

1   this proceeding down just above the graphic -- so if we

2   go down a little farther on the page there -- is

3   basically this is where the 4,000 metres comes from.

4   The 4,000 metres is recommended as a horizontal distance

5   from the aerodrome reference point. So it's effectively

6   a 4,000-metre circle around the centre of the aerodrome.

7   So our position is simple. The guidance that

8   TP1247 provides is that you should not be erecting tall

9   structures within this area of 4,000 metres around the

10   central reference point of an aerodrome. And we know   18:30

11   that in fact, as proposed, the project will have 21

12   turbines within 4,000 metres of these three strips.

13   Now, as I said, Mr. Sutherland is absolutely

14   adamant that this part of 1247 is, quote, "outdated."

15   And his theory -- because that's what it is; it's based

16   on his interpretation of the document, it's not a fact,

17   as he would have had you believe -- is that TP1247 is

18   outdated because TP312 was revised in September 2015,

19   that's when the fifth edition, which is the current

20   edition, came into effect, and that it has abolished   18:31

21   reference to this 4,000-metre outer surface, horizontal

22   outer surface.

23   So let's go now to TP312, which is Exhibit 175.

24   And I would like to begin by having us turn to pdf 57.

25   So this is the beginning of Chapter 4 of TP312.

1   It's entitled, as you can see, "Obstacle Management."

2   And there's a definition of obstacle limitation surface

3   there which basically says that an OLS defines the air

4   space around the runway to be maintained free of

5   obstacles.

6   Now, you heard Mr. Sutherland testify that there's

7   no longer an outer surface, that it's now been included

8   in this category of what he called an OIS, or obstacle

9   identification surface.

10   So let's go to pdf 70. In 4.3.2, Section 4.3.2,   18:33

11   here's where TP312, not 1247, talks about the obstacle

12   identification surface. And you'll see -- I can't read

13   that so I'm just going to grab my own copy. Give me one

14   moment.

15   Section 4.3.2.3 on pdf 70 of TP312, Exhibit 175,

16   under the title "Characteristics": (as read)

17   "The outer obstacle identification

18   surface comprises a common plane

19   established at a constant elevation of

20   45 metres above the ARP extending   18:34

21   horizontally through 360 degrees to a

22   distance of 4,000 metres."

23   You can go to pdf 71, please.

24   There it is depicted graphically, an OIS measured

25   4,000 metres from the centre point of a runway or an

1 aerodrome, and it's identified as an obstacle

2 identification surface.

3   If we can go to pdf 74 now. Go down to the bottom

4 table. You'll see again a reference to an outer ID

5 surface for non-instrument, i.e. visual flight, radius

6 4,000.

7   So with all due respect to our airport expert,

8 Mr. Sutherland, the concept of a 4,000-metre area around

9 an aerodrome where you don't want to be erecting

10 obstacles has not, I repeat "not," been abolished in   18:35

11 TP312. He's just wrong about that.

12   The thing he's right about is that the term "outer

13 surface" is not used in the fifth edition of TP312, but

14 the 4,000-metre horizontal buffer for aerodromes is,

15 indeed, still part of TP312. There simply is no merit,

16 none, to this suggestion that TP1247 is somehow

17 outdated.

18   As a final point on this case, you heard some

19 discussion during the evidence about the Collingwood

20 case. If we can call up Exhibit 162, please.   18:36

21   So this was a -- same evidence. You can read it

22 for yourself, but basically this was a case heard by the

23 Ontario Environmental Review Tribunal. You can see it's

24 from October 2016; that is, the decision is from

25 October 2016. So that's well over one year after TP312

1   was revised in September of 2015. And basically it was

2   a case about turbines in proximity to two aerodromes.

3   If we can go to pdf 6, please.

4   You'll see the name Charles Cormier. We don't need

5   to go through it all, but you'll see that there were 13

6   different aviation experts called to give evidence in

7   this case.

8   Go to pdf 9. If we go down, beginning at

9   paragraph 17, the Ontario Environmental Review Tribunal

10   begins its discussion there of TP1247. And it takes   18:37

11   about five or six paragraphs of the decision.

12   Now, the Ontario Environmental Review Tribunal did

13   not specifically address Section 1.3 of TP1247, but when

14   you read that decision, and I urge you to do so, that

15   review tribunal clearly considered TP1247 to be a valid

16   document still providing up-to-date guidance to planners

17   on how specific land uses may affect aerodromes.

18   So, again, I submit there is no merit, none, to

19   Mr. Sutherland's adamant position that you should not

20   pay any attention to TP1247, that it's somehow outdated.   18:38

21   That's just not correct.

22   So to summarize then, EDP's argument on aviation

23   rests entirely on Mr. Sutherland's position that TP1247

24   apply, because they've said it's 312 that applies and we

25   have voluntarily applied those setbacks, therefore it's

1   safe. That's their entire case on aviation.

2   I submit, again, it's clear that Mr. Sutherland is

3   wrong. There is no inconsistency between TP312 and

4   1247, there is no merit to the suggestion that 1247 is

5   outdated. It remains a valid document that should guide

6   a body like this Commission with power to approve a

7   development in the vicinity of an aerodrome.

8   The second point I want to make, concluding on this

9   issue, is that leaving aside 1247 and 312, the most

10   important evidence you heard about this was the evidence   18:39

11   from Len Jorgenson and Mr. Hatcher about the fact that

12   those four turbines, 74 to 77, immediately south

13   essentially of the Jorgenson airstrip, they're just too

14   close to be safe. Mr. Hatcher, who is the real pilot

15   here, was clear and categorical about that.

16   Finally, we brought up in our cross-examination the

17   fact that EDP has offered a larger setback to Jim and

18   Larry Ness than they have to the Jorgensons. It was a

19   decision they made when they were consulting with the

20   Ness brothers. And there is simply, from a safety   18:40

21   perspective, no justification for treating the strips

22   differently.

23   If EDP wants to give an added 1.5-mile buffer to

24   the Ness brothers, they owe it to the Jorgensons to give

25   them the same buffer. But our primary position is, at a

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1 minimum, at a bare minimum, Turbines 74 and 77 can't be

2 located where they're located. It's simply not safe.

3 And if we are correct, as we submit we are in relation

4 to the ongoing relevance of the 4,000-metre buffer,

5 there's a real problem here because we have 21 turbines,

6 21 turbines, located within that buffer. And that puts

7 this Commission in a very, very difficult position.

8   Sorry for taking so long, Mr. Chair, but I'm

9 getting close to being done. I'm done on aviation. I

10 want to now talk about the impact on the community.   18:41

11 These are social effects of a project that you're

12 statutorily bound to take into account.

13   You heard the evidence from 15 members of the

14 Clearview Group who reside in and make their living

15 farming in the Sedalia, New Brigden area. You also

16 heard the evidence of Mr. Ross and Mr. Kaumeyer, who

17 while not being full-time residents have been coming to

18 the area for decades to hunt. They love it so much they

19 now own property in the area and they're passionate

20 about it.   18:41

21   These are all honest, genuine people whose

22 participation in this proceeding has been motivated by a

23 single purpose: To protect their beloved community.

24 They are third, fourth, and fifth generation farmers who

25 deeply love their land and their community.

1   You heard from Nelson Hertz, who has a two-year-old

2   son who is doing everything in his power to make sure he

3   can return to the community that he grew up in so that

4   he can farm and then his son can farm.

5   You heard from Wyatt Simpson, who is 19 years old,

6   who also wants to be able to stay and carry on his

7   family's multi-generational farming operation.

8   They all told you in one way or another in their

9   own words how deeply, deeply concerned they are about

10   this project and how it is dividing the community.   18:42

11   Contrast all of that with the evidence of EDP's

12   panel. You have Mr. LoTurco from Toronto. You have

13   Mr. VanDerZee from Portland, Oregon. The only one in

14   Alberta is Mr. O'Connor, and Mr. O'Connor was

15   essentially the face of the project in the communities

16   of Sedalia and New Brigden.

17   And this is always difficult, but you heard several

18   members of the Clearview Group essentially accuse

19   Mr. O'Connor of having lied to them.

20   You heard Coleen Blair, and this is at   18:43

21   Transcript Volume 3, pdf 175, put it I think most

22   simply. Quote: (as read)

23   "Mr. O'Connor made many visits to our

24   house. At first we were very interested

25   in hearing about the project, but, as

1   time progressed, we decided the project

2   was not in our best interest. We never

3   gave any indication that we would be

4   signing up our land, and our neighbours

5   knew of our intentions. It came to our

6   attention that Mr. O'Connor told one of

7   our neighbours that he had a firm

8   commitment from us to sign for the

9   project as well as some of his other

10   surrounding neighbours. This was a   18:43

11   complete and bald-faced lie. When my

12   husband asked Mr. O'Connor about this,

13   his answer was that he had no control

14   over how other people interpreted what

15   he said."

16 There were several other Clearview Group witnesses that

17 basically gave you the same story, and this is a story

18 which EDP chose not to challenge on cross-examination or

19 to deal with by way of rebuttal evidence.

20   You also saw examples at the hearing of the way   18:44

21 Mr. O'Connor answered questions. So I put it to him on

22 cross-examination whether he didn't think the fact that

23 the majority of the communities against the project

24 meant, as my clients feel, that it has divided the

25 community. Mr. O'Connor said absolutely not, he didn't

1   agree, and he referred to 50 families of participating

2   landowners. And when I asked him, well, how many of

3   those 50 families actually reside within the project

4   area, he said the vast majority. So I wanted him to be

5   a little more precise than that, so I asked him to get

6   back to me by way of undertaking. So his first response

7   was, well, it's actually 22 of 33 residences within

8   2 kilometres of turbines who are project landowners.

9   And I continued to press him on it. And, finally,

10   where we got to was if you use the project boundary   **18:45**

11   buffer, and I don't know why you wouldn't, within

12   2 kilometres of that line, 14 of 36 are project

13   landowners. In other words, the other 22 are not.

14   So from the vast majority of 50 families, it went

15   down to 22. And then it went down to 14. It was like

16   pulling teeth for me to actually finally get that

17   admission.

18   I'm going to say that Mr. O'Connor seemed to

19   express skepticism throughout -- it's reflected in the

20   materials, almost bordering on disbelief that the Ness   **18:45**

21   brothers and the Jorgensons actually used these

22   airstrips in any meaningful way.

23   The point is, there is more than one way to divide

24   a community. One way is to propose unprecedently large

25   turbines in a quiet, remote, close-knit community.

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1   Another way is in doing so to adapt -- or adopt a

2   combative and arrogant attitude that basically says

3   "Those of you who don't support the project, you're

4   being ungrateful, you should just get over it."

5   Your role, Mr. Chair, is to consider whether this

6   project is in the public interest, and you are

7   expressly -- this Commission is expressly directed to

8   consider social effects, not just how many birds or bats

9   might be killed and how many jobs will be created. The

10   Clearview Group submits that the social effects of this   18:46

11   project on this multi-generational community will be

12   severe and long-lasting. Multi-generational, almost

13   certainly.

14   So, in conclusion, the Clearview Group invites the

15   Commission to draw a line in the sand here. You cannot

16   simply rubber stamp every single wind farm proposal that

17   comes along. This one is unprecedented in terms of the

18   height of the turbines and, in our submission, its

19   location in a really unique area of Alberta, that,

20   again, hardly anyone has even heard about.   18:47

21   At the very least, we submit you should deny this

22   project in total. At the very least, we submit there

23   are certain turbines that you should deny. And the

24   first of those, of course, is Turbine 9. It's on native

25   grass, it hasn't been avoided, and there were no real

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1   reasons given why that's the case.

2   We submit that you should deny those turbines, and

3   those are Turbines 27 to 31, that encroach on wildlife

4   and wetland buffers.

5   And we definitely submit that you should deny those

6   turbines that are too close to active airstrips. There

7   are 21, as I've just said, within 4 kilometres of those

8   strips. There are -- and then, in particular, we have

9   74, 75, 76, and 77, those four turbines, that are just

10   too close to the Jorgenson airstrip.   18:48

11   In our submission, this project isn't a run of the

12   mill windmill project. This is unprecedented. We ask

13   you to draw the line here and tell my clients, but, more

14   importantly, the world, that not every single wind farm

15   that gets applied for in this province will get approved

16   as a matter of course. This is the one that should not

17   get approved.

18   So we ask respectfully the Commission deny the

19   application.

20   And those are my very lengthy submissions, and I'm   18:49

21   happy to answer any questions.

22   THE CHAIR: Thank you very much, sir. We

23   don't have any questions for clarification.

24   Ms. Oleniuk, it is now about 11 minutes to 7. I

25   am, unfortunately, going to time out. I'm wondering

1   whether you're amenable to doing your reply in writing

2   within some reasonable time frame. The other

3   alternative is to try and find a -- schedule a time

4   when we could come back here so you could do it here,

5   but I don't know what works best for you, and I'm

6   looking for some input from you.

7   MS. OLENIUK: Chair, we're definitely amenable

8   to providing our reply in writing. That's fine.

9   THE CHAIR: What kind of time frame do you

10   think would be reasonable?   18:50

11   MR. FITCH: Mr. Chair, while Ms. Oleniuk

12   consults with her client, I have to say this -- I know

13   I'm the problem because I took so long, but this gives

14   me concern because oral reply, in my view, is quite

15   different from written reply because, frankly, you got

16   to get up -- you know, you've been making notes, it

17   shouldn't take too long. A written reply essentially

18   allows Ms. Oleniuk to pore over the transcript and do a

19   considerably more thorough job of reply than she could

20   ever possibly -- anyone could ever possibly do now.   18:51

21   I don't think, in the circumstances, that's

22   actually fair.

23   THE CHAIR: Well, sir, my

24   off-the-top-of-my-head response is this Commission has

25   gone to great lengths to accommodate you, to

```
 1        accommodate your witnesses, and we've kind of ended up

 2        where we are because we have done a lot of

 3        accommodating.

 4             So I'm not really inclined to acquiesce to your

 5        concern that it might potentially give Ms. Oleniuk an

 6        advantage because she's going to do it in writing.

 7             Is there any way we can deal with that and still

 8        allow her to do it in writing by putting some sort of a

 9        page limit on it or something like that?

10   MR. FITCH:                 I would suggest a page limit and a        18:52

11        time limit.  The time limit should be short.

12   THE CHAIR:                 We haven't heard from her what her

13        suggested time limit is, so perhaps we'll start there.

14   MS. OLENIUK:               Thank you.  I think Friday would

15        be reasonable.  And I suggest that, just for the simple

16        fact that I have a commitment tomorrow.  I am driving

17        to Jasper for five hours, so I'm not going to really

18        have an opportunity to deal with this.  So I think

19        Friday would be appropriate.

20   THE CHAIR:                 Mr. Fitch, would that be               18:52

21        acceptable to you?

22   MR. FITCH:                 Yes, that's fine.

23   THE CHAIR:                 Very well.

24             Page limit.  Can I have suggestions from both of

25        you with what you think would be a reasonable or fair
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 1      page limit?
 2   MS. OLENIUK:              We'll certainly keep it to less
 3      than -- less than ten pages, double spaced.
 4   THE CHAIR:                Mr. Fitch, does that work for you,
 5      sir?
 6   MR. FITCH:                Fine.  Thank you.
 7   THE CHAIR:                All right.  I think that's
 8      probably a fair saw-off on that whole situation.
 9            Given that, I guess we've completed at least the
10      evidentiary phase, the argument phase.  We'll see the        18:53
11      reply by the end of the week.
12            And with that, we're going to adjourn.  I would
13      like to thank you all for taking the time that you have
14      taken to spend with us, to help us complete the record
15      and to give us your perspectives.
16            As always, I would like to thank our staff, I
17      would like to thank legal, and I would like to thank
18      the court reporters, who always do a really fine job
19      for us, and I think we've really pressed them here.
20            So with that, I'm going to adjourn and we'll         18:54
21      obviously, once we see reply, issue our decision in due
22      course.  Thank you all very much.
23   (PROCEEDINGS ADJOURNED AT 6:54 P.M.)
24      _____
25   PROCEEDINGS CONCLUDED
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1   Certificate of Transcript

2

3   We, the undersigned, hereby certify that the foregoing

4   pages 1019 to 1303 are a complete and accurate transcript

5   of the proceedings taken down by us in shorthand and

6   transcribed from our shorthand notes to the best of our

7   skill and ability.

8   Dated at the City of Calgary, Province of Alberta, on

9   June 13, 2018.

10

11

12   "Donna Gerbrandt"_____

13   Donna Gerbrandt, CSR(A)

14   Official Court Reporter

15

16   "Brenda Ball"_____

17   Brenda Ball, CSR(A) RPR CRR

18   Official Court Reporter

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3   VOLUME 5

4

5

13

14   EXHIBITS

15

24

25

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

'

'85 [1] - 1052:6
'90s [1] - 1046:23

0

0 [24] - 1031:3, 1031:6, 1036:1, 1036:13, 1041:2, 1047:25, 1063:1, 1112:8, 1113:16, 1130:3, 1130:20, 1132:9, 1135:23, 1144:4, 1145:12, 1185:4, 1186:12, 1260:1, 1263:11, 1263:13, 1264:7, 1265:8, 1265:11, 1265:15
0.5 [28] - 1026:22, 1028:1, 1033:11, 1033:14, 1040:17, 1049:2, 1112:24, 1113:2, 1119:6, 1185:4, 1185:14, 1185:18, 1185:22, 1186:1, 1186:6, 1186:23, 1258:19, 1259:25, 1261:7, 1261:14, 1261:22, 1262:2, 1262:4, 1262:14, 1262:23, 1263:3, 1263:11, 1263:12
0.54 [1] - 1202:20
0.59 [1] - 1202:19
0.7 [16] - 1028:21, 1049:1, 1184:9, 1184:12, 1185:15, 1258:19, 1258:21, 1258:25, 1259:25, 1261:6, 1261:14, 1261:19, 1261:23, 1262:13, 1262:23, 1265:16
0.9 [1] - 1133:14
012 [1] - 1041:5
0129 [1] - 1030:13
034 [1] - 1030:14
09-29-31-05 [1] - 1036:12

1

1 [44] - 1041:8, 1049:4, 1049:6, 1049:13, 1049:17, 1050:2, 1055:16, 1056:2, 1057:8, 1057:12, 1057:13, 1061:19, 1063:1, 1063:3, 1063:19, 1065:22, 1078:22, 1082:5, 1105:5, 1122:21, 1122:24, 1123:17, 1123:21, 1131:20, 1133:23, 1136:22, 1145:10, 1161:4, 1181:5, 1181:18, 1184:15, 1184:23, 1185:18, 1186:2, 1186:8, 1206:8, 1251:9, 1251:14, 1252:12, 1262:21, 1262:24, 1263:25, 1273:15, 1274:10
1,000 [8] - 1282:23, 1282:24, 1283:10,

1283:17, 1283:24, 1284:1, 1284:10, 1284:17
1-kilometre [2] - 1078:18, 1079:9
1.00 [1] - 1202:22
1.2 [2] - 1129:21, 1129:22
1.3 [2] - 1288:14, 1292:13
1.5 [4] - 1041:20, 1138:17, 1152:5, 1152:8
1.5-mile [1] - 1293:23
1.7 [3] - 1036:15, 1045:21, 1265:17
1.75 [1] - 1220:25
1/2 [1] - 1041:21
10 [27] - 1025:13, 1042:14, 1045:4, 1055:11, 1055:14, 1055:17, 1056:3, 1056:7, 1056:11, 1056:13, 1056:14, 1073:5, 1079:23, 1084:20, 1090:20, 1139:3, 1147:22, 1147:23, 1148:2, 1154:19, 1154:24, 1155:1, 1155:8, 1155:17, 1214:23, 1222:11, 1288:15
10,000 [1] - 1175:15
10.6 [1] - 1247:22
100 [4] - 1035:18, 1250:19, 1251:1, 1252:10
100-metre [3] - 1197:22, 1250:23, 1254:3
101.5 [1] - 1231:6
1019 [1] - 1303:5
1023 [1] - 1304:7
1039 [1] - 1304:16
1046 [2] - 1304:18, 1304:20
105 [1] - 1231:13
106 [1] - 1273:7
1095 [1] - 1304:8
11 [13] - 1024:10, 1062:21, 1062:23, 1063:7, 1081:24, 1174:2, 1260:11, 1260:21, 1268:1, 1268:17, 1275:2, 1275:4, 1299:24
110 [1] - 1231:2
1119 [1] - 1304:9
113 [1] - 1149:3
114 [1] - 1149:4
115 [2] - 1149:3, 1227:7
1156 [2] - 1304:22, 1305:1
1158 [1] - 1305:4
1159 [2] - 1304:10, 1305:7
116 [1] - 1231:10
116.8 [1] - 1230:23
1161 [1] - 1304:11
1169 [1] - 1304:12
118 [2] - 1080:12, 1080:13
12 [30] - 1032:7, 1032:10, 1032:11, 1032:13, 1032:20, 1032:25, 1116:16, 1147:22, 1153:25,

1154:18, 1155:13, 1155:16, 1167:16, 1167:17, 1174:4, 1175:15, 1177:19, 1180:4, 1183:4, 1183:11, 1183:14, 1184:15, 1185:17, 1187:11, 1216:1, 1261:1, 1261:5, 1263:22, 1268:23, 1270:1
12.5 [4] - 1116:3, 1116:12, 1117:1, 1117:3
12.7 [1] - 1117:4
120 [1] - 1068:4
1236 [1] - 1058:2
1247 [6] - 1286:10, 1289:14, 1290:11, 1293:4, 1293:9
13 [6] - 1019:21, 1020:5, 1173:2, 1216:1, 1292:5, 1303:10
130 [2] - 1126:19, 1199:23
1303 [1] - 1303:5
132 [4] - 1048:8, 1141:10, 1228:23, 1231:6
1321 [3] - 1055:19, 1056:1, 1056:16
135 [3] - 1054:10, 1066:22, 1232:11
136 [11] - 1054:10, 1065:17, 1066:10, 1066:21, 1066:24, 1071:3, 1101:14, 1119:19, 1228:24, 1231:13, 1232:11
136.5 [1] - 1230:19
137 [11] - 1053:15, 1054:10, 1054:21, 1066:19, 1079:5, 1081:15, 1083:2, 1083:6, 1099:3, 1162:3, 1232:9
1370 [3] - 1055:17, 1056:2, 1056:17
138 [5] - 1025:4, 1109:5, 1128:16, 1259:18, 1259:22
14 [10] - 1083:2, 1083:6, 1083:9, 1085:10, 1133:2, 1162:3, 1174:2, 1237:24, 1297:12, 1297:15
14,000 [1] - 1082:4
1400 [1] - 1020:2
147 [1] - 1229:2
148 [1] - 1231:10
149.4 [1] - 1230:23
15 [8] - 1056:21, 1058:4, 1081:21, 1172:14, 1174:2, 1223:17, 1255:22, 1294:13
15,000 [1] - 1239:9
15-metre [1] - 1082:2
15-year [1] - 1214:23
150 [3] - 1231:2, 1249:22, 1272:11
150-metre [2] - 1205:11, 1250:22
1500 [3] - 1271:17, 1271:18, 1282:17
16 [11] - 1030:12, 1044:9, 1044:23, 1080:21, 1259:21,

1260:4, 1260:10, 1260:11, 1260:21, 1267:25
16,000 [1] - 1219:12
160,000 [1] - 1222:23
162 [1] - 1291:20
167.5 [1] - 1231:7
1693 [1] - 1274:18
17 [8] - 1053:16, 1142:6, 1178:11, 1179:4, 1179:11, 1273:24, 1274:6, 1292:9
173 [1] - 1231:14
175 [5] - 1285:7, 1285:9, 1289:23, 1290:15, 1295:21
17534 [1] - 1036:9
17543 [1] - 1142:7
177 [1] - 1025:16
179 [4] - 1124:4, 1137:4, 1142:23, 1149:13
18 [6] - 1078:19, 1080:11, 1174:2, 1244:11, 1273:10, 1273:11
18.15 [1] - 1248:4
18.5 [1] - 1248:3
188 [1] - 1024:16
19 [4] - 1133:4, 1181:5, 1240:20, 1295:5
19.1(d [1] - 1181:18
190 [1] - 1071:10
1938 [1] - 1090:4
1972 [1] - 1272:1
1975 [2] - 1270:12, 1270:19
1978 [1] - 1272:4
1984 [3] - 1052:7, 1271:8, 1271:9
1985 [1] - 1052:7
1996 [1] - 1051:14
1996-2 [4] - 1128:21, 1129:4, 1129:13
19th [2] - 1107:2, 1109:17
1:00 [1] - 1077:2

2

2 [31] - 1034:5, 1045:21, 1048:1, 1050:2, 1050:10, 1056:21, 1056:22, 1056:23, 1057:20, 1081:14, 1085:9, 1088:6, 1088:10, 1088:13, 1092:14, 1129:19, 1129:22, 1178:11, 1178:12, 1220:18, 1220:24, 1230:25, 1251:9, 1251:14, 1252:12, 1261:10, 1263:12, 1263:25, 1279:10, 1297:8, 1297:12
2,000 [2] - 1283:12, 1284:2
2.2.4 [1] - 1030:12
2.3 [1] - 1133:23
2.5 [1] - 1211:7
2.6 [1] - 1187:22
20 [17] - 1032:8, 1039:11, 1048:15, 1057:25, 1126:14, 1130:11, 1147:21, 1148:15, 1149:6, 1150:23, 1150:24,

1167:15, 1175:25, 1223:17, 1223:18, 1229:16
200 [7] - 1042:25, 1064:15, 1064:16, 1066:14, 1081:22, 1228:25, 1229:4
200-metre [6] - 1080:1, 1081:19, 1097:7, 1232:24, 1241:23, 1283:14
2003 [2] - 1052:14, 1082:21
2007 [1] - 1082:23
2010 [5] - 1051:21, 1065:24, 1076:12, 1151:25, 1270:19
2011 [10] - 1090:16, 1196:6, 1196:7, 1196:16, 1197:8, 1198:7, 1237:4, 1252:20, 1252:21, 1253:1
2011) [1] - 1030:8
2014 [3] - 1212:16, 1230:17, 1288:4
2015 [3] - 1212:2, 1289:18, 1292:1
2016 [5] - 1194:17, 1230:22, 1240:23, 1291:24, 1291:25
2016-07 [1] - 1182:8
2017 [16] - 1062:4, 1107:2, 1108:23, 1109:17, 1109:18, 1194:17, 1196:8, 1196:17, 1197:25, 1198:7, 1199:2, 1218:9, 1237:5, 1239:1, 1244:25, 1252:24
2018 [6] - 1019:21, 1020:5, 1025:13, 1025:15, 1173:2, 1303:10
2030 [2] - 1174:19, 1223:3
2084 [1] - 1052:6
21 [6] - 1274:25, 1275:1, 1289:11, 1294:5, 1294:6, 1299:7
21st [2] - 1077:2, 1192:25
22 [4] - 1051:13, 1297:7, 1297:13, 1297:15
2255 [1] - 1271:8
22665 [1] - 1019:7
23 [2] - 1101:17, 1240:23
2300 [1] - 1270:17
2393 [1] - 1274:15
24 [5] - 1055:9, 1055:14, 1078:12, 1250:23, 1254:3
240 [2] - 1159:18, 1159:21
2435 [1] - 1274:12
25 [8] - 1085:4, 1090:25, 1133:6, 1231:18, 1248:6, 1256:6, 1256:12, 1256:14
2500 [2] - 1272:1, 1285:2
254 [3] - 1080:25, 1081:6, 1235:3
258 [5] - 1106:22, 1112:15, 1118:15,

3

abandonment [1] - 1218:5

aberrations [1] - 1091:17

abide [1] - 1198:24

ability [12] - 1166:12, 1176:8, 1180:25, 1242:8, 1256:11, 1276:16, 1277:2, 1277:7, 1277:14, 1277:21, 1279:5, 1303:8

able [18] - 1027:14, 1028:6, 1047:15, 1066:3, 1071:23, 1073:1, 1089:4, 1089:6, 1089:7, 1172:5, 1172:18, 1176:12, 1214:1, 1219:10, 1221:22, 1224:2, 1225:23, 1295:6

abolished [2] - 1289:20, 1291:10

absence [2] - 1089:12, 1236:21

absolutely [2] - 1289:13, 1296:25

absorb [1] - 1068:8

absorbent [1] - 1037:1

absorption [6] - 1047:21, 1112:24, 1113:2, 1113:16, 1119:6, 1125:16

absorptive [9] - 1030:16, 1040:3, 1047:20, 1048:13, 1048:18, 1126:23, 1131:22, 1132:12, 1264:11

absurd [1] - 1235:4

abundance [4] - 1195:22, 1208:4, 1208:12, 1239:13

abundant [1] - 1177:7

AC [1] - 1137:10

accept [4] - 1160:25, 1164:10, 1198:8, 1205:10

acceptable [10] - 1060:14, 1061:7, 1161:20, 1162:1, 1165:5, 1165:7, 1178:3, 1180:3, 1202:23, 1301:21

accepted [7] - 1183:15, 1183:18, 1201:20, 1232:3, 1263:5, 1263:14, 1267:23

access [8] - 1040:6, 1073:15, 1078:20, 1176:15, 1200:1, 1238:16, 1238:23, 1254:5

accessible [2] - 1027:9, 1063:9

accommodate [4] - 1172:2, 1197:17, 1300:25, 1301:1

accommodating [1] - 1301:3

accomplish [1] - 1103:25

accomplished [2] - 1101:8, 1104:1

accord [1] - 1182:19

accordance [8] - 1174:4, 1183:4, 1194:6, 1195:11, 1215:16, 1218:12, 1219:2, 1224:23

according [22] - 1030:7, 1034:9, 1036:8, 1045:16, 1117:21, 1131:21, 1134:8, 1139:5, 1143:3, 1143:5, 1143:8, 1143:9, 1143:13, 1144:5, 1144:8, 1144:20, 1147:17, 1147:22, 1148:4, 1150:25, 1247:16, 1271:25

According [1] - 1128:20

accordingly [1] - 1214:1

account [19] - 1035:19, 1037:8, 1094:8, 1121:17, 1123:6, 1125:6, 1130:7, 1130:25, 1131:12, 1134:14, 1135:21, 1145:5, 1155:9, 1184:16, 1241:9, 1257:25, 1260:8, 1288:5, 1294:12

accounted [1] - 1239:23

accuracy [3] - 1030:19, 1190:1, 1190:21

accurate [21] - 1024:18, 1025:7, 1036:10, 1053:24, 1054:12, 1054:14, 1100:24, 1101:9, 1101:11, 1101:16, 1102:19, 1102:22, 1102:24, 1102:25, 1103:22, 1106:3, 1116:20, 1128:13, 1131:4, 1265:19, 1303:5

accurately [7] - 1028:19, 1040:8, 1040:13, 1118:6, 1132:1, 1187:6, 1191:21

accuse [1] - 1295:18

accused [2] - 1087:13, 1233:15

achieve [4] - 1060:7, 1223:1, 1223:10, 1245:12

achieved [1] - 1245:22

achievement [1] - 1174:24

acknowledge [4] - 1105:9, 1205:14, 1226:7, 1242:22

acknowledged [24] - 1083:25, 1181:25, 1184:2, 1185:20, 1186:22, 1188:17, 1191:7, 1193:2, 1198:5, 1202:8, 1203:7, 1203:15, 1204:2, 1213:19, 1214:6, 1241:21, 1241:24, 1245:9, 1250:18, 1256:11, 1263:15, 1266:23, 1267:1, 1287:21

acknowledges [8] -

1188:1, 1197:19, 1199:9, 1200:25, 1203:1, 1208:6, 1218:7, 1238:1

acoustic [4] - 1036:5, 1107:13, 1126:7, 1202:18

acoustical [5] - 1024:4, 1047:15, 1049:21, 1115:9, 1142:1

Acoustical [2] - 1024:5, 1024:8

acoustically [1] - 1111:19

acoustician [2] - 1115:4, 1137:18

acousticians' [1] - 1264:13

Acoustics [1] - 1034:9

acquiesce [1] - 1301:4

acres [3] - 1058:2, 1219:11, 1219:12

acronym [1] - 1055:10

acronyms [1] - 1170:8

act [2] - 1105:15, 1130:22

Act [13] - 1174:3, 1178:12, 1179:2, 1179:5, 1179:6, 1179:11, 1198:20, 1198:22, 1218:8, 1218:10, 1223:1, 1287:11, 1287:15

actions [2] - 1199:5, 1288:22

active [4] - 1111:6, 1199:12, 1270:9, 1299:6

activities [5] - 1177:9, 1202:4, 1215:1, 1215:3, 1222:13

activity [4] - 1221:4, 1222:10, 1240:4, 1244:6

activity-specific [1] - 1221:4

acts [1] - 1126:15

actual [4] - 1031:6, 1233:9, 1254:21, 1277:19

adamant [2] - 1289:14, 1292:19

adapt [1] - 1298:1

adaptation [1] - 1166:21

adaptations [1] - 1097:3

adapted [3] - 1036:6, 1096:20, 1096:24

adaptive [4] - 1194:3, 1198:3, 1201:19, 1203:4

add [10] - 1103:15, 1103:16, 1103:21, 1103:24, 1113:20, 1116:2, 1144:4, 1144:9, 1153:5, 1277:19

added [5] - 1085:25, 1103:19, 1184:16, 1279:1, 1293:23

adding [4] - 1123:17, 1123:21, 1170:23, 1186:2

addition [13] - 1035:24, 1182:25, 1186:22, 1189:16, 1190:1, 1197:14, 1211:11, 1213:7, 1217:13, 1217:25, 1218:7, 1221:5, 1222:1

ADDITIONAL [2] - 1158:14, 1305:4

additional [10] - 1110:25, 1128:7, 1157:9, 1158:6, 1184:20, 1218:3, 1219:12, 1224:3, 1242:11, 1256:5

address [12] - 1051:25, 1052:2, 1088:21, 1121:4, 1180:8, 1193:7, 1193:8, 1193:11, 1211:8, 1221:23, 1288:8, 1292:13

addressed [4] - 1094:6, 1159:25, 1160:11, 1257:15

addressing [2] - 1088:23, 1094:9

adequacy [2] - 1194:14, 1200:11

adequate [2] - 1195:15, 1242:11

adequately [1] - 1203:5

adhere [3] - 1191:19, 1196:11, 1197:7

adherence [1] - 1180:1

adhering [1] - 1178:2

adjacency [1] - 1170:12

adjacent [6] - 1075:10, 1083:15, 1122:2, 1238:18, 1238:24, 1253:11

adjourn [2] - 1302:12, 1302:20

ADJOURNED [3] - 1172:22, 1172:24, 1302:23

ADJOURNMENT [4] - 1073:8, 1136:24, 1192:4, 1225:16

adjust [1] - 1214:1

adjustments [4] - 1068:1, 1167:22, 1200:21, 1220:3

admissibility [1] - 1181:9

admission [2] - 1181:14, 1297:17

admit [2] - 1184:22, 1191:6

admitted [3] - 1188:15, 1192:20, 1202:13

adopt [2] - 1025:24, 1298:1

adopted [2] - 1164:17, 1169:22

advantage [1] - 1301:6

adversaries [1] - 1182:4

adverse [2] - 1180:3, 1254:15

adversely [1] - 1188:9

advise [2] - 1039:15, 1108:7

advised [2] - 1185:9, 1216:15

advocate [1] - 1206:6

advocated [1] - 1186:16

advocates [2] - 1186:11, 1202:11

AEP [40] - 1193:23, 1194:6, 1194:7, 1194:11, 1194:20, 1195:9, 1195:15, 1195:23, 1196:10, 1196:20, 1196:21, 1197:24, 1198:6, 1198:11, 1199:1, 1200:17, 1201:3, 1201:13, 1201:20, 1201:21, 1201:23, 1202:23, 1202:24, 1203:4, 1207:15, 1207:19, 1207:20, 1218:12, 1230:7, 1230:9, 1230:11, 1236:3, 1236:7, 1236:8, 1236:15, 1236:22, 1236:24, 1244:10, 1252:18, 1252:19

AEP's [4] - 1194:2, 1194:8, 1195:4, 1202:3

AEP-approved [1] - 1203:4

AER [1] - 1030:2

aerial [8] - 1031:23, 1040:9, 1214:14, 1214:15, 1214:17, 1214:19, 1214:22, 1214:25

Aerodrome [2] - 1285:7, 1285:12

aerodrome [21] - 1209:15, 1209:17, 1210:10, 1210:11, 1211:19, 1215:14, 1275:20, 1278:20, 1285:24, 1285:25, 1286:5, 1286:25, 1287:1, 1287:18, 1288:1, 1289:5, 1289:6, 1289:10, 1291:1, 1291:9, 1293:7

aerodromes [12] - 1212:15, 1213:4, 1275:16, 1275:17, 1285:23, 1286:1, 1286:21, 1286:23, 1288:9, 1291:14, 1292:2, 1292:17

Aerodromes [1] - 1286:11

aesthetic [1] - 1099:10

aesthetics [1] - 1164:18

affect [6] - 1148:23, 1167:25, 1188:9, 1241:6, 1276:16, 1292:17

affected [4] - 1060:24, 1180:25, 1216:25, 1219:18

affecting [1] - 1033:22

affirmed [3] - 1023:5, 1023:14, 1194:11

affordable [1] - 1223:8

afternoon [3] - 1095:25, 1096:1, 1159:16
agency [1] - 1214:8
agenda [1] - 1120:12
ago [7] - 1081:4, 1169:15, 1175:25, 1194:21, 1227:7, 1272:1, 1282:5
agree [16] - 1035:20, 1100:22, 1101:5, 1109:1, 1116:4, 1121:11, 1136:19, 1140:6, 1140:7, 1160:23, 1209:13, 1209:24, 1225:25, 1261:21, 1277:16, 1297:1
agreed [6] - 1209:14, 1211:13, 1213:1, 1236:14, 1277:18, 1278:25
agreement [1] - 1276:15
agreements [1] - 1219:12
agricultural [8] - 1085:19, 1090:15, 1091:2, 1131:19, 1131:23, 1132:10, 1234:15, 1238:10
agriculture [3] - 1131:22, 1177:4, 1177:9
aha [1] - 1131:13
ahead [4] - 1051:6, 1061:18, 1084:8, 1121:14
aid [11] - 1106:19, 1106:23, 1109:13, 1109:15, 1112:15, 1114:2, 1114:18, 1127:9, 1156:16, 1157:16, 1157:19
AID [2] - 1156:19, 1305:1
aids [1] - 1156:22
aimed [1] - 1281:6
air [5] - 1047:12, 1048:9, 1091:1, 1193:21, 1290:3
airborne [1] - 1032:21
aircraft [9] - 1210:6, 1210:10, 1214:4, 1214:9, 1215:18, 1275:19, 1279:4, 1279:17, 1280:9
airplane [3] - 1276:5, 1281:9, 1284:6
airplanes [1] - 1280:11
airport [4] - 1209:9, 1282:2, 1284:14, 1291:7
airports [6] - 1209:20, 1282:4, 1282:7, 1282:10, 1282:11, 1285:23
airstrip [23] - 1075:9, 1075:11, 1210:21, 1211:11, 1212:23, 1215:21, 1270:11, 1272:3, 1273:2, 1274:2, 1274:4, 1275:5, 1276:19, 1277:20, 1277:23, 1278:1, 1278:6, 1281:16, 1285:2, 1285:3, 1286:2,

1293:13, 1299:10
airstrips [28] - 1209:3, 1209:12, 1209:23, 1210:2, 1210:4, 1210:13, 1210:16, 1211:4, 1211:5, 1213:16, 1213:18, 1213:23, 1215:18, 1228:16, 1270:4, 1270:9, 1271:21, 1272:6, 1273:5, 1276:17, 1282:9, 1282:13, 1283:15, 1285:4, 1285:18, 1286:7, 1297:22, 1299:6
alarm [2] - 1021:19, 1057:17
alarms [1] - 1217:1
ALBERTA [1] - 1019:1
Alberta [62] - 1019:22, 1020:1, 1020:2, 1024:10, 1033:1, 1049:17, 1049:19, 1051:9, 1052:6, 1052:12, 1064:24, 1089:14, 1090:7, 1095:15, 1097:16, 1120:5, 1143:25, 1145:11, 1162:17, 1170:1, 1174:15, 1175:6, 1175:25, 1178:12, 1178:17, 1178:20, 1178:24, 1184:13, 1193:22, 1197:7, 1198:17, 1198:25, 1206:19, 1222:20, 1222:23, 1223:9, 1223:13, 1227:9, 1228:23, 1230:3, 1230:16, 1231:20, 1235:16, 1235:22, 1236:6, 1239:1, 1239:20, 1244:4, 1244:25, 1247:18, 1252:20, 1252:24, 1252:25, 1253:10, 1253:15, 1254:2, 1257:10, 1267:2, 1272:22, 1295:14, 1298:19, 1303:9
Alberta's [3] - 1175:1, 1196:14, 1222:25
Albertans [1] - 1175:19
align [1] - 1186:17
alleged [1] - 1203:18
allegedly [1] - 1262:24
alleges [1] - 1197:5
allow [6] - 1103:10, 1121:16, 1196:3, 1225:12, 1237:18, 1301:8
allowance [1] - 1199:6
allowed [1] - 1121:3
allows [3] - 1103:9, 1143:17, 1300:18
alluded [1] - 1059:8
almost [5] - 1067:21, 1092:6, 1260:23, 1297:20, 1298:12
aloft [1] - 1279:4
alone [2] - 1127:11, 1250:2
AltaLis [1] - 1064:25

alteration [7] - 1085:11, 1085:17, 1085:20, 1165:6, 1165:8, 1166:23, 1233:1
alterations [1] - 1161:21
alternate [1] - 1020:24
alternative [1] - 1300:3
alternatives [1] - 1198:8
altitude [11] - 1271:16, 1271:17, 1271:19, 1278:21, 1278:23, 1279:6, 1279:11, 1279:14, 1282:17, 1284:19
altitudes [1] - 1279:3
amalgamate [1] - 1154:22
amalgamation [1] - 1095:15
amazed [1] - 1226:16
amazing [1] - 1090:8
ambient [9] - 1032:11, 1032:13, 1032:15, 1032:19, 1032:20, 1033:3, 1183:11, 1187:16, 1187:24
amenable [2] - 1300:1, 1300:7
amendments [4] - 1195:11, 1199:14, 1201:25, 1218:9
America [7] - 1024:6, 1204:8, 1226:24, 1227:10, 1246:18, 1246:24, 1276:8
American [1] - 1246:25
amount [15] - 1033:24, 1035:3, 1043:19, 1049:11, 1060:23, 1142:17, 1176:9, 1176:22, 1186:20, 1199:15, 1200:7, 1221:18, 1257:24, 1264:15
ample [1] - 1264:4
AMSI [1] - 1030:8
analyses [1] - 1062:8
analysis [7] - 1094:25, 1160:25, 1167:4, 1167:7, 1168:14, 1168:20, 1200:15
analyzed [1] - 1135:6
analyzing [1] - 1135:1
Anderson [4] - 1020:10, 1156:3, 1158:10, 1159:2
angle [4] - 1048:21, 1070:19, 1126:10, 1134:13
angles [1] - 1048:17
animate [1] - 1235:6
animated [3] - 1074:1, 1076:18, 1093:4
animating [1] - 1235:8
animation [8] - 1071:8, 1071:19, 1071:23, 1073:21, 1074:6, 1074:9, 1075:20

animations [1] - 1092:10
Annex [1] - 1034:23
annex [1] - 1034:25
annoyance [1] - 1150:12
annual [6] - 1174:17, 1223:1, 1224:5, 1247:9, 1247:15, 1247:16
annually [2] - 1175:1, 1271:6
answer [18] - 1039:19, 1084:22, 1084:24, 1098:12, 1098:14, 1125:8, 1125:19, 1134:25, 1135:8, 1147:4, 1154:1, 1236:11, 1265:19, 1269:8, 1269:22, 1269:23, 1296:13, 1299:21
answered [2] - 1278:8, 1296:21
answering [1] - 1155:24
antelope [1] - 1239:18
anticipated [1] - 1242:17
anxious [1] - 1156:3
apologies [2] - 1129:8, 1273:25
apologize [2] - 1057:16, 1058:3
appealing [1] - 1069:10
appear [9] - 1076:18, 1157:21, 1169:10, 1187:2, 1208:2, 1209:13, 1215:8, 1227:22, 1272:22
appeared [3] - 1045:7, 1064:12, 1258:12
appendices [4] - 1025:3, 1054:9, 1058:21, 1066:20
appendix [1] - 1152:1
Appendix [2] - 1066:21
applicability [1] - 1206:18
applicable [9] - 1177:25, 1178:14, 1180:10, 1195:2, 1198:1, 1207:17, 1207:23, 1211:22, 1224:23
applicant [3] - 1173:21, 1173:25, 1225:1
application [23] - 1066:14, 1086:2, 1089:11, 1096:22, 1167:19, 1167:20, 1173:21, 1174:1, 1176:24, 1178:9, 1180:15, 1186:8, 1202:3, 1206:24, 1217:4, 1218:17, 1225:4, 1227:19, 1228:1, 1228:7, 1261:8, 1284:22, 1299:19
applications [6] - 1051:19, 1082:23, 1165:3, 1198:19, 1230:15, 1263:3

applicators [1] - 1214:25
applied [15] - 1046:20, 1049:4, 1049:11, 1139:5, 1144:17, 1145:5, 1209:25, 1211:4, 1231:19, 1258:21, 1258:25, 1263:7, 1285:4, 1292:25, 1299:15
applied-for [1] - 1231:19
applies [9] - 1131:10, 1131:15, 1144:7, 1169:6, 1198:19, 1220:15, 1288:9, 1288:10, 1292:24
apply [8] - 1049:9, 1064:18, 1143:22, 1196:9, 1196:17, 1236:24, 1286:2, 1292:24
applying [2] - 1049:12, 1180:11
appraise [1] - 1089:5
appreciates [2] - 1191:11, 1221:17
appreciating [1] - 1101:19
approach [22] - 1052:16, 1068:2, 1085:14, 1094:25, 1163:6, 1164:16, 1169:23, 1170:6, 1173:15, 1188:18, 1191:4, 1195:1, 1195:3, 1195:17, 1211:10, 1213:11, 1213:13, 1213:15, 1265:23, 1265:24, 1275:18
approaches [9] - 1162:24, 1163:6, 1163:25, 1169:24, 1170:3, 1185:6, 1188:18, 1271:11, 1278:4
approaching [4] - 1128:5, 1243:8, 1275:19, 1278:17
appropriate [14] - 1040:18, 1047:9, 1131:6, 1183:18, 1186:2, 1187:16, 1192:10, 1196:14, 1207:3, 1234:12, 1259:25, 1263:17, 1264:7, 1301:19
appropriately [2] - 1159:10, 1196:11
appropriateness [1] - 1046:17
approval [12] - 1174:8, 1201:3, 1201:25, 1223:10, 1225:5, 1242:18, 1243:12, 1243:23, 1257:21, 1257:22, 1269:14, 1287:13
approvals [2] - 1180:9, 1287:12
approve [11] - 1152:14, 1175:22, 1176:2, 1206:23, 1211:2, 1225:4, 1269:6, 1287:9, 1287:11, 1287:17, 1293:6

approved [13] - 1042:5, 1199:7, 1200:16, 1203:4, 1227:21, 1228:22, 1230:15, 1230:25, 1231:17, 1246:10, 1284:15, 1299:15, 1299:17
approving [2] - 1287:18, 1287:25
approximation [1] - 1066:13
April [3] - 1025:15, 1030:21
aprons [1] - 1285:18
architects [2] - 1080:9, 1089:4
area [180] - 1025:14, 1029:1, 1029:3, 1030:20, 1033:13, 1033:25, 1037:17, 1040:8, 1042:21, 1043:1, 1044:5, 1050:13, 1050:22, 1057:10, 1057:12, 1062:3, 1086:7, 1090:2, 1090:8, 1094:18, 1094:21, 1096:11, 1101:20, 1104:13, 1109:8, 1110:6, 1110:10, 1110:11, 1110:15, 1110:16, 1110:22, 1111:17, 1113:22, 1113:25, 1114:13, 1114:15, 1114:20, 1115:12, 1115:16, 1115:20, 1116:3, 1116:8, 1118:10, 1118:11, 1122:7, 1124:7, 1124:9, 1126:14, 1126:20, 1131:1, 1131:6, 1131:13, 1131:14, 1131:24, 1134:8, 1135:24, 1145:6, 1147:20, 1149:1, 1155:11, 1160:8, 1165:13, 1165:22, 1165:23, 1166:13, 1168:18, 1176:7, 1177:8, 1178:5, 1184:11, 1186:13, 1186:17, 1187:1, 1187:2, 1187:4, 1188:10, 1188:13, 1189:7, 1189:18, 1189:21, 1193:4, 1193:8, 1194:10, 1194:25, 1196:2, 1196:25, 1197:12, 1200:12, 1202:10, 1203:13, 1203:23, 1204:1, 1204:16, 1204:24, 1205:17, 1207:10, 1208:25, 1209:3, 1210:3, 1211:18, 1211:25, 1214:16, 1215:22, 1217:14, 1221:3, 1226:13, 1226:14, 1227:1, 1227:2, 1227:3, 1227:25, 1231:24, 1232:13, 1232:15, 1232:16, 1233:25, 1234:18, 1239:5, 1239:9, 1239:12, 1239:19, 1240:3, 1240:8, 1240:18, 1240:25,

1241:1, 1241:7, 1241:10, 1241:13, 1241:15, 1241:25, 1242:7, 1243:18, 1246:20, 1246:23, 1247:4, 1247:17, 1247:18, 1247:20, 1247:22, 1248:5, 1248:9, 1248:12, 1249:16, 1250:11, 1250:15, 1251:5, 1253:6, 1253:20, 1255:2, 1258:21, 1258:24, 1259:1, 1259:14, 1260:16, 1261:12, 1263:7, 1263:16, 1263:22, 1264:17, 1264:19, 1264:23, 1267:15, 1268:9, 1270:5, 1274:25, 1282:6, 1282:19, 1283:10, 1283:15, 1283:21, 1284:20, 1289:9, 1291:8, 1294:15, 1294:18, 1294:19, 1297:4, 1298:19
area-wide [1] - 1033:13
areas [38] - 1033:20, 1034:1, 1034:8, 1035:21, 1043:20, 1043:24, 1061:5, 1090:12, 1100:12, 1113:15, 1124:10, 1124:13, 1130:15, 1130:19, 1131:5, 1131:11, 1135:9, 1140:15, 1177:2, 1185:5, 1186:12, 1196:8, 1199:21, 1200:13, 1200:23, 1206:9, 1207:6, 1223:25, 1224:15, 1237:11, 1237:13, 1238:1, 1238:12, 1238:16, 1238:17, 1238:18, 1239:2
Areas [12] - 1090:3, 1100:2, 1100:6, 1100:10, 1165:19, 1193:6, 1217:7, 1218:16, 1222:2, 1224:5, 1226:12, 1287:13
arguably [1] - 1253:9
argue [1] - 1152:18
argued [1] - 1232:2
argues [1] - 1205:13
argument [13] - 1021:23, 1136:18, 1163:13, 1171:18, 1171:23, 1172:4, 1173:20, 1211:21, 1228:10, 1236:1, 1246:13, 1292:22, 1302:10
arise [1] - 1203:6
ARP [1] - 1290:20
arrangement [1] - 1255:17
arrivals [1] - 1211:3
arrived [1] - 1144:16
arriving [1] - 1037:14
arrogant [1] - 1298:2
article [5] - 1080:15, 1080:17, 1080:25, 1234:16, 1234:24
articles [2] - 1180:20, 1249:4

articulated [1] - 1197:9
artificially [1] - 1132:12
AS [2] - 1158:15, 1305:4
ascribed [1] - 1182:9
aside [1] - 1293:9
aspect [2] - 1060:25, 1098:25
aspects [4] - 1162:20, 1162:22, 1196:18, 1237:9
assembled [1] - 1037:21
asserted [1] - 1032:12
assertion [2] - 1205:5, 1244:21
assess [8] - 1030:3, 1089:8, 1179:22, 1182:12, 1188:12, 1193:10, 1195:15, 1203:5
assessed [4] - 1041:20, 1091:12, 1151:3, 1236:6
assessing [4] - 1089:9, 1179:2, 1190:1, 1220:20
assessment [66] - 1024:23, 1027:21, 1041:12, 1054:4, 1060:7, 1082:22, 1089:4, 1089:10, 1089:15, 1093:18, 1093:20, 1097:15, 1098:8, 1098:25, 1106:11, 1106:15, 1107:1, 1108:19, 1108:24, 1109:9, 1109:15, 1109:20, 1109:23, 1110:19, 1111:1, 1112:17, 1113:6, 1114:15, 1114:20, 1115:20, 1118:15, 1118:17, 1118:23, 1119:1, 1130:23, 1139:19, 1151:2, 1153:7, 1156:25, 1157:10, 1160:21, 1161:3, 1163:2, 1163:25, 1164:21, 1165:24, 1177:15, 1182:24, 1188:7, 1188:14, 1192:19, 1195:5, 1207:22, 1212:21, 1213:10, 1222:16, 1232:8, 1233:8, 1234:13, 1258:7, 1258:9, 1259:6, 1259:18, 1260:23, 1261:18, 1268:23
assessments [6] - 1051:12, 1106:4, 1159:21, 1194:25, 1232:7, 1233:12
assign [1] - 1131:5
assignment [1] - 1110:9
assimilation [2] - 1163:24, 1169:24
assist [5] - 1174:24, 1178:21, 1213:2, 1223:6, 1286:17
assisted [2] - 1108:14, 1113:7
associated [15] - 1178:10, 1179:3,

1187:7, 1191:12, 1199:18, 1200:7, 1200:25, 1204:7, 1205:24, 1213:12, 1213:15, 1215:2, 1222:4, 1254:5, 1264:10
Association [3] - 1024:8, 1052:15, 1052:19
association [1] - 1053:3
assume [5] - 1049:16, 1105:25, 1118:2, 1266:9, 1278:5
assumed [5] - 1032:14, 1036:19, 1105:12, 1107:20, 1172:4
assumes [3] - 1134:14, 1145:25, 1146:4
assuming [6] - 1027:12, 1031:2, 1047:1, 1072:11, 1073:5, 1204:23
assumption [3] - 1077:10, 1146:24, 1266:21
assumptions [3] - 1095:8, 1106:9, 1106:17
assurance [1] - 1142:5
assurances [1] - 1245:17
assure [2] - 1210:18, 1216:4
assured [1] - 1036:7
AT [4] - 1020:18, 1172:22, 1173:5, 1302:23
atmosphere [1] - 1151:20
atmospheric [32] - 1029:4, 1042:9, 1042:11, 1042:12, 1042:21, 1042:25, 1044:3, 1117:24, 1118:7, 1118:8, 1137:19, 1137:20, 1137:23, 1140:5, 1143:11, 1143:17, 1144:4, 1144:12, 1146:19, 1146:25, 1147:13, 1147:19, 1147:24, 1147:25, 1151:15, 1153:8, 1183:22, 1259:12, 1260:8, 1267:13, 1267:17, 1268:15
attempt [1] - 1237:24
attempted [2] - 1249:2, 1264:8
attempts [1] - 1253:22
attention [5] - 1184:6, 1207:13, 1287:23, 1292:20, 1296:6
attenuating [1] - 1125:24
attenuation [24] - 1034:14, 1034:16, 1034:19, 1034:20, 1035:3, 1035:8, 1048:11, 1048:13, 1125:11, 1125:23, 1126:2, 1129:10,

1130:3, 1130:17, 1130:19, 1130:24, 1131:14, 1132:17, 1135:23, 1135:24, 1145:21, 1184:7, 1186:1, 1264:15
attest [1] - 1181:16
attitude [1] - 1298:2
attraction [2] - 1083:17, 1232:14
attribute [1] - 1130:1
attributes [1] - 1091:12
AUC [29] - 1024:12, 1039:19, 1042:5, 1071:19, 1071:22, 1105:5, 1108:16, 1156:16, 1156:19, 1174:4, 1177:19, 1180:4, 1181:18, 1184:14, 1206:18, 1227:21, 1228:2, 1236:13, 1236:14, 1236:17, 1261:8, 1262:1, 1263:14, 1268:21, 1269:13, 1271:5, 1287:8, 1287:16, 1305:1
AUC-approved [1] - 1042:5
audibility [4] - 1150:1, 1150:4, 1150:6, 1150:19
audible [2] - 1150:12, 1150:15
authored [5] - 1106:18, 1107:20, 1107:23, 1108:9, 1108:10
authorities [1] - 1287:7
authority [1] - 1195:2
authorizations [3] - 1198:20, 1198:23, 1198:24
automatically [1] - 1065:5
available [12] - 1040:9, 1040:10, 1060:23, 1095:20, 1206:14, 1216:6, 1217:11, 1218:4, 1218:20, 1221:18, 1266:18
Avenue [1] - 1020:2
average [21] - 1036:14, 1040:17, 1080:11, 1080:13, 1083:14, 1088:20, 1089:2, 1138:20, 1143:20, 1143:21, 1143:22, 1145:3, 1145:5, 1145:7, 1153:18, 1153:24, 1154:22, 1202:19, 1247:24, 1263:16, 1271:6
averaging [1] - 1153:22
Aviation [2] - 1272:22, 1286:11
aviation [12] - 1075:17, 1177:10, 1178:2, 1209:5, 1215:5, 1228:15, 1270:3, 1283:2, 1292:6, 1292:22, 1293:1, 1294:9
avoid [8] - 1197:5,

1197:15, 1199:5, 1203:22, 1237:19, 1249:7, 1249:16, 1253:19
avoidance [13] - 1197:10, 1204:24, 1205:6, 1205:7, 1205:11, 1205:19, 1237:24, 1248:20, 1248:21, 1249:25, 1250:7, 1253:16, 1253:21
avoided [6] - 1101:3, 1197:21, 1237:22, 1244:12, 1250:12, 1298:25
avoiding [4] - 1177:20, 1239:2, 1242:7, 1250:15
avoids [1] - 1224:20
aware [4] - 1166:1, 1184:9, 1199:20, 1214:17

B

b) [1] - 1124:5
backdrop [1] - 1091:25
background [7] - 1059:21, 1159:23, 1160:24, 1189:6, 1190:18, 1233:19, 1234:1
backyard [1] - 1040:4
baked [2] - 1044:2, 1267:19
baked-in [1] - 1267:19
Bakker [1] - 1020:13
balance [5] - 1088:5, 1088:18, 1090:8, 1179:22, 1256:3
bald [1] - 1296:11
bald-faced [1] - 1296:11
Baldasaro [3] - 1020:14, 1225:23, 1229:12
Ball [3] - 1020:16, 1303:17, 1303:18
balloon [1] - 1048:5
band [1] - 1125:17
bands [1] - 1125:16
bankrupt [1] - 1255:7
bankruptcy [2] - 1257:2, 1257:5
bar [1] - 1074:16
bare [5] - 1067:7, 1067:8, 1069:9, 1294:1
barely [1] - 1150:12
barren [1] - 1069:8
barrier [9] - 1034:18, 1203:21, 1204:3, 1204:6, 1204:12, 1249:11, 1249:14, 1278:19, 1280:19
barriers [1] - 1034:13
Barry [1] - 1215:23
bars [1] - 1067:22
base [2] - 1076:14, 1254:21
based [25] - 1040:9, 1043:6, 1044:2, 1047:4, 1047:11, 1128:6, 1139:19, 1140:19, 1140:20,

1143:9, 1143:23, 1148:25, 1163:20, 1177:15, 1182:15, 1189:25, 1194:1, 1204:4, 1211:21, 1215:10, 1232:13, 1238:4, 1270:1, 1271:7, 1289:15
baseline [3] - 1196:21, 1242:15, 1244:15
basic [3] - 1249:7, 1273:5, 1274:20
basins [2] - 1250:4, 1250:9
basis [12] - 1042:23, 1087:4, 1095:1, 1167:20, 1181:4, 1189:24, 1198:10, 1204:20, 1221:4, 1247:15, 1250:14, 1270:18
bat [10] - 1176:21, 1202:18, 1202:19, 1202:21, 1202:22, 1202:24, 1203:2, 1203:6, 1240:10, 1243:5
bats [5] - 1176:19, 1201:16, 1207:8, 1241:4, 1298:8
Bay [1] - 1208:17
Baytex [2] - 1036:12, 1265:13
BC [13] - 1051:9, 1051:16, 1060:22, 1063:5, 1095:15, 1097:18, 1098:18, 1100:24, 1162:17, 1163:7, 1165:24, 1166:2, 1170:4
Bear [4] - 1034:4, 1230:21, 1261:10, 1263:11
bearing [1] - 1207:21
beat [1] - 1163:17
beautiful [2] - 1052:13, 1232:15
beautifully [1] - 1067:8
beauty [1] - 1227:2
become [5] - 1029:23, 1111:6, 1244:6, 1244:9, 1261:2
becomes [4] - 1097:9, 1121:10, 1253:10, 1261:3
becoming [3] - 1047:9, 1213:3, 1286:19
began [2] - 1061:14, 1175:25
begin [8] - 1023:23, 1080:4, 1225:20, 1225:21, 1228:21, 1261:6, 1285:5, 1289:24
beginning [4] - 1194:20, 1251:7, 1289:25, 1292:8
begins [1] - 1292:10
behalf [10] - 1024:22, 1025:21, 1026:13, 1027:20, 1046:15, 1054:3, 1059:1, 1173:20, 1220:22, 1271:22
behind [3] - 1021:11, 1070:25, 1092:5

belief [1] - 1238:9
believes [2] - 1033:18, 1277:21
beloved [1] - 1294:23
below [8] - 1070:1, 1097:10, 1101:25, 1133:16, 1141:6, 1150:19, 1150:22, 1202:22
beneath [2] - 1067:13, 1241:23
beneficial [3] - 1179:23, 1222:16, 1224:24
benefit [2] - 1120:25, 1243:21
benefits [3] - 1175:5, 1221:12, 1224:8
bent [1] - 1091:18
beside [1] - 1092:3
best [16] - 1024:19, 1025:7, 1053:25, 1054:13, 1074:7, 1088:23, 1088:25, 1089:2, 1128:13, 1172:2, 1220:4, 1237:6, 1239:19, 1296:2, 1300:5, 1303:7
best-worst [1] - 1089:2
better [12] - 1029:10, 1031:13, 1059:21, 1083:8, 1086:25, 1122:6, 1130:15, 1137:21, 1164:2, 1220:6, 1230:12, 1242:23
between [58] - 1031:3, 1032:17, 1033:2, 1033:6, 1034:7, 1036:23, 1040:19, 1040:23, 1043:16, 1043:19, 1045:21, 1050:11, 1050:15, 1056:21, 1074:15, 1090:20, 1103:18, 1124:23, 1124:24, 1125:3, 1129:19, 1129:22, 1130:1, 1130:7, 1133:23, 1134:3, 1134:11, 1135:19, 1142:15, 1147:15, 1148:9, 1150:7, 1150:8, 1151:7, 1151:8, 1151:15, 1176:25, 1181:21, 1205:24, 1214:9, 1215:20, 1219:14, 1222:11, 1226:17, 1236:14, 1240:2, 1255:17, 1260:21, 1263:17, 1271:15, 1272:14, 1279:8, 1281:25, 1283:1, 1284:21, 1288:17, 1293:3
beyond [1] - 1102:16
bias [4] - 1087:13, 1088:4, 1233:20, 1234:4
biassed [1] - 1233:16
big [8] - 1060:10, 1061:1, 1084:7, 1154:8, 1160:7, 1228:5, 1288:13
biggest [1] - 1229:25

binding [1] - 1213:6
bins [19] - 1066:5, 1069:11, 1069:12, 1069:13, 1070:5, 1073:23, 1075:1, 1075:10, 1075:11, 1075:13, 1092:23, 1102:12, 1102:15, 1102:16, 1103:10, 1103:23, 1119:21, 1190:10, 1213:24
biogeographic [1] - 1244:7
biologists [1] - 1194:5
biophysical [3] - 1162:7, 1162:20, 1162:22
bird [8] - 1176:20, 1207:5, 1208:18, 1239:22, 1239:25, 1240:4, 1241:19, 1243:5
birds [13] - 1176:19, 1207:8, 1240:18, 1240:24, 1241:4, 1241:12, 1241:22, 1242:7, 1243:18, 1248:22, 1249:11, 1251:21, 1298:8
bit [14] - 1026:4, 1049:14, 1059:21, 1081:10, 1100:21, 1106:14, 1116:8, 1124:5, 1129:24, 1136:11, 1138:12, 1150:10, 1151:5, 1274:1
blade [4] - 1064:15, 1080:2, 1080:11, 1081:20
blades [2] - 1235:6, 1270:13
Blair [1] - 1295:20
blame [2] - 1157:23, 1236:16
blanketed [1] - 1241:11
blend [1] - 1093:3
blending [1] - 1161:1
blind [1] - 1241:13
blindness [1] - 1235:13
BLM [4] - 1090:23, 1091:6, 1091:22, 1162:18
block [2] - 1035:5, 1264:16
blow [1] - 1151:20
blowing [1] - 1154:17
blue [5] - 1038:14, 1079:20, 1079:21, 1129:12
board [1] - 1024:7
Board [8] - 1100:2, 1100:10, 1193:6, 1217:7, 1218:16, 1222:2, 1224:5, 1287:13
bodies [1] - 1039:10
body [5] - 1052:20, 1068:6, 1287:8, 1287:22, 1293:6
boggling [1] - 1082:25
bordering [1] - 1297:20
boreal [1] - 1096:13
borrowed [2] -

1162:17, 1162:23
bothering [1] - 1244:1
bottom [14] - 1055:6, 1056:9, 1067:3, 1067:19, 1072:1, 1102:21, 1111:13, 1111:14, 1112:19, 1119:22, 1142:21, 1263:2, 1274:17, 1291:3
bounce [3] - 1054:25, 1071:1, 1127:3
bound [2] - 1228:19, 1294:12
boundary [4] - 1220:19, 1220:24, 1267:10, 1297:10
box [1] - 1070:4
boxed [1] - 1281:16
boxes [2] - 1069:21, 1069:23
branch [1] - 1236:7
break [20] - 1021:23, 1021:24, 1072:18, 1072:25, 1073:1, 1073:4, 1108:7, 1136:10, 1136:11, 1136:12, 1136:16, 1136:22, 1171:15, 1171:24, 1172:6, 1172:17, 1192:1, 1225:12, 1245:15
breaking [1] - 1156:2
breathtaking [1] - 1090:11
breeding [13] - 1204:15, 1246:23, 1247:10, 1247:17, 1247:19, 1248:2, 1248:4, 1248:6, 1248:15, 1248:24, 1250:17, 1253:4, 1253:7
Brenda [2] - 1303:17, 1303:18
brief [3] - 1061:24, 1093:13, 1178:6
briefly [8] - 1024:1, 1029:7, 1031:8, 1134:17, 1137:16, 1141:24, 1271:22, 1275:12
Brigden [12] - 1069:11, 1104:11, 1152:18, 1226:14, 1231:24, 1267:9, 1271:14, 1271:15, 1278:2, 1279:8, 1294:15, 1295:16
bright [8] - 1038:12, 1070:23, 1070:24, 1078:1, 1078:5, 1092:4, 1092:8, 1192:25
brighter [2] - 1077:6, 1078:5
bring [5] - 1026:4, 1057:1, 1066:6, 1088:6, 1181:2
brings [3] - 1063:18, 1079:13, 1282:19
Britain [1] - 1095:16
British [3] - 1098:9, 1169:25, 1193:5
broad [2] - 1068:13, 1068:14
broader [1] - 1122:11

clarified [2] - 1190:14, 1249:14
clarify [1] - 1077:20
clarifying [1] - 1125:9
Class [52] - 1029:4, 1042:25, 1044:3, 1044:9, 1044:17, 1044:24, 1045:2, 1045:8, 1085:9, 1116:16, 1118:11, 1127:19, 1128:8, 1132:18, 1132:19, 1132:20, 1132:21, 1133:2, 1134:9, 1137:24, 1137:25, 1139:8, 1139:9, 1139:10, 1140:4, 1140:22, 1143:12, 1145:14, 1145:20, 1147:7, 1147:18, 1148:4, 1152:22, 1152:24, 1153:6, 1154:4, 1197:22, 1251:9, 1251:14, 1252:11, 1252:12, 1260:9, 1260:15, 1260:17, 1263:25, 1264:3, 1268:1, 1268:3
class [3] - 1045:13, 1137:16, 1139:13
classes [7] - 1137:10, 1137:11, 1137:23, 1137:24, 1138:7, 1139:5, 1144:15
Classes [2] - 1139:19, 1139:21
classification [1] - 1083:13
classified [1] - 1126:22
clear [25] - 1044:21, 1056:15, 1063:22, 1066:9, 1077:19, 1080:14, 1108:22, 1118:25, 1185:5, 1196:19, 1228:21, 1244:10, 1246:10, 1252:19, 1258:5, 1259:10, 1261:7, 1262:3, 1264:1, 1265:5, 1270:8, 1275:23, 1281:19, 1293:2, 1293:15
clearance [1] - 1282:21
clearing [1] - 1223:20
clearly [17] - 1159:5, 1215:7, 1225:2, 1233:22, 1240:4, 1240:17, 1246:19, 1248:19, 1251:3, 1253:6, 1253:15, 1263:19, 1266:2, 1268:12, 1282:10, 1284:13, 1292:15
Clearview [62] - 1020:14, 1021:22, 1023:4, 1023:19, 1024:22, 1025:18, 1025:21, 1027:20, 1030:10, 1054:3, 1104:24, 1181:7, 1183:1, 1188:2, 1188:5, 1189:7, 1194:8, 1197:4, 1201:23, 1202:7,

1203:19, 1206:20, 1207:19, 1208:1, 1209:4, 1211:15, 1212:6, 1213:22, 1214:19, 1215:24, 1216:9, 1216:14, 1219:24, 1220:17, 1220:23, 1221:2, 1221:8, 1221:11, 1225:24, 1227:13, 1228:6, 1229:4, 1229:23, 1231:21, 1232:5, 1235:15, 1237:8, 1238:22, 1243:22, 1246:9, 1255:12, 1257:20, 1258:11, 1259:17, 1270:4, 1284:11, 1294:14, 1295:18, 1296:16, 1298:10, 1298:14, 1304:6
click [1] - 1071:22
client [3] - 1105:23, 1225:24, 1300:12
clients [5] - 1024:22, 1243:10, 1255:1, 1296:24, 1299:13
clients' [1] - 1261:3
climate [2] - 1174:16, 1222:25
climb [2] - 1279:17, 1280:12
climbing [2] - 1279:18, 1281:15
close [41] - 1035:9, 1035:10, 1035:15, 1039:9, 1039:10, 1057:7, 1063:10, 1064:21, 1066:13, 1080:3, 1083:14, 1083:23, 1087:17, 1091:18, 1092:16, 1127:1, 1141:9, 1149:3, 1151:6, 1152:20, 1152:21, 1160:5, 1160:19, 1168:9, 1171:20, 1194:7, 1197:24, 1207:6, 1207:18, 1222:23, 1226:19, 1238:14, 1257:18, 1274:21, 1280:4, 1280:5, 1293:14, 1294:9, 1297:25, 1299:6, 1299:10
close-in [2] - 1057:7, 1083:14
close-knit [2] - 1226:19, 1297:25
closely [3] - 1057:8, 1074:16, 1176:6
closer [6] - 1026:4, 1048:17, 1067:17, 1083:8, 1084:21, 1135:15
closest [5] - 1055:19, 1055:24, 1187:21, 1250:19, 1251:1
closing [1] - 1226:3
clouds [2] - 1070:25, 1092:7
clumps [1] - 1082:3
Cmet [4] - 1143:7, 1143:14, 1144:20, 1145:11
co [1] - 1200:1
co-locate [1] - 1200:1
coal [3] - 1221:14,

1221:15, 1222:7
coal-fired [1] - 1221:15
Coast [1] - 1090:16
coauthored [1] - 1206:12
cockpit [2] - 1275:25, 1276:5
codes [2] - 1029:21, 1029:23
coefficient [1] - 1184:7
coexist [3] - 1210:21, 1212:22, 1215:21
coexisting [1] - 1177:4
cohesive [1] - 1104:23
coincident [1] - 1177:8
Coleen [1] - 1295:20
collaboratively [1] - 1195:9
colleagues [4] - 1042:3, 1123:10, 1159:12, 1169:10
collection [3] - 1176:14, 1200:1, 1283:19
collective [1] - 1051:25
collector [1] - 1254:6
Collingwood [1] - 1291:19
COLLINS [3] - 1159:15, 1161:11, 1304:10
Collins [2] - 1020:7, 1159:14
collision [1] - 1248:20
collisions [1] - 1176:21
Colorado [1] - 1234:25
colour [8] - 1068:22, 1077:8, 1083:15, 1084:17, 1091:21, 1091:23, 1092:24, 1170:12
Columbia [3] - 1098:10, 1170:1, 1193:5
column [5] - 1056:15, 1115:19, 1262:12, 1274:8
combative [1] - 1298:2
combination [4] - 1033:23, 1168:21, 1169:24, 1188:18
combinations [1] - 1043:17
combined [2] - 1163:6, 1163:9
comfort [3] - 1164:9, 1218:3, 1243:11
comfortable [1] - 1279:22
coming [2] - 1076:23, 1294:17
COMMENCED [1] - 1020:18
commencing [2] - 1201:4, 1217:9
comment [5] - 1049:6, 1050:7, 1150:4, 1151:13, 1270:24

comments [3] - 1027:2, 1059:10, 1208:11
commercial [1] - 1175:24
COMMISSION [1] - 1019:1
Commission [91] - 1020:2, 1020:7, 1020:7, 1020:8, 1020:9, 1020:9, 1020:10, 1020:11, 1020:11, 1025:20, 1028:3, 1044:21, 1046:16, 1093:15, 1105:6, 1106:12, 1108:24, 1119:10, 1120:5, 1120:8, 1136:14, 1147:8, 1152:14, 1152:25, 1155:4, 1159:11, 1165:1, 1167:6, 1169:19, 1174:1, 1175:22, 1176:2, 1176:25, 1178:7, 1178:10, 1178:12, 1178:25, 1179:4, 1179:11, 1179:13, 1179:20, 1179:22, 1180:6, 1181:12, 1181:19, 1182:7, 1182:9, 1182:11, 1182:19, 1184:8, 1184:23, 1185:13, 1185:25, 1192:18, 1199:7, 1199:10, 1199:19, 1201:7, 1205:10, 1205:22, 1206:21, 1209:2, 1210:18, 1211:1, 1215:19, 1220:21, 1221:10, 1221:22, 1225:3, 1225:6, 1228:18, 1231:1, 1232:2, 1235:18, 1236:23, 1240:15, 1243:10, 1255:15, 1256:7, 1261:20, 1263:4, 1274:24, 1276:18, 1287:24, 1293:6, 1294:7, 1298:7, 1298:15, 1299:18, 1300:24
Commission's [7] - 1026:23, 1043:11, 1120:4, 1179:10, 1207:12, 1207:22, 1212:21
commissioned [2] - 1182:23, 1216:6
Commissioner [2] - 1159:13, 1210:24
Commissioners [8] - 1024:1, 1039:15, 1051:5, 1066:22, 1071:17, 1175:7, 1254:21, 1255:18
commitment [5] - 1201:12, 1223:6, 1242:1, 1296:8, 1301:16
commitments [1] - 1257:7
committed [15] - 1180:11, 1187:8, 1199:3, 1199:25, 1200:20, 1214:24, 1216:21, 1217:7, 1217:17, 1217:25, 1218:21, 1222:10,

1224:22, 1241:17, 1254:19
commodity [1] - 1222:6
common [9] - 1030:17, 1089:23, 1109:1, 1214:15, 1237:19, 1239:14, 1240:19, 1261:21, 1290:18
communities [5] - 1089:25, 1220:10, 1244:17, 1295:15, 1296:23
community [41] - 1047:14, 1049:16, 1054:5, 1063:15, 1078:20, 1087:5, 1088:15, 1089:19, 1089:22, 1104:6, 1104:7, 1104:10, 1104:16, 1168:4, 1188:10, 1191:16, 1220:20, 1223:23, 1224:4, 1224:10, 1224:13, 1224:18, 1226:15, 1226:20, 1227:4, 1227:12, 1227:17, 1228:17, 1234:9, 1245:3, 1287:2, 1294:10, 1294:23, 1294:25, 1295:3, 1295:10, 1296:25, 1297:24, 1297:25, 1298:11
company [6] - 1051:14, 1051:22, 1094:3, 1175:13, 1255:10, 1255:18
company's [1] - 1194:24
comparable [4] - 1040:20, 1050:22, 1064:12, 1263:18
compare [8] - 1124:2, 1129:9, 1129:12, 1140:10, 1140:13, 1146:16, 1229:7, 1276:6
compared [4] - 1036:13, 1106:17, 1113:23, 1122:8
comparing [5] - 1050:9, 1050:20, 1067:12, 1132:16, 1144:11
comparison [10] - 1031:3, 1036:11, 1040:23, 1045:16, 1104:1, 1140:8, 1140:13, 1140:21, 1161:8, 1207:2
comparisons [1] - 1139:23
compatibility [5] - 1060:8, 1090:14, 1090:17, 1091:3, 1234:15
compatible [2] - 1060:5, 1177:23
compel [1] - 1219:4
compelling [1] - 1269:19
competing [2] - 1176:25, 1215:20
competitive [1] - 1179:9
complaint [3] - 1041:5, 1041:24, 1267:1

complaints [1] - 1150:3

complete [10] - 1121:10, 1136:13, 1136:23, 1141:16, 1153:7, 1171:17, 1204:3, 1296:11, 1302:14, 1303:5

completed [9] - 1051:21, 1106:11, 1182:24, 1184:18, 1187:5, 1194:10, 1194:17, 1196:21, 1302:9

completely [8] - 1035:5, 1126:15, 1131:3, 1186:19, 1230:10, 1241:13, 1256:22, 1264:16

completing [1] - 1184:3

complex [1] - 1209:6

compliance [10] - 1041:23, 1174:10, 1180:5, 1184:14, 1187:11, 1187:19, 1197:16, 1199:22, 1210:23, 1260:25

compliant [1] - 1041:23

complied [2] - 1207:17, 1268:23

complies [3] - 1177:12, 1207:23, 1269:25

comply [3] - 1183:10, 1185:16, 1197:25

complying [2] - 1177:25, 1218:21

components [1] - 1091:3

composite [2] - 1032:21, 1091:14

comprehensive [1] - 1149:21

compressor [1] - 1187:25

comprise [1] - 1217:24

comprises [1] - 1290:18

compromise [3] - 1252:7, 1252:8, 1288:1

computer [2] - 1171:1, 1191:24

CONCAWE [50] - 1044:16, 1044:24, 1046:18, 1118:3, 1118:8, 1118:13, 1118:22, 1127:16, 1132:18, 1134:1, 1134:4, 1134:5, 1134:12, 1135:8, 1137:9, 1138:7, 1139:6, 1139:7, 1139:18, 1140:10, 1140:15, 1141:2, 1141:8, 1143:3, 1143:6, 1143:9, 1143:18, 1144:5, 1144:7, 1144:8, 1144:10, 1145:14, 1145:20, 1145:22, 1146:8, 1147:6, 1147:7, 1147:12, 1147:15, 1151:1, 1151:24, 1152:22, 1152:24, 1153:6,

1154:4, 1183:24, 1185:21, 1267:22

conceived [1] - 1046:23

concentrations [1] - 1239:14

concept [7] - 1122:15, 1197:10, 1212:13, 1249:21, 1266:4, 1288:19, 1291:8

concern [21] - 1032:5, 1084:12, 1095:2, 1095:3, 1095:4, 1095:5, 1099:17, 1181:15, 1193:9, 1214:2, 1230:2, 1235:20, 1240:21, 1240:22, 1248:20, 1255:1, 1256:17, 1279:18, 1279:24, 1300:14, 1301:5

concerned [4] - 1060:20, 1188:2, 1208:3, 1295:9

concerns [32] - 1029:17, 1031:17, 1105:17, 1175:8, 1189:15, 1190:20, 1200:10, 1201:15, 1203:10, 1207:14, 1207:19, 1211:9, 1214:13, 1215:23, 1216:10, 1216:11, 1216:15, 1220:3, 1221:5, 1221:8, 1221:20, 1221:21, 1221:24, 1222:8, 1227:11, 1229:25, 1232:5, 1233:25, 1243:15, 1256:5, 1257:8, 1281:8

conclude [5] - 1021:25, 1087:6, 1093:1, 1173:13, 1268:18

concluded [6] - 1033:12, 1086:9, 1168:23, 1193:24, 1232:16, 1234:25

CONCLUDED [1] - 1302:25

concludes [4] - 1045:22, 1095:18, 1170:19, 1238:2

concluding [1] - 1293:8

conclusion [12] - 1040:16, 1043:4, 1086:15, 1139:17, 1174:13, 1194:9, 1215:12, 1224:19, 1227:23, 1232:12, 1238:4, 1298:14

conclusions [5] - 1044:1, 1083:12, 1084:23, 1194:11, 1205:2

concrete [1] - 1040:5

condemn [1] - 1089:11

condensed [2] - 1150:10, 1150:14

condition [6] - 1117:24, 1144:2, 1146:6, 1243:11, 1257:21, 1268:15

conditional [2] - 1243:1, 1243:23

conditions [83] - 1028:20, 1029:2, 1029:7, 1032:18, 1033:4, 1040:18, 1041:9, 1042:8, 1042:9, 1042:11, 1042:12, 1042:14, 1042:18, 1042:21, 1043:2, 1044:2, 1044:4, 1044:6, 1045:2, 1045:19, 1047:1, 1047:2, 1047:12, 1047:17, 1048:20, 1070:24, 1118:7, 1118:9, 1123:13, 1132:18, 1134:1, 1137:11, 1137:13, 1138:4, 1138:5, 1138:24, 1140:5, 1140:23, 1140:24, 1141:10, 1143:17, 1143:23, 1144:4, 1144:12, 1145:6, 1145:8, 1146:19, 1147:14, 1147:20, 1147:25, 1148:1, 1151:19, 1153:8, 1153:15, 1153:22, 1155:7, 1155:10, 1155:14, 1155:15, 1155:16, 1167:5, 1169:3, 1169:5, 1183:7, 1183:22, 1186:10, 1193:14, 1210:22, 1245:13, 1256:13, 1259:11, 1259:13, 1260:8, 1260:16, 1263:17, 1267:12, 1267:14, 1267:17, 1267:20, 1268:9, 1280:10

conduct [2] - 1030:18, 1222:10

conducted [18] - 1024:24, 1030:7, 1030:25, 1031:20, 1062:4, 1089:3, 1090:23, 1115:14, 1117:7, 1118:12, 1118:18, 1152:16, 1183:3, 1210:11, 1210:13, 1219:22, 1240:11, 1247:14

conducting [1] - 1036:2

confer [3] - 1159:12, 1225:8, 1237:16

conference [1] - 1151:25

confidence [3] - 1101:13, 1169:19, 1261:25

confident [6] - 1177:16, 1187:5, 1210:14, 1211:8, 1218:19, 1242:16

confidential [1] - 1042:23

confirm [28] - 1024:13, 1024:18, 1025:6, 1025:20, 1025:24, 1026:2, 1026:12, 1026:16, 1026:20, 1032:2, 1044:22, 1053:24, 1054:2, 1054:8, 1054:12, 1058:20, 1058:24, 1059:3, 1065:16, 1099:22,

1105:8, 1107:11, 1110:4, 1110:17, 1113:3, 1187:10, 1198:22, 1204:18

confirmed [2] - 1179:20, 1240:9

conformity [3] - 1085:12, 1085:22, 1233:3

confused [4] - 1056:6, 1157:2, 1158:12, 1159:5

confusion [2] - 1148:17, 1149:8

conjecture [1] - 1205:18

connect [1] - 1126:5

connecting [1] - 1125:20

connection [7] - 1032:17, 1033:2, 1126:2, 1151:15, 1181:22, 1218:17, 1218:18

consciously [3] - 1077:8, 1258:13, 1263:9

consent [1] - 1219:5

consequence [1] - 1212:21

consequently [1] - 1036:25

conservation [3] - 1178:23, 1218:12, 1223:12

conservatism [11] - 1049:7, 1049:15, 1049:25, 1123:22, 1123:23, 1124:1, 1184:20, 1184:25, 1186:16, 1258:15, 1262:22

conservative [26] - 1049:3, 1146:12, 1146:23, 1186:7, 1186:9, 1187:6, 1258:13, 1258:16, 1260:23, 1262:25, 1263:1, 1263:10, 1264:6, 1264:21, 1265:1, 1265:18, 1265:23, 1266:3, 1266:4, 1266:21, 1267:5, 1267:11, 1267:16, 1268:10, 1268:13, 1268:19

consider [11] - 1179:13, 1180:2, 1190:3, 1198:8, 1220:21, 1234:6, 1259:12, 1267:13, 1281:24, 1298:5, 1298:8

considerably [1] - 1300:19

consideration [5] - 1174:11, 1178:8, 1197:20, 1251:2, 1282:8

considerations [3] - 1197:17, 1199:22, 1215:2

considered [11] - 1029:3, 1042:9, 1042:11, 1042:16, 1043:3, 1111:19, 1126:16, 1148:3, 1186:19, 1199:12, 1292:15

considering [5] -

1042:12, 1125:21, 1149:25, 1178:9, 1206:24

considers [1] - 1124:24

consisted [1] - 1207:7

consistent [4] - 1127:5, 1174:16, 1211:16, 1245:12

consistently [4] - 1062:17, 1091:13, 1121:5, 1229:24

consists [1] - 1169:23

conspicuous [1] - 1091:8

constant [2] - 1279:6, 1290:19

constitute [2] - 1181:22, 1288:23

constitutes [3] - 1058:21, 1162:5, 1250:3

constrained [1] - 1068:5

constraint [2] - 1061:6, 1122:15

constraints [4] - 1177:13, 1177:16, 1191:11, 1197:11

construct [2] - 1173:21, 1175:17

constructed [3] - 1102:2, 1184:14, 1271:25

construction [32] - 1050:4, 1152:13, 1152:16, 1167:23, 1179:14, 1187:9, 1187:17, 1194:3, 1194:23, 1195:6, 1198:2, 1198:3, 1201:4, 1201:19, 1202:4, 1203:4, 1217:9, 1222:8, 1222:10, 1223:17, 1241:17, 1242:12, 1242:15, 1242:25, 1243:23, 1245:13, 1246:6, 1266:25, 1269:7, 1269:10, 1269:16, 1269:21

consult [2] - 1214:24, 1222:12

consultant [5] - 1058:12, 1180:19, 1181:3, 1181:8, 1189:3

Consultants [4] - 1023:8, 1030:17, 1183:2, 1259:16

consultation [15] - 1086:24, 1194:7, 1194:22, 1195:1, 1195:23, 1196:14, 1196:20, 1197:24, 1199:1, 1201:21, 1207:18, 1217:5, 1218:25, 1219:20, 1219:23

consulting [2] - 1180:21, 1293:19

consults [1] - 1300:12

consumers [1] - 1223:9

consuming [1] - 1122:4

contact [1] - 1226:9

1092:6, 1190:11
darken [1] - 1069:4
darkened [1] -
1076:5
darker [2] - 1076:6,
1077:11
darkness [1] -
1091:24
dash [1] - 1109:7
data [3] - 1064:17,
1154:16, 1267:22
date [4] - 1215:11,
1217:13, 1242:24,
1292:16
Dated [1] - 1303:9
dated [2] - 1025:13,
1107:2
dating [1] - 1271:8
days [1] - 1172:5
daytime [4] -
1048:23, 1137:11,
1183:7
dB [12] - 1049:4,
1049:6, 1049:13,
1049:18, 1123:17,
1123:21, 1133:23,
1145:10, 1169:7,
1184:23, 1185:18
dBA [30] - 1023:8,
1030:17, 1032:11,
1032:14, 1032:19,
1032:25, 1033:18,
1041:8, 1041:10,
1042:1, 1042:19,
1045:21, 1048:1,
1049:17, 1128:5,
1148:15, 1149:4,
1149:6, 1183:2,
1184:15, 1186:2,
1186:8, 1259:16,
1259:20, 1260:6,
1260:12, 1265:17,
1267:15, 1267:21,
1268:14
DDS [3] - 1027:7,
1037:24, 1044:15
DE [187] - 1023:19,
1024:3, 1024:17,
1024:20, 1025:1,
1025:5, 1025:8,
1025:11, 1025:17,
1025:23, 1026:2,
1026:6, 1026:8,
1026:15, 1026:19,
1026:24, 1027:4,
1027:20, 1028:8,
1028:11, 1029:14,
1029:16, 1031:14,
1031:16, 1038:8,
1039:17, 1040:2,
1044:25, 1045:5,
1045:10, 1045:12,
1045:15, 1046:10,
1046:22, 1048:12,
1049:8, 1049:20,
1050:8, 1105:11,
1105:14, 1105:19,
1106:3, 1106:21,
1107:7, 1107:15,
1107:21, 1107:24,
1108:10, 1108:14,
1108:21, 1109:3,
1109:12, 1109:16,
1109:22, 1109:24,
1110:2, 1110:8,
1110:20, 1111:2,
1111:12, 1111:18,
1111:21, 1111:24,
1112:2, 1112:7,
1112:9, 1112:11,

1112:18, 1112:21,
1113:1, 1113:5,
1113:9, 1113:12,
1113:19, 1114:7,
1114:10, 1114:17,
1114:22, 1114:24,
1115:4, 1115:13,
1115:21, 1116:1,
1116:4, 1116:10,
1116:21, 1117:4,
1117:9, 1117:12,
1117:15, 1117:21,
1118:5, 1118:16,
1118:21, 1118:24,
1119:4, 1122:23,
1123:3, 1123:9,
1123:24, 1124:15,
1124:20, 1125:8,
1125:13, 1125:15,
1126:1, 1127:8,
1127:14, 1127:18,
1127:20, 1127:23,
1128:1, 1128:12,
1128:14, 1128:19,
1128:23, 1129:3,
1129:6, 1129:8,
1129:14, 1129:17,
1129:21, 1129:25,
1130:4, 1130:9,
1130:18, 1130:21,
1131:3, 1131:21,
1132:19, 1132:23,
1132:25, 1133:3,
1133:5, 1133:7,
1133:9, 1133:18,
1133:20, 1133:24,
1134:2, 1134:19,
1134:25, 1135:4,
1135:12, 1136:1,
1137:17, 1138:9,
1139:20, 1140:7,
1140:25, 1141:8,
1141:22, 1141:25,
1142:8, 1142:13,
1142:15, 1143:19,
1144:24, 1145:1,
1145:15, 1145:18,
1145:25, 1146:10,
1146:13, 1147:12,
1147:17, 1148:8,
1148:17, 1149:17,
1150:6, 1150:21,
1151:11, 1151:17,
1152:17, 1152:23,
1153:5, 1153:20,
1154:18, 1154:23,
1155:3, 1155:12,
1155:21, 1167:9,
1167:14, 1168:2,
1304:6, 1304:20
de [58] - 1023:8,
1023:11, 1023:24,
1023:25, 1024:3,
1027:6, 1027:10,
1027:14, 1027:18,
1031:8, 1037:22,
1037:23, 1038:6,
1039:14, 1039:25,
1044:13, 1044:15,
1044:20, 1046:7,
1046:12, 1051:3,
1095:19, 1105:2,
1105:15, 1107:3,
1114:6, 1116:11,
1122:18, 1128:2,
1137:3, 1156:22,
1157:20, 1159:1,
1161:18, 1167:1,
1183:2, 1183:23,
1184:1, 1184:22,

1185:7, 1185:20,
1186:11, 1186:16,
1186:22, 1186:25,
1259:9, 1259:16,
1259:24, 1260:7,
1260:16, 1260:20,
1263:15, 1264:12,
1265:12, 1265:22,
1268:4, 1268:25,
1269:2
deaf [1] - 1227:11
deal [13] - 1022:2,
1049:21, 1182:20,
1184:6, 1220:9,
1228:15, 1255:8,
1257:2, 1279:13,
1284:20, 1296:19,
1301:7, 1301:18
dealing [4] -
1093:24, 1253:20,
1262:7, 1264:18
deals [4] - 1052:20,
1128:8, 1152:12,
1285:16
decades [1] -
1294:18
decibel [4] -
1122:21, 1122:24,
1262:21, 1262:24
decibels [2] -
1129:19, 1262:18
decide [3] - 1155:4,
1185:25, 1287:9
decided [3] -
1122:10, 1219:8,
1296:1
decides [2] -
1076:22, 1152:14
deciding [1] - 1180:2
decision [14] -
1120:8, 1120:9,
1181:13, 1181:20,
1189:23, 1194:12,
1206:22, 1254:22,
1287:16, 1291:24,
1292:11, 1292:14,
1293:19, 1302:21
decisions [2] -
1179:20, 1207:20
deck [1] - 1240:2
declaration [1] -
1105:5
decline [1] - 1242:9
declined [1] -
1042:22
decommission [1] -
1254:8
decommissioned [1]
- 1218:14
decommissioning
[19] - 1217:17,
1217:18, 1217:21,
1217:22, 1218:1,
1218:5, 1218:16,
1218:20, 1218:23,
1228:14, 1254:17,
1255:4, 1255:10,
1256:2, 1256:10,
1256:24, 1257:3,
1257:15, 1257:23
deconstruction [1] -
1217:20
decrease [3] -
1144:23, 1145:1,
1145:24
deemed [2] -
1244:19, 1253:16
deeper [1] - 1266:12
deeply [3] - 1294:25,
1295:9

deer [1] - 1239:20
default [1] - 1253:11
defaulted [1] -
1077:3
defence [1] - 1236:2
define [4] - 1048:16,
1059:17, 1104:10,
1131:4
defined [9] -
1032:20, 1033:1,
1124:21, 1125:1,
1131:13, 1141:8,
1153:10, 1155:14,
1211:25
defines [5] -
1083:10, 1124:7,
1124:9, 1154:18,
1290:3
definitely [4] -
1063:4, 1158:25,
1299:5, 1300:7
definition [8] -
1057:1, 1089:20,
1104:7, 1210:8,
1212:10, 1213:8,
1283:20, 1290:2
degraded [2] -
1244:6, 1248:12
degree [1] - 1184:11
degrees [17] -
1044:10, 1048:15,
1048:16, 1065:2,
1065:4, 1067:20,
1068:4, 1069:18,
1070:1, 1091:16,
1134:7, 1139:3,
1153:10, 1153:11,
1154:7, 1290:21
deliver [1] - 1172:6
Delta [1] - 1242:20
delusional [1] -
1235:12
demand [1] - 1154:2
demonstrate [3] -
1185:15, 1188:8,
1207:2
demonstrated [5] -
1033:5, 1043:22,
1050:20, 1141:19,
1265:12
demonstrates [3] -
1174:7, 1208:25,
1265:22
demonstrating [1] -
1180:22
denied [1] - 1228:7
dense [3] - 1035:4,
1035:15, 1264:16
densities [2] -
1247:19, 1248:2
density [4] -
1247:17, 1247:21,
1247:22, 1248:5
deny [6] - 1241:2,
1298:21, 1298:23,
1299:2, 1299:5,
1299:18
departing [1] -
1281:5
departure [1] -
1211:11
departures [1] -
1211:3
dependent [2] -
1137:19, 1258:10
depict [3] - 1101:22,
1189:1, 1193:1
depicted [3] -
1189:5, 1190:4,
1290:24

depicting [1] -
1191:21
depiction [2] -
1102:19, 1190:13
depressions [1] -
1252:3
deputy [1] - 1217:6
derived [2] - 1083:1,
1204:19
descent [2] -
1271:13, 1284:18
describe [2] -
1092:12, 1140:23
described [18] -
1056:12, 1065:17,
1097:2, 1126:25,
1141:1, 1176:4,
1189:9, 1191:25,
1192:11, 1192:25,
1194:15, 1194:18,
1195:8, 1210:1,
1212:24, 1225:1,
1239:19
describes [1] -
1204:24
describing [2] -
1051:5, 1097:5
deserves [1] -
1090:10
design [7] - 1060:7,
1086:24, 1195:22,
1197:21, 1215:17,
1224:19, 1269:24
Design [2] - 1188:6,
1232:6
designation [1] -
1237:15
designed [10] -
1085:12, 1177:17,
1178:3, 1194:6,
1197:23, 1200:12,
1210:21, 1213:2,
1219:1, 1286:17
designing [1] -
1177:12
desirable [1] -
1278:21
desktop [1] - 1236:8
despite [5] - 1079:1,
1100:9, 1240:16,
1244:10, 1250:20
destroying [1] -
1208:16
detail [5] - 1024:15,
1053:15, 1103:22,
1174:13, 1194:19
detailed [1] -
1198:20
details [1] - 1241:18
detect [1] - 1243:7
detected [1] -
1240:17
detection [4] -
1196:1, 1203:3,
1217:10, 1243:3
detector [2] -
1202:20, 1202:21
determination [4] -
1060:22, 1179:21,
1195:20, 1198:16
determine [9] -
1060:16, 1154:16,
1155:6, 1187:19,
1196:10, 1204:20,
1242:8, 1242:12,
1268:23
determined [7] -
1050:3, 1054:15,
1082:24, 1086:6,
1185:23, 1198:12,

1241:19
detriment [1] - 1287:2
develop [6] - 1051:11, 1176:1, 1191:7, 1201:2, 1218:15, 1283:14
developed [5] - 1052:14, 1096:8, 1096:10, 1114:25, 1219:16
developer [2] - 1175:11, 1195:4
developers [2] - 1180:23, 1180:24
developing [1] - 1217:7
development [22] - 1100:12, 1165:17, 1165:21, 1174:15, 1178:16, 1178:19, 1178:23, 1179:7, 1179:8, 1191:22, 1194:21, 1196:16, 1197:13, 1199:11, 1218:17, 1222:19, 1224:1, 1237:7, 1287:10, 1287:18, 1287:25, 1293:7
Development [1] - 1023:12
developments [5] - 1096:16, 1098:9, 1193:19, 1204:6, 1204:7
device [1] - 1242:22
DG [1] - 1137:12
diameter [9] - 1050:17, 1196:1, 1228:24, 1230:18, 1230:22, 1231:1, 1231:6, 1231:10, 1231:13
dictated [1] - 1199:21
differ [3] - 1033:6, 1043:17, 1047:13
difference [15] - 1037:19, 1129:18, 1130:7, 1134:11, 1135:13, 1135:16, 1148:9, 1150:7, 1150:8, 1151:12, 1152:4, 1160:23, 1281:24, 1281:25, 1282:25
differences [11] - 1121:17, 1123:17, 1130:1, 1130:6, 1134:2, 1135:7, 1135:17, 1142:15, 1152:7, 1152:8, 1221:17
different [46] - 1032:21, 1033:21, 1037:16, 1037:18, 1040:6, 1043:16, 1047:21, 1063:23, 1065:6, 1070:24, 1076:3, 1129:4, 1138:24, 1141:11, 1141:15, 1142:19, 1144:14, 1151:12, 1153:9, 1153:25, 1162:24, 1163:1, 1170:5, 1170:8, 1170:16, 1173:14, 1185:6, 1188:19, 1196:17, 1212:10, 1220:10, 1221:18,

1228:1, 1234:24, 1240:11, 1240:18, 1251:21, 1260:20, 1268:16, 1268:20, 1272:15, 1281:3, 1286:13, 1292:6, 1300:15
different-sized [1] - 1037:16
differently [2] - 1033:22, 1293:22
differs [1] - 1039:13
difficult [2] - 1294:7, 1295:17
difficulty [2] - 1241:22, 1281:15
diligently [1] - 1195:9
dimensional [2] - 1064:11, 1065:12
dimensions [1] - 1288:24
diminish [1] - 1080:4
direct [9] - 1066:22, 1084:4, 1095:19, 1192:21, 1196:10, 1210:24, 1221:18, 1223:18, 1249:14
directed [3] - 1036:2, 1189:11, 1298:7
direction [23] - 1033:5, 1044:10, 1074:18, 1076:10, 1076:22, 1134:6, 1134:8, 1134:12, 1134:13, 1138:16, 1141:17, 1143:11, 1153:7, 1153:10, 1153:11, 1154:17, 1182:8, 1182:17, 1195:12, 1270:17, 1280:17, 1281:5, 1281:17
directional [1] - 1067:20
directions [6] - 1146:1, 1153:9, 1154:21, 1154:23, 1182:7, 1198:25
directive [9] - 1196:9, 1196:17, 1198:1, 1198:8, 1237:5, 1239:1, 1244:25, 1252:25, 1253:1
directly [4] - 1068:15, 1194:20, 1237:25, 1273:3
director [1] - 1217:6
disagree [8] - 1088:10, 1140:21, 1209:6, 1220:14, 1220:16, 1243:5, 1282:20, 1284:8
disagreed [2] - 1249:8, 1276:14
disagreement [2] - 1284:21, 1288:17
disagrees [2] - 1211:15, 1219:23
disappear [1] - 1083:24
disassembled [1] - 1256:19
disbelief [1] - 1297:20
discredit [1] - 1249:3
discretion [2] - 1031:9, 1198:6

discuss [8] - 1029:7, 1057:9, 1134:17, 1174:12, 1180:5, 1214:25, 1218:24, 1281:24
discussed [5] - 1043:6, 1203:16, 1210:7, 1217:19, 1221:7
discussing [1] - 1081:4
discussion [16] - 1049:24, 1068:21, 1069:4, 1116:8, 1122:20, 1138:13, 1151:7, 1180:15, 1193:13, 1193:17, 1196:5, 1201:17, 1207:11, 1220:9, 1291:19, 1292:10
disingenuous [1] - 1230:10
dismal [1] - 1245:23
dismissed [3] - 1181:3, 1181:6, 1232:4
dispersed [1] - 1092:21
displaced [1] - 1204:22
displacement [2] - 1204:7, 1204:13
dispute [1] - 1247:8
disregard [3] - 1203:12, 1235:21, 1235:23
disruptions [1] - 1222:14
distance [28] - 1030:25, 1035:7, 1055:18, 1078:14, 1078:15, 1080:22, 1086:20, 1088:1, 1090:24, 1095:11, 1102:18, 1104:18, 1104:19, 1121:8, 1135:20, 1148:21, 1149:7, 1160:3, 1160:22, 1162:9, 1162:20, 1205:9, 1211:19, 1229:16, 1283:11, 1289:4, 1290:22
distances [4] - 1080:7, 1092:1, 1104:6, 1135:19
Distances [1] - 1081:2
distant [1] - 1063:1
distinction [2] - 1034:7, 1077:17
distinguish [1] - 1249:5
distribution [2] - 1092:14, 1190:10
disturbance [3] - 1176:13, 1200:22, 1245:5
disturbed [4] - 1197:1, 1197:3, 1200:23, 1238:10
ditch [1] - 1191:2
diversification [1] - 1175:5
diversify [1] - 1224:2
diversifying [1] - 1223:7
diversity [3] - 1084:16, 1090:18, 1234:19

divide [1] - 1297:23
divided [1] - 1296:24
dividing [2] - 1227:18, 1295:10
DOCUMENT [4] - 1039:24, 1046:3, 1304:16, 1304:18
Document [1] - 1284:23
document [41] - 1037:23, 1039:16, 1039:22, 1044:16, 1045:24, 1053:6, 1053:11, 1056:7, 1061:15, 1082:12, 1083:10, 1085:4, 1149:9, 1156:16, 1158:13, 1164:13, 1164:20, 1205:9, 1206:12, 1206:14, 1212:2, 1212:14, 1212:25, 1236:14, 1274:6, 1276:21, 1276:22, 1285:10, 1285:16, 1285:20, 1286:3, 1286:16, 1287:5, 1287:6, 1287:19, 1288:3, 1288:7, 1289:16, 1292:16, 1293:5
documents [6] - 1027:6, 1198:9, 1209:8, 1235:15, 1254:1, 1285:6
dominant [5] - 1135:13, 1160:4, 1161:6, 1166:23, 1233:2
dominated [1] - 1136:2
dominating [1] - 1120:17
donated [1] - 1224:14
donations [1] - 1224:18
done [37] - 1039:14, 1051:17, 1058:9, 1071:21, 1071:25, 1073:24, 1077:17, 1085:2, 1085:21, 1088:17, 1089:12, 1108:19, 1108:20, 1108:24, 1117:10, 1120:18, 1127:21, 1163:2, 1163:8, 1163:23, 1167:2, 1167:4, 1167:8, 1172:12, 1181:17, 1193:4, 1210:12, 1220:7, 1229:10, 1233:17, 1259:12, 1261:24, 1269:24, 1284:25, 1294:9, 1301:2
Donna [2] - 1303:13, 1303:14
doors [3] - 1021:11, 1021:15, 1021:16
dot [1] - 1038:9
dotted [1] - 1226:22
double [2] - 1130:22, 1302:3
down [36] - 1021:13, 1021:17, 1028:8, 1038:22, 1056:8, 1070:1, 1071:10, 1086:14, 1086:24, 1088:10, 1094:7, 1094:10, 1113:11,

1124:5, 1137:5, 1138:12, 1151:21, 1166:22, 1229:18, 1262:6, 1262:9, 1273:7, 1273:15, 1273:25, 1274:13, 1276:23, 1284:19, 1285:9, 1285:13, 1289:1, 1289:2, 1291:3, 1292:8, 1297:15, 1303:6
DOWN [1] - 1171:14
downloaded [1] - 1072:15
downplay [1] - 1267:6
downplayed [1] - 1233:22
downtown [1] - 1229:17
downward [1] - 1048:21
downwind [11] - 1036:2, 1047:2, 1047:17, 1134:13, 1134:15, 1144:2, 1146:1, 1146:24, 1183:22, 1183:24, 1281:10
dR [1] - 1052:22
DR [182] - 1051:2, 1051:7, 1052:8, 1052:10, 1053:17, 1053:21, 1054:1, 1054:7, 1054:11, 1054:14, 1054:19, 1054:25, 1055:16, 1056:1, 1056:4, 1056:18, 1056:20, 1056:23, 1057:6, 1057:11, 1057:13, 1058:8, 1058:14, 1058:19, 1058:23, 1059:2, 1059:6, 1059:11, 1059:13, 1059:19, 1059:22, 1061:12, 1061:14, 1064:1, 1064:3, 1064:5, 1064:9, 1065:14, 1065:19, 1066:11, 1066:13, 1066:16, 1066:24, 1067:2, 1067:6, 1067:15, 1067:17, 1068:16, 1068:18, 1068:21, 1068:25, 1069:13, 1069:23, 1069:25, 1070:3, 1070:10, 1070:12, 1070:17, 1071:4, 1071:12, 1071:20, 1071:24, 1072:5, 1072:7, 1072:9, 1072:12, 1072:14, 1073:3, 1074:2, 1074:13, 1074:19, 1074:21, 1075:2, 1075:5, 1075:20, 1076:24, 1077:1, 1077:13, 1077:25, 1078:8, 1078:14, 1079:6, 1079:8, 1079:21, 1079:24, 1080:13, 1080:20, 1081:3, 1081:7, 1081:9, 1081:16, 1081:18, 1082:10, 1082:15, 1082:18, 1082:20, 1083:5, 1083:7, 1086:8,

1086:11, 1086:13, 1086:18, 1087:10, 1087:23, 1088:1, 1088:4, 1088:10, 1089:16, 1089:18, 1093:19, 1094:23, 1096:9, 1096:12, 1096:15, 1096:18, 1096:22, 1097:1, 1097:4, 1097:17, 1097:21, 1098:4, 1098:11, 1098:14, 1098:19, 1099:1, 1099:4, 1099:7, 1099:16, 1099:21, 1099:24, 1100:3, 1100:8, 1100:15, 1100:18, 1101:4, 1101:6, 1101:8, 1101:24, 1102:3, 1102:11, 1102:13, 1102:23, 1103:3, 1103:6, 1103:12, 1103:15, 1103:21, 1104:17, 1119:24, 1120:10, 1120:15, 1120:20, 1120:24, 1121:3, 1121:24, 1122:1, 1122:4, 1122:9, 1122:14, 1159:7, 1159:24, 1160:15, 1160:22, 1161:10, 1161:17, 1161:23, 1162:7, 1162:9, 1162:16, 1163:3, 1163:9, 1163:24, 1164:12, 1165:4, 1165:7, 1170:7, 1170:14, 1170:16, 1171:2, 1171:5, 1171:13, 1305:7

Dr [79] - 1052:18, 1054:22, 1054:23, 1071:13, 1073:19, 1076:16, 1080:24, 1093:14, 1095:17, 1095:20, 1096:5, 1119:17, 1158:17, 1159:16, 1161:15, 1169:17, 1188:12, 1188:14, 1188:22, 1191:5, 1191:8, 1192:19, 1192:20, 1192:24, 1193:2, 1193:9, 1194:15, 1196:2, 1203:19, 1203:20, 1203:24, 1204:4, 1204:9, 1204:11, 1204:14, 1204:18, 1204:20, 1204:21, 1204:24, 1205:1, 1205:2, 1205:4, 1205:7, 1205:8, 1205:12, 1205:13, 1205:17, 1206:1, 1206:4, 1206:11, 1220:13, 1233:13, 1233:15, 1234:7, 1234:19, 1234:22, 1235:7, 1246:22, 1247:2, 1247:6, 1247:9, 1247:19, 1248:1, 1248:7, 1248:18, 1249:2, 1249:3, 1249:4, 1249:8, 1249:9, 1249:13, 1250:1, 1250:21, 1251:4, 1251:6,

1251:7, 1252:13
drafts [1] - 1052:10
dragger [1] - 1280:11
drainage [1] - 1270:14
drained [1] - 1248:12
dramatic [2] - 1227:14, 1262:15
dramatically [1] - 1240:11
draw [4] - 1207:12, 1228:2, 1298:15, 1299:13
drawn [1] - 1034:7
drew [1] - 1038:16
Drew [26] - 1026:18, 1046:14, 1048:25, 1049:25, 1106:8, 1116:7, 1116:25, 1148:11, 1148:12, 1151:8, 1152:12, 1182:25, 1185:2, 1187:13, 1258:8, 1258:14, 1258:19, 1261:15, 1261:16, 1261:23, 1262:1, 1262:19, 1264:8, 1265:4, 1266:23
Drew's [3] - 1034:6, 1035:21, 1130:8
drill [1] - 1266:12
drilled [2] - 1266:16, 1266:19
drive [3] - 1021:6, 1276:7, 1276:8
driven [2] - 1187:25, 1235:19
driving [5] - 1110:15, 1226:16, 1276:2, 1276:7, 1301:16
drop [1] - 1232:25
dropped [1] - 1271:15
drove [2] - 1229:13, 1264:17
dry [4] - 1091:1, 1226:22, 1251:12, 1252:3
Dry [1] - 1240:2
duck [1] - 1250:13
ducks [3] - 1204:1, 1246:24, 1246:25
due [8] - 1028:17, 1035:16, 1040:20, 1147:24, 1180:12, 1256:12, 1291:7, 1302:21
duration [3] - 1084:13, 1243:24, 1246:8
during [62] - 1028:2, 1030:20, 1031:19, 1035:13, 1041:23, 1042:2, 1048:23, 1064:6, 1072:25, 1090:4, 1099:19, 1099:25, 1106:7, 1113:20, 1113:24, 1141:3, 1146:20, 1149:21, 1153:23, 1168:8, 1173:23, 1174:7, 1175:7, 1185:1, 1185:8, 1186:22, 1187:13, 1188:20, 1190:19, 1192:21, 1193:12, 1194:14, 1196:5, 1197:9, 1198:2, 1198:5, 1201:9,

1202:5, 1202:13, 1202:20, 1202:21, 1203:10, 1208:2, 1208:8, 1211:12, 1213:1, 1213:19, 1214:6, 1214:16, 1216:3, 1216:8, 1216:12, 1217:19, 1220:9, 1220:12, 1223:17, 1223:18, 1240:23, 1243:6, 1243:14, 1247:5, 1291:19
dusty [1] - 1226:22
Dutch [1] - 1024:9
duty [1] - 1105:9
dwellings [5] - 1028:25, 1041:3, 1125:25, 1260:3, 1260:5
dynamic [1] - 1150:14

E

eagles [1] - 1239:16
early [3] - 1046:23, 1052:10, 1195:1
earth [2] - 1256:13, 1270:13
ease [1] - 1129:11
easier [1] - 1073:15
easily [3] - 1053:11, 1063:9, 1080:2
East [1] - 1090:16
east [11] - 1021:6, 1057:15, 1065:8, 1067:24, 1068:10, 1079:12, 1229:14, 1240:3, 1270:17, 1274:3, 1278:3
east-west [3] - 1065:8, 1270:17, 1274:3
easy [3] - 1067:9, 1078:20, 1159:4
ecological [2] - 1237:14, 1244:17
economic [8] - 1174:12, 1178:15, 1179:17, 1221:12, 1221:14, 1222:18, 1224:1, 1266:14
economics [2] - 1224:25, 1266:15
edge [1] - 1035:14
edition [11] - 1034:10, 1209:16, 1211:25, 1212:1, 1212:7, 1212:18, 1215:16, 1288:4, 1289:19, 1289:20, 1291:13
EDP [75] - 1019:10, 1020:12, 1025:19, 1026:13, 1027:22, 1028:2, 1031:21, 1042:19, 1045:2, 1046:15, 1046:21, 1055:17, 1055:20, 1056:3, 1056:13, 1056:14, 1059:1, 1062:7, 1062:24, 1064:6, 1070:6, 1071:18, 1073:24, 1074:14, 1096:3, 1105:9, 1229:6, 1230:3, 1230:11, 1230:12, 1230:14, 1233:6, 1235:15,

1236:1, 1236:16, 1237:22, 1238:1, 1239:3, 1239:24, 1240:5, 1240:17, 1241:2, 1241:5, 1241:9, 1241:16, 1241:19, 1241:21, 1242:14, 1243:1, 1243:16, 1243:20, 1244:14, 1244:19, 1245:9, 1246:7, 1250:18, 1252:15, 1253:24, 1255:4, 1255:8, 1255:25, 1256:2, 1256:7, 1256:10, 1257:22, 1260:14, 1269:23, 1270:1, 1271:5, 1274:24, 1276:15, 1285:4, 1293:17, 1293:23, 1296:18
EDP's [7] - 1027:22, 1027:23, 1233:21, 1245:17, 1272:24, 1292:22, 1295:11
EDPR [112] - 1173:21, 1173:25, 1174:5, 1175:12, 1176:12, 1177:1, 1177:11, 1177:16, 1180:8, 1180:11, 1180:19, 1181:7, 1181:17, 1182:23, 1183:3, 1185:24, 1186:15, 1187:5, 1187:8, 1187:14, 1188:1, 1189:6, 1189:10, 1191:11, 1192:15, 1193:24, 1194:19, 1195:2, 1195:13, 1196:9, 1196:13, 1196:24, 1197:5, 1197:10, 1197:14, 1197:19, 1197:22, 1198:17, 1198:22, 1198:24, 1199:2, 1199:8, 1199:12, 1199:14, 1199:22, 1200:4, 1200:12, 1200:18, 1200:20, 1200:25, 1201:9, 1201:18, 1201:22, 1201:24, 1202:1, 1203:1, 1203:3, 1203:12, 1203:17, 1205:12, 1206:25, 1207:17, 1208:6, 1208:24, 1209:25, 1210:12, 1210:18, 1211:3, 1211:8, 1211:20, 1212:19, 1213:21, 1214:4, 1214:14, 1214:17, 1214:24, 1215:4, 1215:14, 1215:17, 1215:23, 1216:3, 1216:6, 1216:11, 1216:15, 1216:21, 1217:5, 1217:13, 1217:17, 1217:20, 1217:25, 1218:7, 1218:10, 1218:15, 1218:19, 1218:25, 1219:3, 1219:10, 1219:13, 1219:16, 1219:22, 1221:7, 1221:17, 1221:22, 1221:23, 1222:1, 1222:2, 1222:8, 1222:15,

1223:19, 1224:12, 1224:19
EDPR's [16] - 1174:1, 1175:8, 1175:10, 1176:4, 1180:5, 1181:2, 1189:3, 1194:4, 1196:2, 1202:8, 1206:11, 1206:24, 1210:14, 1211:13, 1211:15, 1222:10
eerie [1] - 1151:21
effect [20] - 1028:12, 1051:25, 1053:5, 1094:10, 1094:16, 1097:20, 1125:2, 1132:13, 1140:3, 1164:20, 1183:22, 1203:22, 1204:7, 1204:13, 1205:19, 1249:15, 1254:16, 1287:21, 1289:20
effectively [5] - 1199:21, 1253:10, 1287:13, 1287:15, 1289:5
effectiveness [1] - 1081:25
effects [32] - 1028:16, 1029:16, 1030:4, 1041:13, 1065:7, 1087:2, 1098:8, 1160:9, 1161:2, 1174:12, 1177:19, 1178:4, 1179:17, 1179:18, 1180:3, 1188:7, 1192:19, 1193:15, 1203:11, 1216:10, 1224:21, 1224:23, 1225:2, 1228:18, 1236:6, 1237:2, 1238:2, 1238:3, 1238:6, 1294:11, 1298:8, 1298:10
efficient [5] - 1178:15, 1178:18, 1179:7, 1222:19, 1225:21
effort [4] - 1103:25, 1177:11, 1253:19, 1267:15
efforts [3] - 1194:25, 1215:15, 1244:14
egg [1] - 1251:24
eight [6] - 1087:10, 1153:13, 1154:21, 1154:23, 1216:5, 1272:14
eight-hour [1] - 1216:5
either [12] - 1063:1, 1068:6, 1068:13, 1101:1, 1132:9, 1132:14, 1135:14, 1158:18, 1169:24, 1275:22, 1284:17, 1285:3
elected [1] - 1206:12
Electric [3] - 1174:3, 1179:1, 1179:6
electric [8] - 1175:6, 1178:17, 1178:20, 1178:23, 1179:7, 1179:8, 1222:20, 1223:12
Electricity [1] - 1218:8
electricity [8] - 1174:18, 1175:1,

1176:9, 1222:22, 1223:2, 1223:5, 1223:7, 1223:9
element [2] - 1040:11, 1095:9
elements [3] - 1103:16, 1180:2, 1190:23
elevation [1] - 1290:19
eliminate [1] - 1254:18
eliminated [1] - 1243:18
elimination [1] - 1200:19
elk [1] - 1239:17
embedded [1] - 1065:23
embody [1] - 1194:25
emergence [1] - 1251:17
emergency [7] - 1021:9, 1021:10, 1021:17, 1217:6, 1217:8, 1217:10, 1217:15
emissions [2] - 1174:25, 1222:24
emit [1] - 1193:20
emitted [1] - 1183:5
emotional [1] - 1093:24
emphasize [1] - 1191:20
emphasized [1] - 1211:10
emphasizes [1] - 1197:23
employed [1] - 1203:8
employees [1] - 1216:23
employment [3] - 1181:20, 1221:18, 1223:16
empty [1] - 1226:19
emulate [1] - 1091:15
enable [2] - 1195:15, 1217:3
enabled [2] - 1200:6, 1211:3
enabling [3] - 1177:8, 1219:13, 1224:6
encompass [1] - 1116:18
encompassing [2] - 1079:11, 1250:9
encounter [2] - 1113:21, 1115:15
encountered [3] - 1111:4, 1113:24, 1148:14
encounters [2] - 1131:12, 1135:21
encouraged [1] - 1209:18
encroach [1] - 1299:3
end [28] - 1035:12, 1053:9, 1053:10, 1062:11, 1063:18, 1068:13, 1093:6, 1093:8, 1093:12, 1144:5, 1145:4, 1151:6, 1163:12, 1171:18, 1182:5,

1211:7, 1217:18, 1218:4, 1218:20, 1230:6, 1238:4, 1257:16, 1258:4, 1258:15, 1279:23, 1279:24, 1285:3, 1302:11
endeavoured [1] - 1105:12
ended [2] - 1107:17, 1301:1
ends [1] - 1211:5
Energy [2] - 1174:3, 1223:1
energy [31] - 1032:23, 1036:22, 1037:2, 1098:9, 1174:15, 1174:21, 1175:11, 1175:14, 1175:16, 1175:24, 1177:3, 1178:17, 1178:19, 1178:20, 1178:23, 1193:23, 1204:6, 1206:23, 1221:19, 1222:20, 1223:8, 1223:13, 1235:19, 1239:2, 1245:1, 1252:20, 1252:25, 1259:3, 1260:1, 1265:3, 1281:9
energy-related [1] - 1032:23
enforceable [2] - 1209:19, 1213:6
engagement [1] - 1196:10
engineering [1] - 1198:21
Engineering [1] - 1024:9
Engineers [1] - 1024:6
enhanced [1] - 1160:18
Enhancement [1] - 1218:10
enhancement [1] - 1093:10
enlarged [1] - 1069:20
ENLARGEMENT [2] - 1039:24, 1304:16
enlargement [3] - 1037:20, 1039:17, 1039:22
Enlargement [1] - 1038:1
ensure [9] - 1177:13, 1178:3, 1187:8, 1197:16, 1210:3, 1210:15, 1237:6, 1257:17, 1270:14
ensured [2] - 1196:20, 1215:17
ensuring [3] - 1178:22, 1223:11, 1223:22
enter [1] - 1266:12
entered [1] - 1080:19
enterprise [3] - 1142:11, 1142:13, 1142:19
entire [7] - 1167:20, 1203:22, 1258:21, 1259:1, 1263:7, 1263:16, 1293:1
entirely [2] - 1245:17, 1292:23
entities [2] -

1215:13, 1220:5
entitled [2] - 1128:20, 1290:1
entitlement [1] - 1257:3
entity [1] - 1252:14
Environment [2] - 1193:22, 1230:4
environment [12] - 1177:20, 1179:19, 1191:21, 1191:23, 1196:15, 1228:13, 1235:6, 1235:14, 1235:20, 1243:21, 1254:7
Environment's [1] - 1206:22
environmental [31] - 1053:1, 1082:22, 1109:20, 1114:3, 1116:13, 1156:23, 1164:21, 1174:11, 1176:16, 1177:13, 1177:22, 1178:22, 1193:12, 1193:14, 1194:2, 1194:17, 1194:24, 1195:14, 1195:18, 1200:15, 1203:16, 1207:11, 1207:17, 1208:2, 1223:12, 1224:25, 1235:21, 1235:23, 1236:5, 1237:1, 1245:10
Environmental [9] - 1052:15, 1052:19, 1053:4, 1156:11, 1157:6, 1218:10, 1291:23, 1292:9, 1292:12
ENVIRONMENTAL [2] - 1156:14, 1304:22
environmentally [3] - 1237:11, 1237:25, 1238:18
ephemeral [3] - 1115:5, 1116:18, 1251:10
ephemeris [1] - 1077:13
epidemic [1] - 1257:10
equal [4] - 1123:24, 1123:25, 1124:2, 1184:25
equally [1] - 1211:4
equals [1] - 1139:13
equipment [2] - 1123:12, 1217:11
equivalent [3] - 1137:9, 1138:7, 1139:18
equivocal [1] - 1204:13
erecting [2] - 1289:8, 1291:9
erection [1] - 1288:22
errata [1] - 1054:14
error [3] - 1055:9, 1063:6, 1128:24
errors [1] - 1127:11
ESA [1] - 1237:15
ESAs [8] - 1237:12, 1237:13, 1237:19, 1237:20, 1237:22, 1238:2, 1238:11, 1238:14
escrow [5] - 1255:9, 1255:16, 1255:22,

1255:25, 1256:18
especially [1] - 1278:16
essential [2] - 1059:23, 1092:23
essentially [24] - 1045:7, 1046:16, 1048:9, 1073:25, 1074:13, 1075:10, 1076:22, 1101:21, 1112:4, 1117:17, 1119:2, 1126:11, 1170:10, 1232:20, 1236:11, 1248:21, 1254:10, 1269:18, 1287:8, 1287:17, 1293:13, 1295:15, 1295:18, 1300:17
established [7] - 1055:20, 1181:7, 1193:3, 1211:17, 1233:14, 1238:12, 1290:19
establishes [2] - 1210:9, 1288:20
establishing [1] - 1217:25
esthetic [1] - 1093:19
estimated [2] - 1174:19, 1187:23
estimates [3] - 1271:5, 1272:11, 1272:12
et [3] - 1139:3, 1139:6
evaluate [1] - 1196:22
evaluated [1] - 1202:24
evaluating [1] - 1097:20
Evaluation [2] - 1156:11, 1157:7
evaluation [4] - 1109:21, 1114:3, 1116:13, 1156:23
EVALUATION [2] - 1156:14, 1304:23
evaluations [6] - 1194:2, 1194:18, 1195:15, 1195:18, 1203:16, 1245:10
event [13] - 1021:9, 1021:19, 1152:13, 1198:23, 1214:23, 1215:2, 1216:24, 1236:23, 1243:14, 1255:10, 1257:1, 1257:4, 1266:25
everyday [1] - 1226:17
evidence [122] - 1026:1, 1026:13, 1027:2, 1027:24, 1031:24, 1032:9, 1033:9, 1042:17, 1042:24, 1044:8, 1045:1, 1045:17, 1045:18, 1050:7, 1058:21, 1058:25, 1059:10, 1061:22, 1082:13, 1087:9, 1088:7, 1095:19, 1096:4, 1105:6, 1106:1, 1118:3, 1128:17, 1134:8, 1134:9, 1139:25, 1141:2, 1141:12, 1147:17, 1148:4,

1151:23, 1168:23, 1180:13, 1181:1, 1181:9, 1181:10, 1181:15, 1181:16, 1181:24, 1182:10, 1182:16, 1182:20, 1182:21, 1183:1, 1186:11, 1192:21, 1196:19, 1204:12, 1204:21, 1205:21, 1207:1, 1208:8, 1208:24, 1209:2, 1209:7, 1212:6, 1215:4, 1216:14, 1216:16, 1221:9, 1230:2, 1231:4, 1234:4, 1237:23, 1238:19, 1239:6, 1239:7, 1239:12, 1239:21, 1239:25, 1240:6, 1240:9, 1241:10, 1243:4, 1244:3, 1248:18, 1249:2, 1249:14, 1250:1, 1253:18, 1253:21, 1253:22, 1254:16, 1254:21, 1254:23, 1260:14, 1261:7, 1261:9, 1263:21, 1264:1, 1264:5, 1266:23, 1268:2, 1269:4, 1269:5, 1269:19, 1270:2, 1271:13, 1272:24, 1275:23, 1280:25, 1281:22, 1282:15, 1283:4, 1283:18, 1284:12, 1285:6, 1286:12, 1288:3, 1291:19, 1291:21, 1292:6, 1293:10, 1294:13, 1294:16, 1295:11, 1296:19
evidences [1] - 1214:7
evident [6] - 1085:11, 1085:17, 1195:13, 1231:22, 1232:21, 1233:4
evidentiary [2] - 1180:14, 1302:10
evolving [1] - 1196:15
exact [3] - 1076:10, 1077:15, 1259:22
exactly [2] - 1095:7, 1285:6
exaggerate [1] - 1101:1
examination [22] - 1026:18, 1059:5, 1106:7, 1116:7, 1127:10, 1137:2, 1184:1, 1185:20, 1186:23, 1187:13, 1198:6, 1202:13, 1211:12, 1213:1, 1213:20, 1214:6, 1220:13, 1230:14, 1241:22, 1293:16, 1296:18, 1296:22
EXAMINES [6] - 1023:21, 1095:24, 1169:16, 1304:7, 1304:8, 1304:12
examining [2] - 1116:25, 1265:4
example [10] - 1126:18, 1169:3,

1186:18, 1192:24, 1208:11, 1240:10, 1245:4, 1263:9, 1265:6, 1279:6

examples [3] - 1185:2, 1245:25, 1296:20

exceed [3] - 1147:24, 1167:4, 1269:16

exceedance [6] - 1029:25, 1041:18, 1168:13, 1169:2, 1169:7, 1269:9

exceedances [7] - 1133:2, 1260:17, 1260:21, 1268:1, 1268:5, 1268:16, 1268:21

exceeded [10] - 1029:5, 1043:5, 1043:8, 1045:20, 1153:21, 1167:15, 1260:3, 1260:5, 1260:11, 1269:20

exceeding [3] - 1150:1, 1219:20, 1261:4

except [5] - 1099:19, 1113:21, 1140:17, 1209:20, 1222:11

exception [3] - 1129:23, 1187:15, 1284:4

excerpt [6] - 1106:18, 1106:25, 1112:17, 1156:25, 1157:19, 1158:7

EXCERPT [2] - 1158:15, 1305:5

excerpts [2] - 1157:15, 1180:20

excess [2] - 1128:5, 1201:12

excluded [2] - 1190:7, 1259:6

exclusion [6] - 1033:17, 1204:23, 1205:11, 1249:22, 1250:2, 1250:22

exercise [6] - 1153:16, 1154:2, 1154:9, 1154:12, 1260:10, 1269:11

Exhibit [52] - 1024:16, 1025:4, 1025:16, 1030:13, 1039:23, 1046:1, 1046:8, 1053:15, 1054:21, 1066:19, 1070:10, 1070:15, 1071:3, 1071:10, 1079:5, 1080:25, 1081:6, 1081:15, 1083:2, 1083:6, 1099:3, 1101:14, 1106:22, 1109:5, 1112:15, 1118:15, 1119:19, 1124:4, 1128:16, 1137:4, 1138:10, 1142:23, 1149:13, 1156:12, 1156:18, 1158:11, 1162:3, 1229:2, 1232:9, 1235:3, 1259:18, 1259:22, 1262:6, 1273:7, 1285:7, 1285:9, 1286:14, 1288:14, 1289:23, 1290:15, 1291:20

EXHIBIT [14] - 1039:24, 1046:3, 1046:10, 1156:13, 1156:19, 1158:14, 1159:7, 1304:16, 1304:18, 1304:20, 1304:22, 1305:1, 1305:4, 1305:7

exhibit [16] - 1022:12, 1022:13, 1022:14, 1027:8, 1031:11, 1039:22, 1045:25, 1046:7, 1070:9, 1080:19, 1082:10, 1140:9, 1157:17, 1158:18, 1158:24, 1159:5

EXHIBITS [1] - 1304:14

Exhibits [2] - 1054:10, 1232:11

exhibits [4] - 1022:11, 1156:4, 1229:1

exist [6] - 1165:18, 1166:16, 1180:6, 1205:12, 1214:11, 1238:15

existence [3] - 1160:18, 1179:25, 1241:13

existing [14] - 1084:22, 1084:25, 1086:6, 1086:13, 1162:17, 1175:4, 1177:23, 1186:7, 1188:12, 1190:7, 1190:15, 1191:21, 1191:23, 1232:12

exists [5] - 1053:10, 1090:13, 1098:18, 1164:23, 1255:11

exits [2] - 1021:10, 1021:17

expand [1] - 1109:9

expect [1] - 1244:13

expectancy [1] - 1084:8

expected [3] - 1111:6, 1223:15, 1256:18

expects [1] - 1217:20

expediency [1] - 1261:24

experience [10] - 1024:5, 1051:8, 1051:13, 1053:7, 1089:5, 1089:7, 1175:17, 1182:13, 1204:5, 1216:1

experienced [9] - 1041:14, 1085:20, 1087:3, 1175:11, 1189:13, 1189:20, 1191:16, 1201:11, 1215:7

expert [21] - 1100:20, 1101:20, 1141:1, 1180:16, 1181:9, 1181:10, 1181:14, 1181:21, 1181:23, 1182:13, 1182:19, 1183:2, 1205:1, 1239:6, 1269:3, 1269:12, 1282:1, 1282:2, 1282:3, 1291:7

expert's [1] - 1181:16

expertise [5] - 1175:17, 1215:8, 1282:6, 1282:11

experts [10] - 1182:2, 1182:10, 1196:2, 1209:13, 1209:24, 1220:13, 1258:4, 1267:18, 1276:13, 1292:6

explain [8] - 1022:23, 1057:23, 1097:11, 1120:2, 1124:12, 1137:16, 1138:8, 1141:24

explained [3] - 1175:13, 1190:20, 1212:3

explains [1] - 1182:9

explore [3] - 1101:15, 1169:18, 1173:14

exposed [1] - 1234:11

express [2] - 1216:9, 1297:19

expressed [11] - 1099:19, 1189:15, 1201:1, 1203:10, 1207:14, 1210:25, 1211:9, 1219:9, 1229:24, 1233:24, 1279:18

expressly [4] - 1202:15, 1236:15, 1298:7

extend [1] - 1224:10

extended [2] - 1148:13, 1189:20

extending [1] - 1290:20

extends [1] - 1211:19

extensive [1] - 1252:16

extent [14] - 1027:12, 1060:14, 1114:19, 1136:2, 1176:14, 1180:8, 1196:6, 1203:15, 1203:18, 1209:3, 1210:16, 1222:14, 1224:21, 1243:15

extra [2] - 1058:10, 1172:14

extraction [1] - 1177:4

extremely [1] - 1137:12

eyes [2] - 1068:3, 1068:6

F

face [1] - 1295:15

faced [2] - 1165:2, 1296:11

facilities [40] - 1028:13, 1028:14, 1029:16, 1029:19, 1029:21, 1030:7, 1030:22, 1031:18, 1031:22, 1031:25, 1032:1, 1032:23, 1036:3, 1036:17, 1049:10, 1051:18, 1108:12, 1109:9, 1110:5, 1110:10, 1110:12, 1110:13, 1110:23, 1144:12, 1148:7, 1148:14,

1148:22, 1149:9, 1168:22, 1168:24, 1175:14, 1183:12, 1221:19, 1255:3, 1259:3, 1259:5, 1260:1, 1265:3, 1265:11, 1266:1

facility [27] - 1030:14, 1030:15, 1030:24, 1031:1, 1035:25, 1036:14, 1036:23, 1036:25, 1040:25, 1043:21, 1043:23, 1111:3, 1112:9, 1112:12, 1127:2, 1127:3, 1135:11, 1135:23, 1136:2, 1144:14, 1149:1, 1149:6, 1187:21, 1265:14

facing [4] - 1068:10, 1074:22, 1076:11, 1076:20

fact [60] - 1027:9, 1050:1, 1057:21, 1087:21, 1097:19, 1100:9, 1123:6, 1169:23, 1175:23, 1181:17, 1184:17, 1185:7, 1186:4, 1189:17, 1191:5, 1194:9, 1197:1, 1197:4, 1209:25, 1213:19, 1214:8, 1214:10, 1215:12, 1221:19, 1226:19, 1226:22, 1229:4, 1229:9, 1229:25, 1231:15, 1231:20, 1234:3, 1235:10, 1237:23, 1239:24, 1240:16, 1244:7, 1245:14, 1255:15, 1257:9, 1257:22, 1258:18, 1259:5, 1260:23, 1262:22, 1264:20, 1266:1, 1266:6, 1267:9, 1268:3, 1270:20, 1276:10, 1287:4, 1288:7, 1289:11, 1289:16, 1293:11, 1293:17, 1296:22, 1301:16

factor [83] - 1026:22, 1028:1, 1028:21, 1031:3, 1031:6, 1033:8, 1033:11, 1033:13, 1033:14, 1033:15, 1036:1, 1036:13, 1036:14, 1040:12, 1040:17, 1041:2, 1047:21, 1047:25, 1049:1, 1049:3, 1050:18, 1091:20, 1112:8, 1113:2, 1119:6, 1124:23, 1124:25, 1129:10, 1130:3, 1130:17, 1130:20, 1130:25, 1131:6, 1131:9, 1131:15, 1132:2, 1132:3, 1132:6, 1132:9, 1132:17, 1135:23, 1135:24, 1138:20, 1143:9, 1144:3, 1144:21, 1146:22, 1184:7, 1184:9, 1184:12, 1185:3,

1185:4, 1185:10, 1185:14, 1185:18, 1185:22, 1186:1, 1186:6, 1186:12, 1186:23, 1258:18, 1258:20, 1258:25, 1259:25, 1261:6, 1261:14, 1262:2, 1262:4, 1262:21, 1262:23, 1262:25, 1263:4, 1263:6, 1263:16, 1264:7, 1264:25, 1265:11, 1265:14, 1265:16, 1265:20, 1268:15, 1279:12

factor).. [1] - 1034:22

factored [1] - 1195:22

factors [5] - 1028:17, 1085:23, 1125:11, 1125:23, 1155:9

facts [4] - 1203:15, 1270:8, 1273:5, 1274:20

failed [3] - 1197:6, 1239:3, 1241:9

failings [1] - 1207:15

fails [1] - 1205:14

failure [1] - 1267:13

fair [28] - 1084:11, 1105:7, 1106:1, 1113:18, 1122:13, 1123:20, 1129:2, 1129:20, 1131:2, 1131:20, 1132:24, 1132:25, 1133:23, 1133:24, 1135:22, 1151:13, 1153:19, 1160:21, 1162:6, 1163:2, 1163:22, 1181:10, 1222:15, 1225:20, 1249:6, 1300:22, 1301:25, 1302:8

Fairhurst [42] - 1023:12, 1050:25, 1051:3, 1052:18, 1053:12, 1054:22, 1054:23, 1071:13, 1073:19, 1076:16, 1080:24, 1093:14, 1095:17, 1095:20, 1096:5, 1119:17, 1159:16, 1161:15, 1169:17, 1170:25, 1188:5, 1188:12, 1188:14, 1188:22, 1190:14, 1191:5, 1191:8, 1192:19, 1192:20, 1192:24, 1193:2, 1193:9, 1232:6, 1232:19, 1232:22, 1233:13, 1233:15, 1234:2, 1234:7, 1234:19, 1234:22, 1235:7

FAIRHURST [183] - 1023:19, 1051:2, 1051:7, 1052:8, 1052:10, 1052:22, 1053:17, 1053:21, 1054:1, 1054:7, 1054:11, 1054:14, 1054:19, 1054:25, 1055:16, 1056:1, 1056:4, 1056:18, 1056:20, 1056:23, 1057:6, 1057:11, 1057:13, 1058:8,

16

1058:14, 1058:19, 1058:23, 1059:2, 1059:6, 1059:11, 1059:13, 1059:19, 1059:22, 1061:12, 1061:14, 1064:1, 1064:3, 1064:5, 1064:9, 1065:14, 1065:19, 1066:11, 1066:13, 1066:16, 1066:24, 1067:2, 1067:6, 1067:15, 1067:17, 1068:16, 1068:18, 1068:21, 1068:25, 1069:13, 1069:23, 1069:25, 1070:3, 1070:10, 1070:12, 1070:17, 1071:4, 1071:14, 1071:20, 1071:24, 1072:5, 1072:7, 1072:9, 1072:12, 1072:14, 1073:3, 1074:2, 1074:13, 1074:19, 1074:21, 1075:2, 1075:5, 1075:20, 1076:24, 1077:1, 1077:13, 1077:25, 1078:8, 1078:14, 1079:6, 1079:8, 1079:21, 1079:24, 1080:13, 1080:20, 1081:3, 1081:7, 1081:9, 1081:16, 1081:18, 1082:10, 1082:15, 1082:18, 1082:20, 1083:5, 1083:7, 1086:8, 1086:11, 1086:13, 1086:18, 1087:10, 1087:23, 1088:1, 1088:4, 1088:10, 1089:16, 1089:18, 1093:19, 1094:23, 1096:9, 1096:12, 1096:15, 1096:18, 1096:22, 1097:1, 1097:4, 1097:17, 1097:21, 1098:4, 1098:11, 1098:14, 1098:19, 1099:1, 1099:4, 1099:7, 1099:16, 1099:21, 1099:24, 1100:3, 1100:8, 1100:15, 1100:18, 1101:4, 1101:6, 1101:8, 1101:24, 1102:3, 1102:11, 1102:13, 1102:23, 1103:3, 1103:6, 1103:12, 1103:15, 1103:21, 1104:17, 1119:24, 1120:10, 1120:15, 1120:20, 1120:24, 1121:3, 1121:24, 1122:1, 1122:4, 1122:9, 1122:14, 1159:24, 1160:15, 1160:22, 1161:10, 1161:17, 1161:23, 1162:7, 1162:9, 1162:16, 1163:3, 1163:9, 1163:24, 1164:12, 1165:4, 1165:7, 1170:7, 1170:14, 1170:16, 1171:2, 1171:5, 1171:13, 1304:6

Fairhurst's [4] - 1054:22, 1158:17, 1189:23, 1233:8
FAIRHURST'S [2] - 1159:7, 1305:7
fairly [8] - 1063:4, 1063:5, 1067:9, 1087:20, 1164:13, 1258:6, 1263:15, 1280:4
faith [1] - 1156:6
fall [6] - 1202:21, 1202:22, 1238:20, 1239:8, 1241:11, 1247:6
familiar [8] - 1098:10, 1098:13, 1098:18, 1121:18, 1213:3, 1215:9, 1286:19
familiarization [1] - 1062:5
families [4] - 1224:3, 1297:1, 1297:3, 1297:14
family [1] - 1270:6
family's [1] - 1295:7
far [28] - 1021:6, 1026:17, 1032:21, 1033:9, 1046:24, 1053:6, 1067:10, 1076:14, 1079:25, 1080:3, 1092:6, 1102:18, 1128:4, 1136:3, 1150:13, 1150:14, 1160:6, 1165:18, 1175:3, 1201:12, 1227:3, 1229:21, 1232:21, 1257:8, 1273:8, 1288:7
far-fetched [1] - 1257:8
farm [30] - 1024:24, 1032:15, 1034:4, 1042:7, 1050:2, 1050:3, 1054:5, 1065:21, 1086:16, 1092:3, 1092:17, 1165:5, 1165:24, 1173:22, 1173:24, 1174:8, 1207:10, 1230:15, 1232:1, 1233:23, 1246:16, 1249:19, 1261:8, 1263:2, 1271:10, 1295:4, 1298:16, 1299:14
FARM [1] - 1019:10
farm's [1] - 1277:23
farmed [1] - 1252:4
farmers [1] - 1294:24
farmhouses [1] - 1104:12
farming [3] - 1226:14, 1294:15, 1295:7
farms [19] - 1033:10, 1050:1, 1062:9, 1084:1, 1087:16, 1090:15, 1096:21, 1098:22, 1104:21, 1117:19, 1165:3, 1168:9, 1175:4, 1188:16, 1231:17, 1231:20, 1288:2, 1288:6, 1288:8
farthest [1] - 1023:7
fast [1] - 1028:5
faster [1] - 1150:14

fat [1] - 1251:23
fatalities [2] - 1243:5, 1243:13
fatality [3] - 1202:24, 1203:6, 1242:2
father [1] - 1270:12
father's [2] - 1271:4, 1271:7
favourable [1] - 1047:1
feasible [1] - 1199:6
feature [1] - 1060:18
features [11] - 1060:18, 1060:19, 1083:11, 1143:1, 1177:23, 1190:8, 1190:15, 1195:21, 1197:16, 1207:8
federal [2] - 1178:2, 1180:10
feeding [2] - 1248:24, 1250:16
feet [22] - 1229:5, 1270:17, 1271:16, 1271:17, 1271:18, 1272:1, 1279:10, 1282:17, 1282:18, 1282:23, 1282:24, 1282:25, 1283:6, 1283:10, 1283:12, 1283:17, 1283:24, 1284:1, 1284:2, 1284:10, 1284:17
fell [1] - 1130:10
fellow [1] - 1023:13
felt [3] - 1062:7, 1062:10, 1087:4
fence [2] - 1092:17, 1190:10
fences [2] - 1103:10, 1103:24
fescue [4] - 1244:24, 1245:4, 1246:1, 1246:4
fetched [1] - 1257:8
few [18] - 1020:21, 1020:23, 1022:4, 1022:9, 1035:14, 1039:9, 1039:10, 1052:1, 1087:8, 1095:5, 1096:3, 1100:16, 1102:18, 1108:15, 1149:11, 1172:5, 1189:24, 1268:14
fewer [4] - 1087:1, 1095:4, 1176:12
fiddle [3] - 1047:17, 1132:5, 1185:10
fiddling [1] - 1146:21
field [21] - 1025:14, 1030:18, 1030:20, 1031:19, 1035:13, 1042:3, 1062:4, 1064:6, 1065:2, 1097:24, 1099:20, 1099:25, 1108:11, 1111:4, 1113:20, 1113:24, 1115:14, 1121:8, 1132:4, 1168:8
fields [4] - 1077:20, 1085:20, 1085:25, 1239:9
fifth [7] - 1209:16, 1212:1, 1212:6, 1215:16, 1289:19, 1291:13, 1294:24
fifties [1] - 1247:12
figure [6] - 1120:12,

1155:10, 1191:1, 1250:25, 1251:1, 1252:14
Figure [1] - 1081:14
figured [1] - 1115:18
figures [2] - 1204:21, 1252:16
Figures [1] - 1092:14
file [2] - 1226:9, 1269:14
filed [13] - 1042:17, 1072:15, 1106:24, 1107:18, 1132:21, 1134:8, 1147:18, 1174:2, 1189:13, 1201:22, 1206:3, 1216:13, 1260:14
files [1] - 1040:10
fill [2] - 1120:6, 1170:23
final [8] - 1023:3, 1062:21, 1094:17, 1104:2, 1107:18, 1152:11, 1173:20, 1291:18
finally [16] - 1025:18, 1026:20, 1026:25, 1027:25, 1031:16, 1037:3, 1049:24, 1178:21, 1201:8, 1218:15, 1243:22, 1259:11, 1272:24, 1293:16, 1297:9, 1297:16
findings [5] - 1028:11, 1093:2, 1111:7, 1254:15, 1259:19
fine [15] - 1027:16, 1061:8, 1061:9, 1073:17, 1098:23, 1117:6, 1129:1, 1149:10, 1171:3, 1172:13, 1252:5, 1300:8, 1301:22, 1302:6, 1302:18
finish [2] - 1053:18, 1254:7
fire [5] - 1216:24, 1216:25, 1217:1, 1217:5, 1217:15
fire-monitoring [1] - 1216:25
fired [1] - 1221:15
firefighting [1] - 1217:10
firm [2] - 1233:17, 1296:7
firms [1] - 1180:21
first [44] - 1028:12, 1054:24, 1056:24, 1061:2, 1061:16, 1062:3, 1069:15, 1072:12, 1083:17, 1084:1, 1094:14, 1096:5, 1096:6, 1104:17, 1105:4, 1106:22, 1109:6, 1114:25, 1115:16, 1115:24, 1122:19, 1137:17, 1139:6, 1157:3, 1157:16, 1171:23, 1188:15, 1207:13, 1209:13, 1212:24, 1223:4, 1224:14, 1251:15, 1251:17, 1255:14, 1262:17, 1269:24, 1274:8, 1282:19, 1286:15, 1288:22,

1295:24, 1297:6, 1298:24
firstly [3] - 1060:16, 1231:5, 1269:2
Fish [1] - 1247:13
fit [2] - 1086:18, 1250:21
FITCH [39] - 1023:1, 1023:21, 1023:22, 1027:5, 1027:17, 1038:6, 1039:21, 1039:25, 1044:14, 1044:20, 1045:24, 1046:2, 1046:9, 1046:12, 1056:8, 1056:12, 1056:16, 1072:19, 1072:23, 1073:7, 1073:17, 1073:19, 1075:6, 1075:9, 1075:16, 1095:18, 1116:15, 1158:22, 1169:14, 1169:16, 1170:19, 1172:9, 1225:19, 1300:11, 1301:10, 1301:22, 1302:6, 1304:7, 1304:12
Fitch [20] - 1020:14, 1022:2, 1022:24, 1051:2, 1098:16, 1122:20, 1127:9, 1136:15, 1151:8, 1158:19, 1161:25, 1165:25, 1169:13, 1172:8, 1220:12, 1225:12, 1225:14, 1225:18, 1301:20, 1302:4
Fitch's [1] - 1157:16
fits [2] - 1085:22, 1102:6
five [26] - 1045:20, 1057:19, 1057:20, 1058:9, 1067:22, 1072:4, 1072:6, 1072:7, 1072:8, 1076:3, 1167:2, 1167:6, 1167:21, 1167:25, 1169:15, 1227:5, 1234:24, 1238:19, 1239:4, 1242:3, 1256:25, 1260:17, 1268:5, 1272:15, 1292:11, 1301:17
fix [2] - 1192:2, 1269:17
fixed [1] - 1051:24
flag [2] - 1240:13, 1240:14
flash [2] - 1076:1, 1076:2
flashing [1] - 1076:3
flat [1] - 1226:21
flawed [1] - 1236:22
flew [3] - 1271:12, 1276:10, 1282:15
flicker [3] - 1215:25, 1216:2, 1216:6
flies [4] - 1271:9, 1276:9, 1278:2, 1278:3
flight [8] - 1213:25, 1215:8, 1240:24, 1241:1, 1275:16, 1279:7, 1279:12, 1291:5
flights [1] - 1271:6
flip [1] - 1056:21
flocks [2] - 1241:12,

1034:2, 1034:16, 1034:19, 1034:21, 1036:1, 1036:9, 1036:13, 1036:14, 1036:22, 1040:5, 1040:12, 1040:17, 1040:25, 1041:2, 1041:16, 1041:20, 1041:22, 1047:4, 1047:11, 1047:19, 1047:20, 1047:22, 1047:25, 1048:8, 1048:11, 1048:13, 1048:18, 1048:22, 1049:1, 1049:3, 1050:18, 1062:25, 1063:3, 1064:5, 1084:4, 1086:19, 1087:16, 1087:20, 1088:13, 1091:6, 1111:23, 1112:8, 1112:12, 1112:24, 1113:1, 1113:15, 1113:17, 1119:5, 1124:23, 1124:25, 1125:2, 1125:11, 1125:16, 1125:22, 1125:23, 1126:2, 1126:3, 1126:4, 1126:5, 1126:11, 1126:15, 1126:22, 1129:10, 1130:2, 1130:17, 1130:19, 1130:24, 1130:25, 1131:6, 1131:9, 1131:14, 1131:18, 1131:19, 1131:23, 1132:2, 1132:3, 1132:6, 1132:9, 1132:13, 1132:15, 1132:17, 1135:9, 1135:22, 1135:24, 1138:17, 1138:20, 1140:14, 1141:9, 1141:15, 1145:21, 1146:22, 1184:6, 1184:7, 1184:9, 1184:12, 1185:3, 1185:4, 1185:5, 1185:10, 1185:14, 1185:18, 1185:22, 1186:1, 1186:6, 1186:12, 1186:14, 1186:23, 1189:5, 1233:18, 1258:18, 1258:20, 1258:25, 1259:2, 1259:25, 1261:6, 1261:14, 1262:2, 1262:3, 1262:4, 1262:23, 1263:3, 1263:6, 1263:16, 1264:7, 1264:25, 1265:2, 1265:5, 1265:6, 1265:7, 1265:10, 1265:11, 1265:14, 1265:16, 1265:20, 1265:21, 1268:15, 1271:18, 1284:6

ground-based [2] - 1047:4, 1047:11

ground-level [2] - 1041:16, 1041:20

grounds [2] - 1047:20, 1249:5

group [4] - 1147:19, 1164:19, 1225:24, 1229:4

Group [58] - 1020:14, 1021:22,

1023:4, 1023:19, 1024:22, 1025:18, 1025:21, 1027:20, 1030:10, 1054:3, 1104:24, 1181:7, 1188:2, 1188:5, 1189:7, 1194:8, 1197:4, 1201:23, 1202:7, 1203:19, 1206:20, 1207:19, 1208:1, 1209:4, 1211:15, 1213:22, 1214:19, 1215:24, 1216:9, 1219:24, 1220:17, 1220:23, 1221:2, 1221:8, 1221:11, 1225:24, 1227:13, 1228:6, 1229:23, 1231:21, 1232:5, 1235:15, 1237:8, 1238:22, 1243:22, 1246:9, 1255:12, 1257:20, 1258:11, 1259:17, 1270:4, 1284:11, 1294:14, 1295:18, 1296:16, 1298:10, 1298:14, 1304:6

Group's [3] - 1183:1, 1212:6, 1216:14

grouse [5] - 1197:15, 1201:16, 1202:2, 1202:12, 1239:15

growing [1] - 1239:17

growth [1] - 1208:22

guarantee [2] - 1123:2, 1123:7

guess [19] - 1040:12, 1049:7, 1050:5, 1052:18, 1067:21, 1072:21, 1079:22, 1100:4, 1102:7, 1104:8, 1104:14, 1108:6, 1108:7, 1120:21, 1148:10, 1172:9, 1284:7, 1286:15, 1302:9

guidance [19] - 1098:18, 1196:11, 1209:7, 1210:23, 1211:23, 1212:14, 1212:25, 1214:10, 1235:15, 1244:10, 1250:20, 1252:19, 1254:1, 1287:5, 1287:6, 1287:7, 1287:20, 1289:7, 1292:16

guide [2] - 1085:2, 1293:5

guidebook [3] - 1098:9, 1100:23, 1162:18

guided [3] - 1178:10, 1179:9, 1206:21

guideline [3] - 1034:24, 1090:21, 1237:4

guidelines [19] - 1060:13, 1098:1, 1178:1, 1178:2, 1180:1, 1196:7, 1196:17, 1197:8, 1198:7, 1202:14, 1214:5, 1215:9, 1235:23, 1237:3, 1237:5, 1237:9, 1252:20, 1252:22

guiding [2] - 1061:6,

1166:18

Guildford [2] - 1137:24, 1140:4

guy [1] - 1284:14

H

HAAN [185] - 1023:19, 1024:3, 1024:17, 1024:20, 1025:1, 1025:5, 1025:8, 1025:11, 1025:17, 1025:23, 1026:2, 1026:6, 1026:8, 1026:15, 1026:19, 1026:24, 1027:4, 1027:20, 1028:8, 1028:11, 1029:14, 1029:16, 1031:14, 1031:16, 1038:8, 1039:17, 1040:2, 1044:25, 1045:5, 1045:10, 1045:12, 1045:15, 1046:22, 1048:12, 1049:8, 1049:20, 1050:8, 1105:11, 1105:14, 1105:19, 1106:3, 1106:21, 1107:7, 1107:15, 1107:21, 1107:24, 1108:10, 1108:14, 1108:21, 1109:3, 1109:12, 1109:16, 1109:22, 1109:24, 1110:2, 1110:8, 1110:20, 1111:2, 1111:12, 1111:18, 1111:21, 1111:24, 1112:2, 1112:7, 1112:9, 1112:11, 1112:18, 1112:21, 1113:1, 1113:5, 1113:9, 1113:12, 1113:19, 1114:7, 1114:10, 1114:17, 1114:22, 1114:24, 1115:4, 1115:13, 1115:21, 1116:1, 1116:4, 1116:10, 1116:21, 1117:4, 1117:9, 1117:12, 1117:15, 1117:21, 1118:5, 1118:16, 1118:21, 1118:24, 1119:4, 1122:23, 1123:3, 1123:9, 1123:24, 1124:15, 1124:20, 1125:8, 1125:13, 1125:15, 1126:1, 1127:8, 1127:14, 1127:18, 1127:20, 1127:23, 1128:1, 1128:12, 1128:14, 1128:19, 1128:23, 1129:3, 1129:6, 1129:8, 1129:14, 1129:17, 1129:21, 1129:25, 1130:4, 1130:9, 1130:18, 1130:21, 1131:3, 1131:21, 1132:19, 1132:23, 1132:25, 1133:3, 1133:5, 1133:7, 1133:9, 1133:18, 1133:20, 1133:24, 1134:2, 1134:19, 1134:25, 1135:4, 1135:12, 1136:1,

1137:17, 1138:9, 1139:20, 1140:7, 1140:25, 1141:8, 1141:22, 1141:25, 1142:8, 1142:13, 1142:15, 1143:19, 1144:24, 1145:1, 1145:15, 1145:18, 1145:25, 1146:10, 1146:13, 1147:12, 1147:17, 1148:8, 1148:17, 1149:17, 1150:6, 1150:21, 1151:11, 1151:17, 1152:17, 1152:23, 1153:5, 1153:20, 1154:18, 1154:23, 1155:3, 1155:12, 1155:21, 1167:9, 1167:14, 1168:2, 1304:6

Haan [52] - 1023:8, 1023:11, 1023:24, 1023:25, 1024:3, 1027:6, 1027:14, 1027:18, 1031:8, 1037:22, 1037:23, 1038:6, 1039:14, 1039:25, 1044:13, 1044:20, 1046:12, 1051:3, 1095:19, 1105:2, 1105:15, 1107:3, 1114:6, 1116:11, 1122:18, 1128:2, 1137:3, 1156:22, 1157:20, 1161:18, 1167:1, 1183:2, 1184:1, 1184:22, 1185:7, 1185:20, 1186:16, 1186:22, 1186:25, 1259:9, 1259:16, 1259:24, 1260:7, 1260:16, 1260:20, 1263:15, 1264:12, 1265:12, 1265:22, 1268:4, 1268:25, 1269:2

HAAN'S [2] - 1046:10, 1304:20

Haan's [6] - 1027:10, 1044:15, 1046:7, 1159:1, 1183:23, 1186:11

habitat [22] - 1194:1, 1195:17, 1203:25, 1207:6, 1208:16, 1245:6, 1245:7, 1247:10, 1248:10, 1248:15, 1248:22, 1248:24, 1249:17, 1250:3, 1250:5, 1250:6, 1250:10, 1250:11, 1250:16, 1252:23, 1253:2, 1253:7

habitats [3] - 1177:20, 1177:22, 1197:3

half [12] - 1023:10, 1036:20, 1061:21, 1068:6, 1082:5, 1088:19, 1127:2, 1127:5, 1136:8, 1148:25, 1149:7, 1194:21

halfway [1] - 1137:7

Halkirk [6] - 1034:5, 1050:2, 1050:16, 1230:25, 1261:10,

1263:12

hallways [1] - 1021:12

hamlet [1] - 1168:6

hamlets [1] - 1267:8

hand [25] - 1038:10, 1038:24, 1102:17, 1102:21, 1103:1, 1127:25, 1275:22, 1275:23, 1275:24, 1276:1, 1276:4, 1276:7, 1276:9, 1276:11, 1276:16, 1277:2, 1277:3, 1277:8, 1277:14, 1277:15, 1277:22, 1280:17, 1280:20

Handbook [1] - 1034:9

handed [1] - 1156:17

HANDED [2] - 1156:20, 1305:2

handles [1] - 1135:18

handy [2] - 1038:3, 1057:3

hangars [2] - 1272:15, 1272:19

Hank [3] - 1023:8, 1024:3, 1183:2

happy [1] - 1299:21

hard [21] - 1027:12, 1034:1, 1037:9, 1037:17, 1038:2, 1038:14, 1038:20, 1039:2, 1044:17, 1047:20, 1055:5, 1093:22, 1130:3, 1131:1, 1152:24, 1173:8, 1203:24, 1256:22, 1262:10, 1265:5, 1265:10

harder [1] - 1170:17

hardly [3] - 1241:2, 1261:25, 1298:20

hardship [2] - 1090:4, 1243:20

harm [1] - 1243:16

harm's [1] - 1211:1

harmonious [1] - 1083:20

harnessing [1] - 1093:5

Harris [2] - 1034:10, 1126:8

harvesting [1] - 1177:7

hatched [1] - 1246:25

Hatcher [32] - 1209:15, 1210:7, 1211:12, 1213:1, 1213:19, 1214:2, 1214:6, 1215:6, 1215:7, 1270:24, 1275:13, 1275:14, 1275:21, 1276:13, 1276:25, 1277:12, 1277:16, 1277:24, 1278:5, 1278:8, 1280:1, 1280:23, 1282:2, 1282:3, 1282:23, 1283:8, 1284:13, 1284:21, 1288:17, 1293:11, 1293:14

hatcher [1] - 1282:20

Hatcher's [3] - 1281:22, 1283:13, 1284:12

hawks [1] - 1239:16
hazard [2] - 1075:24, 1283:11
head [9] - 1068:6, 1084:5, 1113:23, 1116:6, 1138:19, 1141:3, 1149:3, 1153:12, 1300:24
health [1] - 1177:18
healthy [2] - 1239:17, 1239:18
hear [8] - 1021:21, 1021:24, 1022:21, 1072:5, 1150:11, 1161:21, 1172:16
heard [72] - 1094:24, 1161:24, 1175:8, 1177:2, 1184:22, 1188:20, 1189:1, 1190:2, 1191:5, 1204:4, 1204:14, 1204:17, 1208:8, 1209:2, 1210:4, 1211:24, 1215:23, 1216:9, 1219:7, 1220:12, 1220:17, 1222:8, 1223:14, 1224:11, 1225:25, 1226:24, 1227:5, 1228:1, 1229:3, 1232:9, 1234:2, 1234:22, 1235:7, 1237:3, 1239:8, 1239:19, 1240:14, 1242:10, 1242:19, 1246:16, 1246:22, 1247:6, 1247:9, 1248:1, 1251:3, 1257:9, 1258:18, 1260:13, 1263:21, 1264:12, 1267:18, 1268:4, 1270:3, 1270:6, 1272:16, 1273:3, 1275:13, 1275:14, 1276:6, 1276:9, 1290:6, 1291:18, 1291:22, 1293:10, 1294:13, 1294:16, 1295:1, 1295:5, 1295:17, 1295:20, 1298:20, 1301:12
hearing [31] - 1023:7, 1026:17, 1028:2, 1059:4, 1098:7, 1100:21, 1150:9, 1181:3, 1182:16, 1188:21, 1190:19, 1193:13, 1194:14, 1196:5, 1197:9, 1201:9, 1203:11, 1208:2, 1216:8, 1217:20, 1220:10, 1220:22, 1221:2, 1223:14, 1225:21, 1229:13, 1258:4, 1269:12, 1276:12, 1295:25, 1296:20
Hearing [3] - 1024:1, 1039:15, 1051:4
hearings [3] - 1191:12, 1236:12, 1236:13
heart [1] - 1141:13
heavy [1] - 1165:16
hectares [7] - 1058:1, 1058:2, 1082:5, 1250:3, 1250:4, 1250:8,

1250:9
HEEA [5] - 1174:3, 1178:11, 1178:13, 1178:25, 1223:11
height [61] - 1032:7, 1032:12, 1033:2, 1033:7, 1035:16, 1041:17, 1041:20, 1041:21, 1047:23, 1050:14, 1050:16, 1077:1, 1077:2, 1080:2, 1080:11, 1081:20, 1082:2, 1086:19, 1092:13, 1092:20, 1095:11, 1097:7, 1102:4, 1124:21, 1125:1, 1125:22, 1126:18, 1126:19, 1132:13, 1141:9, 1141:16, 1152:5, 1152:6, 1175:21, 1176:8, 1188:4, 1228:11, 1228:21, 1228:23, 1228:24, 1229:7, 1229:25, 1230:18, 1230:19, 1230:22, 1230:23, 1231:1, 1231:2, 1231:5, 1231:7, 1231:9, 1231:10, 1231:12, 1231:13, 1259:8, 1266:22, 1267:2, 1288:20, 1298:18
heights [3] - 1032:20, 1081:20, 1151:12
hell [1] - 1271:1
help [10] - 1059:20, 1124:16, 1125:11, 1134:22, 1145:24, 1170:25, 1223:10, 1243:7, 1243:13, 1302:14
helped [1] - 1051:10
helpful [19] - 1038:5, 1052:3, 1054:20, 1059:16, 1061:10, 1066:16, 1075:19, 1108:17, 1120:3, 1120:14, 1128:15, 1129:7, 1130:5, 1134:17, 1147:5, 1148:6, 1149:11, 1151:4, 1155:3
helpfully [1] - 1023:9
helping [1] - 1170:23
helps [1] - 1081:10
hence [1] - 1146:21
hereby [1] - 1303:4
heritage [1] - 1177:3
hertz [4] - 1150:16, 1150:23, 1150:24, 1151:1
Hertz [1] - 1295:1
high [45] - 1035:14, 1035:15, 1035:18, 1046:24, 1046:25, 1076:9, 1084:12, 1084:14, 1084:15, 1084:22, 1085:9, 1085:11, 1085:12, 1085:21, 1086:7, 1086:9, 1086:11, 1086:13, 1091:3, 1092:19, 1095:2, 1095:3, 1095:5, 1124:13, 1141:18, 1150:7, 1165:10, 1165:11, 1165:22,

1166:22, 1232:13, 1232:16, 1238:25, 1239:3, 1247:21, 1248:7, 1250:3, 1250:16, 1253:20, 1258:23, 1264:23, 1278:16
high-quality [1] - 1250:16
high-risk [1] - 1238:25
high-tension [1] - 1092:19
higher [15] - 1032:14, 1041:8, 1041:10, 1041:15, 1042:18, 1092:24, 1124:1, 1140:12, 1141:16, 1200:5, 1247:21, 1248:5, 1253:17, 1278:21, 1284:17
highest [8] - 1070:25, 1089:1, 1153:3, 1153:14, 1154:25, 1175:21, 1247:18, 1283:11
highlights [1] - 1062:1
highly [8] - 1204:13, 1223:24, 1246:8, 1248:21, 1258:22, 1259:2, 1265:2, 1265:9
highway [1] - 1095:3
highways [1] - 1213:24
Hills [28] - 1024:24, 1050:3, 1050:18, 1054:5, 1062:3, 1067:7, 1090:3, 1093:10, 1111:16, 1113:25, 1116:9, 1117:2, 1117:11, 1173:22, 1173:24, 1174:8, 1174:23, 1207:10, 1227:14, 1231:15, 1246:16, 1247:3, 1247:18, 1247:22, 1247:25, 1250:2, 1261:19, 1270:5
hills [3] - 1084:8, 1090:18, 1234:18
HILLS [1] - 1019:10
hilly [1] - 1196:1
him.. [1] - 1158:21
hired [1] - 1164:19
history [1] - 1227:4
hit [5] - 1026:10, 1061:25, 1089:20, 1154:5, 1154:8
hmm [12] - 1099:4, 1099:16, 1103:3, 1112:7, 1114:24, 1129:17
hold [1] - 1244:21
holds [1] - 1090:8
holes [1] - 1120:6
hollow [1] - 1245:18
home [3] - 1226:19, 1229:13, 1239:11
homes [1] - 1222:23
homesteading [1] - 1227:7
honest [1] - 1294:21
honing [1] - 1162:19
honour [1] - 1225:22
hope [7] - 1021:3, 1072:1, 1072:14,

1073:2, 1073:3, 1235:17, 1256:20
hopefully [3] - 1071:9, 1159:10, 1172:18
hoping [2] - 1124:12, 1173:8
horizon [1] - 1078:5
horizontal [5] - 1211:19, 1229:19, 1289:4, 1289:21, 1291:14
horizontally [2] - 1284:2, 1290:21
horsepower [1] - 1280:11
hot [2] - 1279:16, 1279:19
hour [3] - 1136:8, 1172:10, 1216:5
hours [8] - 1048:23, 1141:4, 1146:20, 1216:1, 1216:2, 1222:11, 1279:21, 1301:17
house [2] - 1040:4, 1295:24
houses [4] - 1103:24, 1168:10, 1168:17, 1189:10
hub [14] - 1032:7, 1032:12, 1033:6, 1050:16, 1141:9, 1152:5, 1176:8, 1228:23, 1230:17, 1230:22, 1231:1, 1231:5, 1231:9, 1231:12
Hudson [1] - 1208:17
huge [1] - 1279:5
human [5] - 1068:3, 1068:5, 1177:17, 1178:4, 1244:5
humidity [1] - 1139:3
hundred [2] - 1126:20, 1138:18
Hungarian [1] - 1239:15
hunt [1] - 1294:18
hunting [7] - 1177:10, 1208:5, 1208:6, 1208:9, 1208:23, 1208:25, 1239:20
husband [1] - 1296:12
Hydro [1] - 1174:3
hydro [1] - 1178:19
hydrological [1] - 1237:14

I

i.e [3] - 1049:5, 1285:23, 1291:5
ID [2] - 1019:7, 1291:4
idea [4] - 1076:21, 1086:25, 1141:6, 1169:18
identical [9] - 1031:4, 1130:9, 1130:12, 1139:9, 1142:3, 1142:4, 1144:7, 1144:13
identification [9] - 1038:10, 1202:9, 1212:4, 1212:8, 1213:9, 1290:9,

1290:12, 1290:17, 1291:2
identified [24] - 1038:12, 1038:14, 1062:23, 1063:7, 1064:6, 1093:21, 1104:23, 1110:5, 1161:5, 1165:12, 1187:12, 1199:2, 1201:21, 1205:7, 1205:12, 1207:7, 1214:2, 1216:16, 1237:14, 1237:21, 1239:3, 1259:15, 1259:19, 1291:1
identifies [1] - 1193:9
identify [6] - 1031:10, 1201:4, 1212:11, 1213:10, 1220:3, 1285:10
identifying [5] - 1061:3, 1185:2, 1198:14, 1200:13, 1237:20
identity [1] - 1089:24
IEC [2] - 1184:17, 1186:5
ignore [2] - 1237:21, 1262:12
ignored [1] - 1235:15
illumination [3] - 1069:3, 1074:17, 1084:18
illustrate [1] - 1037:19
illustrated [1] - 1036:11
image [5] - 1076:4, 1077:21, 1102:22, 1103:23, 1285:11
images [3] - 1077:3, 1091:20, 1103:24
imagine [3] - 1041:19, 1146:2, 1256:22
immediate [1] - 1217:3
immediately [4] - 1075:10, 1101:25, 1238:24, 1293:12
Impact [2] - 1081:1, 1128:20
impact [105] - 1024:23, 1027:21, 1029:24, 1033:15, 1041:5, 1041:9, 1041:10, 1041:15, 1041:16, 1041:24, 1042:13, 1042:18, 1051:12, 1053:2, 1060:6, 1078:17, 1080:7, 1082:22, 1086:21, 1089:1, 1089:3, 1089:10, 1089:15, 1093:20, 1097:15, 1098:25, 1100:20, 1106:4, 1106:10, 1106:15, 1107:1, 1108:18, 1108:24, 1109:8, 1109:14, 1109:19, 1109:23, 1110:18, 1110:25, 1112:5, 1112:17, 1117:23, 1118:6, 1118:15, 1118:17, 1118:23, 1118:25, 1123:21, 1130:23, 1132:15, 1135:6, 1135:25,

1143:20, 1145:2, 1145:7, 1146:21, 1148:23, 1153:23, 1156:25, 1157:10, 1160:17, 1164:21, 1182:23, 1188:14, 1190:1, 1191:15, 1201:5, 1203:14, 1203:18, 1212:11, 1214:3, 1214:14, 1216:20, 1227:15, 1227:16, 1227:17, 1229:20, 1231:25, 1232:7, 1232:8, 1233:12, 1233:22, 1234:13, 1235:11, 1238:11, 1238:14, 1238:17, 1242:17, 1244:19, 1245:6, 1250:16, 1250:17, 1253:17, 1258:7, 1258:9, 1259:6, 1259:10, 1259:18, 1260:22, 1261:18, 1268:22, 1279:5, 1286:25, 1294:10

impacted [1] - 1209:1

impactful [1] - 1228:5

impacts [40] - 1052:25, 1054:4, 1090:19, 1093:16, 1093:18, 1094:20, 1101:2, 1153:3, 1176:19, 1176:20, 1179:23, 1180:8, 1182:22, 1188:1, 1188:3, 1195:5, 1199:4, 1199:5, 1199:13, 1200:2, 1200:24, 1201:11, 1201:14, 1202:1, 1208:2, 1208:3, 1215:25, 1221:5, 1222:16, 1225:3, 1228:12, 1228:13, 1228:15, 1228:16, 1228:17, 1232:3, 1235:2, 1242:13, 1254:18, 1286:24

impartial [2] - 1181:10, 1181:16

impede [3] - 1277:2, 1277:13, 1277:21

impediment [1] - 1280:22

impetus [1] - 1235:18

impinged [1] - 1253:8

impingements [1] - 1252:17

impinging [1] - 1254:5

implement [1] - 1051:11

implementation [3] - 1036:8, 1243:1, 1243:8

implemented [1] - 1243:12

implications [2] - 1221:15, 1221:20

implied [1] - 1229:6

importance [4] - 1191:20, 1203:12, 1211:10, 1237:15

important [27] - 1041:11, 1062:15,

1080:5, 1100:25, 1176:18, 1180:2, 1190:3, 1193:10, 1193:18, 1199:10, 1201:18, 1207:5, 1208:7, 1209:9, 1213:14, 1220:21, 1244:9, 1246:23, 1248:10, 1248:23, 1251:5, 1251:19, 1252:1, 1252:12, 1253:25, 1257:13, 1293:10

importantly [5] - 1178:21, 1190:17, 1255:24, 1263:4, 1299:14

impose [1] - 1215:13

impossible [2] - 1035:7, 1236:19

impracticable [1] - 1253:16

impressed [1] - 1085:16

improve [1] - 1266:16

in-direct [1] - 1084:4

inability [1] - 1245:2

inaccuracies [1] - 1192:22

inaccurate [2] - 1190:12, 1192:16

inadequate [1] - 1240:17

inappropriate [2] - 1191:14, 1205:13

Inc [2] - 1023:12, 1232:6

incidence [2] - 1048:21, 1126:7

incident [2] - 1126:10, 1126:11

incidents [4] - 1048:14, 1048:16, 1126:4, 1126:6

inclined [1] - 1301:4

include [20] - 1041:11, 1042:1, 1043:15, 1095:1, 1109:9, 1112:5, 1127:16, 1134:3, 1138:20, 1142:18, 1148:21, 1151:1, 1154:6, 1178:14, 1179:6, 1215:15, 1234:12, 1252:12, 1259:9

INCLUDED [2] - 1158:14, 1305:4

included [38] - 1029:1, 1029:20, 1029:23, 1031:18, 1031:25, 1032:6, 1032:11, 1033:19, 1033:25, 1034:3, 1041:3, 1041:5, 1041:6, 1041:7, 1042:6, 1043:25, 1044:7, 1045:16, 1047:5, 1050:13, 1062:10, 1110:13, 1110:18, 1112:11, 1113:15, 1118:7, 1124:10, 1137:13, 1141:12, 1149:1, 1149:9, 1152:19, 1153:9, 1155:16, 1158:7, 1168:24, 1266:2, 1290:7

includes [10] -

1051:12, 1131:19, 1134:5, 1134:6, 1152:3, 1186:13, 1213:7, 1261:9, 1263:25, 1265:6

including [27] - 1026:17, 1028:14, 1047:19, 1058:21, 1059:4, 1080:9, 1087:18, 1123:18, 1165:24, 1166:20, 1176:7, 1183:20, 1184:13, 1185:19, 1195:18, 1198:9, 1202:2, 1204:10, 1209:21, 1210:5, 1213:23, 1216:23, 1217:23, 1223:16, 1252:18, 1259:7, 1264:24

inclusion [3] - 1034:24, 1130:2, 1213:11

income [2] - 1224:3

incompatible [1] - 1093:11

inconsistency [2] - 1077:22, 1293:3

inconsistent [1] - 1170:5

incorporate [3] - 1123:14, 1127:24, 1140:14

incorporated [3] - 1028:24, 1122:22, 1122:25

incorporates [2] - 1142:1, 1142:2

incorporating [2] - 1091:7, 1159:21

incorrect [2] - 1205:13, 1230:11

increase [5] - 1132:12, 1144:23, 1145:23, 1223:7, 1224:5

increased [6] - 1042:13, 1205:23, 1208:10, 1208:15, 1208:18, 1208:24

increases [3] - 1262:14, 1262:18, 1262:23

increasing [1] - 1047:8

increasingly [1] - 1242:21

indeed [16] - 1043:1, 1176:16, 1181:24, 1184:1, 1193:8, 1196:15, 1202:7, 1202:23, 1205:17, 1215:10, 1216:11, 1227:16, 1233:7, 1242:13, 1253:1, 1291:15

independence [4] - 1180:16, 1181:4, 1182:10, 1182:14

independent [8] - 1105:5, 1106:1, 1125:10, 1126:21, 1131:17, 1181:1, 1194:4, 1194:10

indicate [9] - 1045:18, 1099:9, 1099:18, 1107:4, 1110:24, 1111:3, 1115:8, 1183:9, 1214:19

indicated [11] - 1038:9, 1096:20, 1097:14, 1157:10, 1161:19, 1185:22, 1216:1, 1217:4, 1267:24, 1268:14, 1271:8

indicates [12] - 1031:24, 1040:25, 1100:24, 1109:7, 1111:15, 1112:24, 1114:13, 1114:14, 1208:9, 1210:8, 1213:5, 1216:17

indication [3] - 1171:22, 1172:1, 1296:3

individual [9] - 1036:23, 1037:6, 1037:7, 1037:12, 1039:12, 1091:6, 1091:14, 1104:12, 1176:17

individuals [4] - 1099:23, 1189:13, 1220:22, 1221:1

industrial [3] - 1206:7, 1255:3, 1265:7

industrialized [1] - 1085:21

industries [3] - 1061:6, 1221:14, 1222:7

industry [12] - 1036:19, 1148:12, 1162:12, 1163:13, 1164:5, 1175:24, 1179:7, 1182:14, 1188:17, 1188:22, 1191:19, 1257:12

inferring [1] - 1062:14

influence [1] - 1058:15

influenced [1] - 1163:10

information [32] - 1025:19, 1027:23, 1030:2, 1030:10, 1031:20, 1039:19, 1040:9, 1042:20, 1042:22, 1068:11, 1072:15, 1077:12, 1082:14, 1105:8, 1108:15, 1120:9, 1128:6, 1141:5, 1168:11, 1174:6, 1196:22, 1201:22, 1201:23, 1206:17, 1216:17, 1216:19, 1220:4, 1221:24, 1245:20, 1271:4, 1272:11, 1274:9

informational [1] - 1074:25

infrasound [11] - 1149:12, 1149:20, 1149:25, 1150:5, 1150:6, 1150:9, 1150:12, 1150:17, 1150:18, 1150:22

infrastructure [21] - 1160:19, 1175:12, 1177:6, 1177:22, 1177:24, 1178:10, 1179:3, 1197:1, 1197:6, 1197:12, 1198:13, 1198:21, 1199:16, 1199:18,

1200:8, 1200:14, 1202:6, 1202:9, 1217:23, 1219:14, 1224:6

infringement [1] - 1211:14

infringements [1] - 1252:17

inherent [1] - 1034:20

initiated [1] - 1217:5

initiatives [1] - 1224:13

iNoise [6] - 1141:21, 1141:24, 1141:25, 1142:9, 1143:1, 1143:17

input [6] - 1061:4, 1076:21, 1077:9, 1077:12, 1267:21, 1300:6

inputs [4] - 1258:10, 1258:12, 1258:17, 1259:23

insects [1] - 1251:18

insert [2] - 1103:9, 1103:10

inset [1] - 1071:4

insisted [2] - 1088:17, 1089:9

inspected [1] - 1111:4

installation [1] - 1202:16

installed [1] - 1222:21

installs [1] - 1261:25

instance [7] - 1042:7, 1047:19, 1049:10, 1050:10, 1066:5, 1123:18, 1152:6

instances [2] - 1140:12, 1186:15

instead [24] - 1034:19, 1037:1, 1045:8, 1047:21, 1047:25, 1049:1, 1049:3, 1055:14, 1056:1, 1143:6, 1144:3, 1226:3, 1256:2, 1258:19, 1258:22, 1259:1, 1259:25, 1261:6, 1261:23, 1263:7, 1277:3, 1277:9, 1277:15, 1285:2

instills [1] - 1261:25

Institute [1] - 1024:6

instituted [1] - 1108:25

instructed [1] - 1182:3

instrument [6] - 1029:20, 1213:11, 1213:12, 1213:15, 1275:18, 1291:5

insufficiently [1] - 1043:13

intact [1] - 1248:13

integrated [1] - 1231:23

integrates [2] - 1140:3, 1183:21

integrity [12] - 1084:22, 1084:25, 1085:1, 1086:7, 1086:16, 1093:9, 1170:9, 1188:13, 1232:13, 1232:25,

1238:11
intend [2] - 1057:1,
1098:16
intended [8] -
1047:4, 1057:18,
1129:6, 1143:20,
1173:10, 1174:24,
1202:15, 1212:10
intends [1] - 1223:19
intensity [5] -
1165:22, 1166:8,
1166:9, 1166:18
intent [6] - 1153:21,
1189:14, 1211:13,
1216:12, 1219:16,
1219:19
intention [1] -
1093:25
intentions [1] -
1296:5
interaction [1] -
1214:9
interactions [1] -
1178:4
interchangeably [1]
- 1129:2
interconnect [2] -
1063:14, 1173:22
interconnected [1] -
1175:6
interest [23] -
1093:4, 1093:15,
1124:7, 1124:14,
1174:9, 1175:19,
1178:16, 1178:19,
1179:4, 1179:10,
1179:16, 1179:22,
1181:22, 1207:24,
1219:10, 1222:18,
1228:20, 1237:1,
1237:10, 1253:14,
1254:22, 1296:2,
1298:6
interested [5] -
1073:15, 1219:19,
1220:5, 1264:21,
1295:24
interesting [5] -
1068:7, 1261:16,
1262:5, 1262:10,
1262:19
international [4] -
1046:22, 1047:14,
1183:15, 1247:7
internationally [1] -
1183:18
interpretation [4] -
1163:14, 1283:1,
1283:13, 1289:16
interpreted [2] -
1249:9, 1296:14
interrupt [2] -
1031:8, 1080:24
interruption [1] -
1029:9
intervals [1] -
1091:17
intervener [2] -
1105:24, 1236:19
intervener's [1] -
1105:21
interveners [1] -
1105:17
intervening [4] -
1082:1, 1092:16,
1094:8, 1102:24
intimation [1] -
1180:24
introduce [8] -
1022:3, 1022:24,

1023:4, 1023:25,
1051:4, 1123:22,
1123:25, 1184:24
introduces [1] -
1262:21
introduction [1] -
1286:15
inventories [1] -
1060:17
inversion [1] -
1138:1
investigate [1] -
1201:9
investigating [1] -
1200:21
investment [4] -
1223:23, 1223:25,
1224:6, 1224:15
invite [2] - 1173:17,
1225:14
invites [1] - 1298:14
involve [1] - 1153:12
involved [10] -
1024:11, 1051:19,
1080:17, 1105:19,
1105:21, 1107:8,
1108:3, 1108:11,
1224:12
involvement [3] -
1107:17, 1219:1,
1220:2
involves [1] -
1139:14
IR [3] - 1025:25,
1030:14, 1204:21
ironic [1] - 1235:24
irony [1] - 1235:17
IRs [2] - 1025:22,
1113:7
is.. [1] - 1082:11
ISO [81] - 1030:8,
1034:23, 1036:6,
1036:8, 1036:9,
1037:3, 1042:19,
1044:2, 1044:5,
1045:17, 1046:16,
1046:20, 1046:22,
1046:25, 1047:3,
1047:8, 1047:16,
1117:18, 1117:23,
1118:5, 1118:19,
1119:5, 1124:7,
1124:13, 1125:14,
1125:15, 1126:16,
1128:21, 1128:24,
1129:4, 1129:6,
1129:13, 1131:22,
1132:1, 1132:4,
1132:14, 1133:18,
1133:19, 1134:3,
1134:11, 1134:14,
1137:9, 1138:6,
1138:25, 1139:9,
1139:13, 1140:3,
1140:11, 1140:13,
1141:23, 1142:2,
1142:4, 1142:6,
1143:13, 1143:16,
1143:19, 1144:1,
1144:3, 1144:21,
1144:24, 1145:25,
1146:4, 1146:17,
1146:20, 1150:25,
1162:13, 1183:16,
1183:17, 1183:21,
1184:2, 1185:10,
1185:23, 1265:5,
1265:8, 1265:20,
1267:18, 1267:24
issue [17] - 1025:20,

1159:25, 1160:7,
1193:7, 1203:17,
1209:5, 1214:5,
1215:9, 1245:8,
1258:21, 1259:8,
1261:15, 1263:24,
1283:25, 1288:13,
1293:9, 1302:21
issued [6] - 1029:22,
1193:23, 1194:1,
1201:23, 1214:5,
1214:10
issues [8] - 1022:5,
1182:22, 1193:12,
1203:6, 1207:12,
1213:3, 1221:6,
1286:19
issuing [1] - 1182:6
Item [1] - 1112:23
iterations [1] -
1199:17
iterative [1] -
1199:13
itself [6] - 1042:19,
1060:18, 1083:15,
1097:5, 1160:13,
1164:12
IWTs [1] - 1206:6

J

J.P [1] - 1020:8
jacks [1] - 1092:20
jaded [1] - 1227:22
jarring [1] - 1085:23
Jasper [1] - 1301:17
Jim [17] - 1270:5,
1270:7, 1271:21,
1271:25, 1272:12,
1272:14, 1272:16,
1273:17, 1274:14,
1274:15, 1275:6,
1276:19, 1277:4,
1280:11, 1280:24,
1281:2, 1293:17
Jim's [3] - 1272:3,
1272:16, 1273:21
job [3] - 1269:3,
1300:19, 1302:18
jobs [5] - 1221:13,
1222:4, 1223:16,
1223:18, 1298:9
join [1] - 1278:23
joining [2] - 1091:20,
1278:12
Jonathan [1] -
1108:9
Jones [8] - 1194:15,
1196:2, 1204:4,
1204:20, 1205:1,
1220:13, 1249:2,
1249:8
Jones' [1] - 1204:9
Jorgenson [41] -
1069:22, 1069:13,
1070:5, 1073:22,
1075:9, 1119:21,
1211:9, 1270:6,
1270:7, 1270:11,
1270:18, 1270:20,
1270:22, 1270:23,
1271:3, 1273:2,
1273:4, 1274:2,
1274:16, 1274:18,
1274:19, 1275:2,
1275:5, 1276:6,
1276:9, 1277:11,
1277:17, 1277:19,
1277:25, 1279:2,
1279:16, 1279:20,

1280:6, 1282:15,
1284:15, 1285:25,
1288:10, 1293:11,
1293:13, 1299:10
Jorgensons [4] -
1209:22, 1293:18,
1293:24, 1297:21
Jorgensons' [5] -
1066:5, 1075:1,
1075:3, 1102:14,
1271:1
Josephine [1] -
1072:13
Juanita [1] - 1222:9
jump [5] - 1062:2,
1120:1, 1128:15,
1137:15, 1148:7
jumping [1] -
1145:13
June [7] - 1019:21,
1020:5, 1058:8,
1077:2, 1173:2,
1192:25, 1303:10
jurisdiction [5] -
1195:5, 1207:21,
1276:8, 1286:5,
1286:6
jurisdictions [4] -
1170:4, 1170:13,
1188:19, 1193:5
justification [2] -
1264:11, 1293:21
justified [1] - 1032:9

K

K4 [3] - 1143:9,
1144:8, 1144:21
Kaumeyer [9] -
1206:20, 1207:1,
1208:21, 1239:8,
1239:22, 1241:10,
1241:14, 1242:19,
1294:16
Kaumeyer's [1] -
1239:25
kayaking [1] - 1095:4
keep [6] - 1028:7,
1061:19, 1073:20,
1136:7, 1193:18,
1302:2
keeping [3] -
1034:16, 1085:16,
1259:23
keeps [1] - 1271:10
Keith [1] - 1206:13
Kelly [3] - 1099:20,
1226:8, 1227:3
Ken [2] - 1023:12,
1188:5
key [5] - 1177:22,
1223:10, 1258:12,
1258:17, 1288:25
kill [2] - 1241:4
killed [1] - 1298:9
killing [1] - 1241:15
kilometre [14] -
1057:8, 1057:12,
1057:13, 1057:21,
1063:1, 1078:22,
1079:17, 1149:7,
1161:4, 1204:16,
1206:8, 1247:23,
1248:4, 1248:6
kilometres [32] -
1056:25, 1057:14,
1057:22, 1078:21,
1080:21, 1088:13,
1088:19, 1090:25,
1109:10, 1110:6,

1148:12, 1148:25,
1149:10, 1161:5,
1187:22, 1211:7,
1211:20, 1220:18,
1220:24, 1220:25,
1229:16, 1235:2,
1275:1, 1275:2,
1275:4, 1275:7,
1275:10, 1297:8,
1297:12, 1299:7
kind [27] - 1047:10,
1048:4, 1048:6,
1050:13, 1063:21,
1073:21, 1076:14,
1079:11, 1082:25,
1084:6, 1085:14,
1087:14, 1088:19,
1090:13, 1092:22,
1094:8, 1126:4,
1137:22, 1139:13,
1153:23, 1159:22,
1168:13, 1168:15,
1257:24, 1288:16,
1300:9, 1301:1
kindly [1] - 1062:6
kinds [1] - 1285:17
Kingdom [1] -
1169:25
kluge [1] - 1164:2
kluged [2] - 1162:25,
1163:5
knit [2] - 1226:19,
1297:25
knowing [2] -
1256:8, 1264:4
knowledge [11] -
1024:19, 1025:7,
1049:19, 1049:20,
1053:25, 1054:13,
1118:24, 1128:13,
1151:17, 1151:19,
1182:13
known [4] - 1121:7,
1132:1, 1202:12,
1239:12
knows [5] - 1174:1,
1230:12, 1252:13,
1258:9, 1264:18
Kolesar [1] - 1020:6
Kroker [4] - 1099:20,
1214:22, 1226:8,
1227:3
Krokers [7] - 1021:5,
1062:5, 1062:20,
1064:7, 1087:19,
1099:23, 1100:5
kV [2] - 1159:18,
1159:21

L

labelled [1] - 1281:1
lack [2] - 1092:15,
1181:4
laid [1] - 1278:11
Lake [2] - 1240:2,
1240:3
lake [1] - 1095:4
lakes [1] - 1131:7
Land [6] - 1080:9,
1080:16, 1081:5,
1093:2, 1234:24,
1286:11
land [37] - 1083:16,
1083:19, 1085:22,
1090:11, 1096:15,
1100:11, 1100:12,
1114:20, 1114:23,
1131:22, 1131:23,
1132:10, 1176:25,

1177:6, 1177:8, 1177:14, 1177:23, 1193:6, 1195:21, 1196:7, 1209:12, 1210:20, 1212:15, 1213:4, 1215:20, 1219:4, 1219:11, 1219:12, 1238:10, 1252:21, 1257:18, 1286:20, 1286:23, 1288:5, 1292:17, 1294:25, 1296:4

landing [6] - 1075:4, 1275:19, 1280:15, 1282:17, 1284:4, 1284:19

landings [2] - 1271:9, 1272:12

landowner [2] - 1197:17, 1256:23

landowners [21] - 1214:25, 1218:3, 1219:6, 1219:7, 1219:9, 1219:18, 1220:15, 1220:18, 1222:3, 1222:12, 1224:2, 1224:10, 1227:19, 1255:2, 1255:18, 1256:17, 1256:18, 1257:4, 1297:2, 1297:8, 1297:13

lands [1] - 1214:22

landscape [71] - 1052:11, 1052:16, 1059:25, 1060:1, 1060:3, 1060:5, 1060:9, 1060:17, 1067:7, 1069:9, 1069:10, 1080:1, 1080:8, 1080:9, 1082:3, 1082:16, 1083:14, 1084:15, 1084:25, 1085:5, 1085:12, 1085:19, 1086:2, 1086:5, 1086:7, 1086:9, 1086:16, 1086:17, 1089:4, 1089:12, 1090:15, 1091:2, 1092:22, 1093:5, 1093:10, 1095:14, 1096:7, 1102:10, 1102:17, 1121:19, 1161:21, 1164:13, 1165:6, 1165:14, 1166:21, 1169:21, 1170:8, 1170:9, 1176:13, 1184:10, 1188:11, 1188:12, 1190:8, 1190:15, 1192:12, 1193:1, 1207:8, 1227:15, 1229:19, 1231:24, 1232:12, 1232:14, 1232:16, 1232:25, 1233:1, 1233:2, 1234:15, 1235:8, 1251:11, 1252:2

Landscape [1] - 1052:17

landscapes [4] - 1090:17, 1091:10, 1190:23, 1206:19

Landscapes [1] - 1081:2

Lanfine [1] - 1240:12

laptop [1] - 1171:9

large [28] - 1040:21, 1049:17, 1089:22,

1091:7, 1113:21, 1130:25, 1135:20, 1136:1, 1160:23, 1166:3, 1168:16, 1168:19, 1168:20, 1175:10, 1186:20, 1204:5, 1205:15, 1205:25, 1217:23, 1235:1, 1239:13, 1241:12, 1248:10, 1252:13, 1253:3, 1253:7, 1297:24

large-scaled [1] - 1204:5

largely [2] - 1232:3, 1248:13

larger [12] - 1091:1, 1176:2, 1176:17, 1200:4, 1205:18, 1205:19, 1242:9, 1249:23, 1250:7, 1253:9, 1293:17

largest [2] - 1175:13, 1247:13

Larry [15] - 1206:20, 1270:5, 1271:22, 1271:24, 1272:11, 1272:14, 1273:12, 1273:18, 1274:10, 1274:12, 1275:9, 1277:5, 1280:1, 1280:23, 1293:18

Larry's [4] - 1271:25, 1272:15, 1272:18, 1272:19

last [31] - 1021:8, 1022:15, 1037:11, 1056:23, 1057:20, 1057:25, 1082:16, 1108:23, 1112:10, 1112:11, 1129:21, 1149:18, 1149:23, 1164:3, 1172:5, 1172:12, 1214:21, 1221:10, 1224:13, 1226:1, 1226:4, 1227:21, 1228:16, 1245:14, 1246:20, 1255:5, 1264:17, 1264:25, 1270:3, 1279:7

last-minute [1] - 1172:12

lasting [1] - 1298:12

lastly [3] - 1029:2, 1231:12, 1252:24

late [2] - 1156:2, 1171:19

laughably [1] - 1246:7

lawyers [2] - 1072:23, 1096:3

lay [1] - 1239:6

layered [1] - 1151:20

laying [1] - 1251:24

layout [9] - 1040:2, 1146:13, 1147:1, 1197:23, 1200:20, 1211:16, 1276:15, 1278:7

lead [4] - 1029:24, 1041:9, 1041:17, 1042:13

leadership [2] - 1174:16, 1222:25

leading [2] - 1093:8, 1233:14

leads [3] - 1094:1, 1114:1, 1281:18

learn [2] - 1165:19,

1170:17

learned [1] - 1118:10

lease [1] - 1219:11

least [24] - 1109:10, 1148:24, 1152:18, 1164:21, 1167:5, 1167:17, 1171:23, 1172:17, 1185:21, 1187:3, 1211:20, 1228:7, 1228:17, 1229:15, 1242:5, 1254:2, 1261:8, 1267:9, 1282:7, 1282:24, 1283:6, 1298:21, 1298:22, 1302:9

leave [4] - 1031:9, 1047:10, 1063:16, 1086:22

leaves [2] - 1079:14, 1278:1

leaving [2] - 1207:11, 1293:9

led [2] - 1057:23, 1087:11

Lee [1] - 1096:2

left [23] - 1021:12, 1039:4, 1039:8, 1067:23, 1069:11, 1069:24, 1085:13, 1103:17, 1156:16, 1275:22, 1275:24, 1276:1, 1276:8, 1276:9, 1276:11, 1276:16, 1277:2, 1277:8, 1277:14, 1277:22, 1280:17

left-hand [11] - 1275:22, 1275:24, 1276:1, 1276:9, 1276:11, 1276:16, 1277:2, 1277:8, 1277:14, 1277:22, 1280:17

legal [3] - 1178:7, 1257:3, 1302:17

Legal [1] - 1021:1

legislation [1] - 1180:11

legislators [2] - 1213:3, 1286:18

legitimate [2] - 1078:1, 1164:16

lekking [1] - 1202:5

leks [4] - 1197:15, 1202:3, 1202:10, 1202:12

Len [19] - 1211:9, 1270:7, 1270:20, 1271:3, 1271:5, 1271:9, 1276:6, 1276:9, 1277:17, 1277:19, 1277:25, 1278:5, 1278:25, 1279:2, 1279:16, 1279:20, 1282:15, 1284:15, 1293:11

Len's [1] - 1277:25

length [2] - 1189:19, 1208:23

lengths [2] - 1089:11, 1300:25

lengthy [1] - 1299:20

lens [3] - 1065:5, 1091:14, 1091:16

less [33] - 1035:22, 1046:24, 1047:9, 1048:10, 1048:11, 1048:15, 1050:14, 1060:21, 1061:5,

1116:12, 1117:3, 1117:24, 1121:6, 1137:21, 1138:5, 1146:12, 1146:19, 1150:15, 1187:24, 1234:8, 1256:24, 1258:13, 1258:16, 1263:9, 1267:4, 1282:18, 1283:23, 1284:10, 1284:16, 1302:2, 1302:3

lesser [2] - 1069:5, 1160:12

letter [1] - 1230:3

level [45] - 1028:18, 1028:19, 1032:4, 1032:6, 1032:11, 1032:19, 1032:20, 1033:3, 1033:6, 1037:4, 1037:14, 1041:16, 1041:20, 1041:22, 1047:22, 1061:7, 1099:17, 1103:21, 1123:11, 1124:13, 1130:10, 1130:12, 1138:17, 1138:22, 1139:4, 1141:4, 1141:9, 1141:15, 1149:2, 1149:6, 1150:8, 1150:9, 1150:23, 1154:17, 1183:11, 1184:16, 1186:3, 1186:15, 1187:24, 1196:13, 1262:21, 1271:18, 1272:7, 1279:12, 1282:21

levels [20] - 1028:1, 1031:4, 1032:14, 1036:17, 1036:18, 1036:20, 1043:8, 1124:14, 1124:18, 1145:3, 1150:1, 1164:18, 1183:10, 1185:17, 1185:22, 1187:7, 1187:16, 1262:14, 1286:18

licence [3] - 1142:20, 1225:5, 1282:5

licences [1] - 1029:22

lie [1] - 1296:11

lied [1] - 1295:19

life [9] - 1053:9, 1094:2, 1208:7, 1217:19, 1218:5, 1218:21, 1223:19, 1223:22, 1230:8

lifespan [1] - 1196:18

light [7] - 1022:17, 1076:19, 1077:9, 1091:19, 1165:17, 1254:14, 1264:22

lighter [1] - 1077:11

lights [4] - 1071:6, 1075:21, 1075:24, 1173:16

likely [7] - 1091:5, 1189:12, 1189:17, 1214:11, 1241:5, 1251:2, 1253:17

limit [10] - 1168:25, 1199:13, 1210:9, 1301:9, 1301:10, 1301:11, 1301:13, 1301:24, 1302:1

limitation [6] - 1101:9, 1103:11, 1210:1, 1212:9,

1213:17, 1290:2

limitations [2] - 1052:1, 1191:6

limited [7] - 1139:13, 1175:9, 1192:18, 1224:9, 1239:24, 1242:1, 1244:15

limiting [2] - 1048:1, 1212:12

limits [2] - 1177:18, 1208:18

line [15] - 1038:17, 1079:11, 1079:20, 1084:4, 1159:18, 1160:13, 1167:16, 1199:24, 1200:1, 1203:24, 1228:3, 1263:2, 1297:12, 1298:15, 1299:13

line's [1] - 1161:7

linear [1] - 1205:22

lines [11] - 1051:18, 1078:24, 1091:25, 1103:11, 1160:8, 1162:13, 1190:10, 1190:24, 1213:24, 1254:6

link [2] - 1071:22, 1071:25

links [1] - 1071:19

list [4] - 1027:11, 1156:5, 1156:8, 1217:13

listed [2] - 1107:14, 1109:7

literally [1] - 1247:5

literature [19] - 1047:25, 1048:14, 1078:15, 1117:22, 1126:8, 1132:7, 1139:23, 1146:18, 1164:14, 1185:9, 1204:9, 1204:11, 1205:3, 1205:18, 1234:14, 1234:22, 1245:25, 1249:1, 1249:21

live [1] - 1022:15

lives [1] - 1158:13

livestock [1] - 1222:9

living [4] - 1090:9, 1257:11, 1261:4, 1294:14

local [15] - 1054:5, 1088:15, 1114:15, 1114:20, 1115:20, 1188:10, 1223:20, 1224:6, 1224:7, 1224:14, 1227:12, 1228:16, 1234:9, 1287:2

locate [1] - 1200:1

located [27] - 1052:20, 1054:6, 1062:20, 1063:9, 1175:3, 1197:2, 1199:9, 1199:16, 1199:23, 1199:25, 1200:8, 1204:17, 1207:6, 1213:22, 1216:25, 1218:2, 1238:24, 1244:11, 1246:17, 1247:4, 1247:25, 1248:16, 1254:3, 1283:11, 1294:2, 1294:6

locating [1] - 1241:22

location [7] -

1048:10, 1074:14, 1196:3, 1199:21, 1207:4, 1246:11, 1298:19

Location [1] - 1070:8

locations [9] - 1047:6, 1111:8, 1152:15, 1188:25, 1189:11, 1189:16, 1195:19, 1195:25, 1215:1

logbooks [1] - 1271:7

long-lasting [1] - 1298:12

long-term [3] - 1143:20, 1146:16, 1153:24

long-time [1] - 1223:22

look [49] - 1021:3, 1027:13, 1040:2, 1042:2, 1057:3, 1062:1, 1066:17, 1067:17, 1069:8, 1070:5, 1070:14, 1073:25, 1074:16, 1077:11, 1083:8, 1084:6, 1086:23, 1098:11, 1098:21, 1102:1, 1102:16, 1102:20, 1110:9, 1110:23, 1112:23, 1114:16, 1114:23, 1133:1, 1133:10, 1133:13, 1133:14, 1142:24, 1147:5, 1148:18, 1148:21, 1152:23, 1154:15, 1154:25, 1159:2, 1163:22, 1229:9, 1236:9, 1241:19, 1244:18, 1262:8, 1262:12, 1276:2, 1276:4, 1285:15

looked [23] - 1051:22, 1052:24, 1063:23, 1064:23, 1065:16, 1073:23, 1073:24, 1076:13, 1087:1, 1091:16, 1101:22, 1102:5, 1102:14, 1110:12, 1110:14, 1119:20, 1155:18, 1234:24, 1260:4, 1260:9, 1260:22, 1267:16

looking [46] - 1044:21, 1054:23, 1056:9, 1056:14, 1060:16, 1067:9, 1067:12, 1067:23, 1067:24, 1068:3, 1068:15, 1070:15, 1073:22, 1074:18, 1074:25, 1076:17, 1077:19, 1080:1, 1083:14, 1084:8, 1084:9, 1097:9, 1106:13, 1109:25, 1115:23, 1120:16, 1121:9, 1121:22, 1125:14, 1142:9, 1142:23, 1147:9, 1148:18, 1149:15, 1149:18, 1152:22, 1157:11, 1158:19, 1169:10, 1233:23, 1242:4, 1249:3, 1271:7, 1287:20,

1300:6

looks [10] - 1022:7, 1059:24, 1094:14, 1115:23, 1131:12, 1133:1, 1134:12, 1135:16, 1192:5, 1224:16

lose [3] - 1250:15, 1252:7, 1278:22

losing [1] - 1279:10

loss [4] - 1216:18, 1245:6, 1248:21, 1250:6

lost [3] - 1092:2, 1235:18, 1244:8

LoTurco [7] - 1176:4, 1189:9, 1201:8, 1217:19, 1220:1, 1224:11, 1295:12

love [2] - 1294:18, 1294:25

low [22] - 1077:4, 1080:1, 1082:1, 1084:16, 1084:17, 1087:20, 1095:2, 1141:4, 1141:15, 1165:22, 1193:25, 1198:15, 1202:24, 1233:2, 1251:2, 1279:17, 1279:21, 1281:9

low-hours [1] - 1279:21

lower [8] - 1038:23, 1041:16, 1130:12, 1152:9, 1160:14, 1176:11, 1185:22, 1280:11

LTD [1] - 1019:10

Ltd [1] - 1273:11

luck [1] - 1255:23

lunch [5] - 1136:16, 1171:16, 1171:24, 1171:25, 1172:6

M

Macnab [2] - 1020:9, 1204:14

madam [1] - 1023:22

magnify [1] - 1274:7

magnitude [2] - 1203:18, 1248:8

main [6] - 1039:12, 1063:16, 1065:7, 1071:21, 1226:8, 1273:12

maintain [5] - 1175:18, 1217:13, 1219:13, 1279:5, 1279:11

maintained [4] - 1184:19, 1270:23, 1272:9, 1290:4

maintains [1] - 1210:22

maintenance [3] - 1217:2, 1222:4, 1223:20

major [6] - 1091:25, 1231:17, 1231:20, 1250:5, 1253:2, 1253:6

majority [8] - 1079:9, 1087:3, 1087:21, 1087:23, 1189:24, 1296:23, 1297:4, 1297:14

maker [1] - 1065:15

man [1] - 1255:5

manage [1] - 1060:4

Management [7] - 1052:15, 1052:19, 1080:10, 1080:16, 1081:5, 1234:24, 1290:1

management [17] - 1051:8, 1051:12, 1051:15, 1052:11, 1059:17, 1059:24, 1060:1, 1060:2, 1060:9, 1194:3, 1198:4, 1201:19, 1203:5, 1223:21, 1236:7, 1240:21, 1240:22

Management's [1] - 1093:2

mandate [2] - 1179:10, 1228:20

mandated [4] - 1032:10, 1032:19, 1032:25, 1033:3

mandatory [1] - 1285:22

manipulation [1] - 1077:5

manipulations [1] - 1101:1

manner [9] - 1143:18, 1177:17, 1196:24, 1204:18, 1210:22, 1224:20, 1237:7, 1254:18, 1269:25

manuals [1] - 1264:13

map [13] - 1057:2, 1057:4, 1062:23, 1078:23, 1079:3, 1110:8, 1110:13, 1111:8, 1114:5, 1114:8, 1114:12, 1216:6

mapped [2] - 1185:5, 1186:13

maps [2] - 1166:16, 1272:23

March [2] - 1108:1, 1218:9

mark [4] - 1039:21, 1046:6, 1156:16, 1158:10

marked [15] - 1024:16, 1025:4, 1025:15, 1045:25, 1053:15, 1054:10, 1066:21, 1067:20, 1079:17, 1156:24, 1157:17, 1158:22, 1158:23, 1158:25, 1159:11

market [4] - 1179:9, 1256:6, 1256:13, 1256:14

marsh [10] - 1035:21, 1115:6, 1115:7, 1115:8, 1115:11, 1115:22, 1115:24, 1115:25, 1186:21, 1263:23

marshes [4] - 1131:7, 1186:18, 1264:9, 1264:11

marshy [2] - 1034:7, 1034:8

masked [1] - 1032:15

mass [1] - 1082:7

massive [3] - 1231:25, 1235:10, 1235:11

master [1] - 1192:9

match [2] - 1031:6, 1049:15

matched [3] - 1065:1, 1101:12, 1265:15

material [2] - 1170:5, 1201:21

materially [1] - 1231:18

materials [3] - 1110:20, 1217:4, 1297:20

math [2] - 1115:22, 1116:4

matrix [3] - 1060:21, 1084:15, 1084:24

matter [6] - 1058:12, 1088:11, 1180:14, 1182:21, 1236:3, 1299:16

matters [2] - 1215:5, 1276:14

maximizes [1] - 1190:12

maximizing [1] - 1177:21

maximum [10] - 1028:20, 1032:8, 1080:2, 1097:7, 1155:15, 1166:6, 1166:10, 1183:5, 1183:6, 1196:3

McDonnell [32] - 1055:21, 1058:25, 1059:5, 1080:18, 1081:11, 1081:12, 1087:13, 1088:6, 1088:11, 1088:17, 1089:3, 1089:13, 1089:18, 1090:14, 1091:2, 1091:11, 1092:12, 1092:15, 1093:2, 1188:20, 1189:2, 1190:2, 1190:20, 1191:25, 1192:11, 1233:7, 1233:11, 1233:15, 1234:6, 1234:14, 1235:5

McDonnell's [7] - 1059:10, 1061:22, 1068:2, 1079:1, 1087:9, 1233:17, 1233:20

McDougall [1] - 1055:21

McMurray [1] - 1052:20

mean [15] - 1029:4, 1056:20, 1068:15, 1069:8, 1079:10, 1088:7, 1089:15, 1111:2, 1115:10, 1143:16, 1143:21, 1144:24, 1147:23, 1160:7, 1266:20

meaning [3] - 1097:6, 1099:11, 1101:16

meaningful [1] - 1297:22

meaningfully [1] - 1236:20

meaningless [1] - 1253:11

means [9] - 1115:5,

1115:7, 1248:21, 1249:15, 1258:16, 1265:18, 1272:22, 1283:14, 1286:4

meant [6] - 1055:23, 1101:22, 1102:1, 1115:2, 1138:8, 1296:24

measure [7] - 1049:7, 1056:24, 1095:1, 1144:13, 1176:18, 1211:8, 1243:11

measured [18] - 1030:22, 1031:3, 1031:7, 1036:18, 1040:24, 1055:17, 1055:18, 1063:12, 1095:7, 1099:12, 1146:16, 1149:20, 1151:12, 1152:5, 1265:13, 1265:15, 1290:24

measurement [2] - 1032:22, 1095:11

measurements [9] - 1030:6, 1030:18, 1030:25, 1031:20, 1036:3, 1111:8, 1127:1, 1144:11, 1144:13

measures [4] - 1093:23, 1180:7, 1243:2, 1243:9

medium [2] - 1095:2, 1198:15

meet [3] - 1181:8, 1183:15, 1239:3

meeting [3] - 1108:25, 1174:19, 1219:20

megawatt [2] - 1066:10, 1176:5

megawatts [4] - 1174:20, 1174:22, 1175:16, 1222:22

Member [2] - 1020:7, 1020:7

member [4] - 1024:5, 1024:7, 1024:9

members [25] - 1023:2, 1023:23, 1054:20, 1188:2, 1189:7, 1189:17, 1202:7, 1209:4, 1215:24, 1216:9, 1219:25, 1221:2, 1221:8, 1221:11, 1224:10, 1225:20, 1229:3, 1229:23, 1233:23, 1233:25, 1234:9, 1270:3, 1270:4, 1294:13, 1295:18

memo [3] - 1025:15, 1025:25, 1092:15

memorandum [1] - 1025:12

memory [1] - 1171:6

mention [5] - 1065:10, 1068:1, 1090:12, 1113:14, 1126:14

mentioned [8] - 1022:10, 1063:20, 1065:23, 1076:17, 1100:4, 1116:6, 1126:9, 1282:14

mere [1] - 1181:20

merging [1] - 1091:4

merit [3] - 1291:15, 1292:18, 1293:4
met [2] - 1209:21, 1226:11
metal [4] - 1256:6, 1256:14, 1256:21, 1257:4
meteorological [25] - 1044:2, 1118:13, 1134:1, 1134:4, 1134:6, 1139:1, 1140:18, 1140:25, 1143:2, 1143:5, 1143:7, 1143:14, 1143:23, 1143:25, 1144:2, 1144:14, 1144:20, 1144:22, 1145:3, 1145:4, 1145:6, 1145:8, 1154:15, 1267:20, 1267:22
meteorologist [3] - 1137:18, 1138:3, 1151:18
meters [1] - 1150:23
method [3] - 1096:24, 1118:5, 1217:21
methodology [1] - 1051:22
methods [3] - 1099:13, 1200:16, 1203:3
metre [2] - 1041:21, 1152:5
metres [88] - 1032:7, 1032:8, 1032:10, 1032:13, 1035:14, 1035:18, 1041:21, 1044:10, 1046:25, 1047:23, 1048:8, 1050:15, 1050:17, 1050:18, 1055:17, 1056:1, 1064:15, 1064:16, 1066:14, 1080:11, 1080:12, 1080:13, 1081:21, 1081:22, 1081:24, 1082:5, 1092:19, 1126:19, 1126:20, 1130:11, 1134:10, 1138:17, 1138:18, 1138:19, 1141:10, 1152:6, 1152:8, 1160:1, 1160:21, 1199:23, 1211:18, 1228:23, 1228:24, 1228:25, 1229:4, 1230:18, 1230:19, 1230:22, 1230:23, 1230:24, 1231:1, 1231:2, 1231:6, 1231:7, 1231:9, 1231:10, 1231:11, 1231:13, 1231:14, 1231:16, 1231:18, 1249:22, 1249:24, 1250:19, 1251:1, 1252:10, 1267:3, 1274:12, 1274:15, 1274:18, 1285:1, 1285:2, 1289:3, 1289:4, 1289:9, 1289:12, 1290:20, 1290:22, 1290:25
mic [4] - 1022:19, 1026:4, 1077:24, 1161:16
micro [5] - 1196:3, 1198:21, 1199:6,

1200:21, 1246:12
micro-sited [1] - 1196:3
micro-siting [4] - 1198:21, 1199:6, 1200:21, 1246:12
microphone [4] - 1036:21, 1036:24, 1051:1, 1127:4
microphones [2] - 1022:16, 1150:21
mid [4] - 1064:5, 1091:6, 1233:18, 1234:1
mid-ground [2] - 1064:5, 1233:18
middle [15] - 1039:2, 1062:24, 1062:25, 1063:3, 1084:3, 1087:16, 1087:20, 1088:13, 1124:10, 1125:5, 1125:18, 1189:5, 1190:18, 1226:18, 1248:16
might [37] - 1021:2, 1026:3, 1026:4, 1031:12, 1038:4, 1044:12, 1044:17, 1054:20, 1059:16, 1063:17, 1067:10, 1067:11, 1077:20, 1080:4, 1083:11, 1088:25, 1094:10, 1094:11, 1094:12, 1120:3, 1120:7, 1120:13, 1121:14, 1130:6, 1136:14, 1136:15, 1148:14, 1148:22, 1150:24, 1169:12, 1173:14, 1191:2, 1225:13, 1281:23, 1298:9, 1301:5
migrate [2] - 1239:11, 1247:5
migrating [3] - 1241:12, 1253:3, 1253:7
migration [4] - 1239:25, 1243:7, 1243:14, 1251:24
migrations [1] - 1239:22
migratory [4] - 1202:19, 1202:20, 1202:22, 1248:17
Mile [8] - 1108:25, 1231:5, 1231:9, 1261:12, 1261:13, 1261:17, 1261:22
miles [4] - 1090:20, 1090:25, 1271:14, 1278:3
mill [1] - 1299:12
millimetre [1] - 1069:19
millions [2] - 1247:5
mind [6] - 1082:25, 1125:10, 1165:1, 1182:17, 1193:18, 1214:8
mine [4] - 1064:13, 1070:22, 1127:11, 1164:22
mines [2] - 1096:17, 1255:3
minimal [4] - 1085:9, 1085:17, 1092:13, 1177:6
minimize [6] -

1101:1, 1176:12, 1200:24, 1202:1, 1222:13, 1243:13
minimized [2] - 1196:24, 1243:17
minimizes [2] - 1177:19, 1224:20
minimizing [1] - 1202:4
minimum [4] - 1200:21, 1242:11, 1294:1
Ministry [1] - 1206:22
minor [1] - 1166:21
minus [2] - 1084:20, 1153:10
minute [2] - 1022:13, 1172:12
minutes [5] - 1022:4, 1169:15, 1172:14, 1225:14, 1299:24
misleading [1] - 1192:17
missed [2] - 1062:7, 1120:14
missing [1] - 1066:7
mistake [2] - 1058:3, 1257:14
misunderstanding [1] - 1211:22
mitigate [2] - 1132:13, 1200:24
mitigating [1] - 1224:22
mitigation [5] - 1176:18, 1180:7, 1198:2, 1201:12, 1241:16
mix [3] - 1063:11, 1131:1, 1223:8
mixed [6] - 1057:16, 1130:17, 1130:24, 1135:23, 1184:10, 1203:8
Model [1] - 1038:1
model [58] - 1031:4, 1037:20, 1039:18, 1040:13, 1044:24, 1046:18, 1047:18, 1050:12, 1050:14, 1064:11, 1065:12, 1065:15, 1076:11, 1076:12, 1077:10, 1101:11, 1113:6, 1113:9, 1118:3, 1122:22, 1123:8, 1123:25, 1124:17, 1124:22, 1130:9, 1130:15, 1131:4, 1131:7, 1131:11, 1131:19, 1132:15, 1134:3, 1134:4, 1134:5, 1134:22, 1135:5, 1135:14, 1135:16, 1135:17, 1140:17, 1142:17, 1143:17, 1146:11, 1146:14, 1146:22, 1154:5, 1176:5, 1183:24, 1258:10, 1260:16, 1262:22, 1265:1, 1267:21, 1267:22, 1267:23, 1268:7, 1268:10
modelled [24] - 1030:15, 1031:21, 1035:21, 1035:25, 1036:11, 1036:15, 1041:1, 1043:22,

1043:23, 1133:17, 1138:15, 1138:17, 1183:8, 1190:22, 1260:11, 1263:8, 1264:21, 1265:8, 1265:12, 1265:14, 1265:16, 1267:17, 1267:24, 1268:20
modelling [49] - 1026:21, 1027:3, 1028:15, 1028:22, 1028:24, 1029:1, 1029:3, 1030:20, 1031:5, 1033:10, 1033:14, 1033:20, 1034:1, 1036:4, 1036:25, 1040:8, 1040:16, 1043:7, 1043:10, 1043:15, 1043:21, 1043:25, 1046:20, 1049:13, 1117:7, 1117:10, 1117:13, 1117:18, 1123:18, 1125:24, 1128:8, 1130:7, 1130:8, 1133:15, 1133:16, 1133:21, 1133:22, 1144:23, 1147:5, 1147:7, 1183:19, 1185:15, 1185:21, 1187:5, 1258:22, 1259:2, 1260:2, 1260:10, 1260:20
models [5] - 1034:25, 1065:19, 1078:3, 1134:1, 1183:15
moderate [7] - 1083:17, 1084:2, 1084:21, 1085:8, 1086:14, 1165:17, 1193:25
modification [6] - 1083:16, 1083:19, 1166:6, 1166:7, 1166:9, 1166:10
modified [2] - 1195:9, 1197:3
moment [5] - 1055:3, 1081:4, 1107:22, 1128:23, 1290:14
money [7] - 1255:9, 1255:15, 1255:19, 1255:21, 1255:25, 1256:18, 1256:21
monitoring [20] - 1050:4, 1167:23, 1187:17, 1187:19, 1194:3, 1198:3, 1201:19, 1202:18, 1203:4, 1216:25, 1241:17, 1242:6, 1243:24, 1246:6, 1266:25, 1269:7, 1269:10, 1269:16, 1269:22
montage [1] - 1121:15
montages [1] - 1121:21
month [1] - 1270:24
months [3] - 1216:2, 1216:3, 1226:9
moose [1] - 1239:17
moreover [2] - 1242:1, 1246:3
morning [8] - 1020:19, 1072:18, 1095:25, 1096:1,

1192:22, 1232:10, 1260:14, 1264:13
mortality [1] - 1241:3
most [25] - 1036:10, 1038:20, 1062:8, 1062:9, 1080:21, 1107:25, 1134:7, 1137:24, 1137:25, 1150:23, 1189:12, 1192:13, 1193:19, 1230:5, 1231:16, 1235:4, 1240:19, 1244:7, 1246:23, 1255:24, 1263:2, 1263:4, 1275:25, 1293:9, 1295:21
mostly [1] - 1037:1
motion [4] - 1074:4, 1181:2, 1181:6, 1182:6
motivated [1] - 1294:22
MOUSSEAU [11] - 1119:14, 1119:16, 1136:6, 1137:3, 1155:23, 1156:3, 1156:8, 1156:20, 1158:16, 1304:9, 1305:2
Mousseau [8] - 1020:8, 1119:11, 1136:22, 1137:2, 1156:17, 1157:23, 1168:2, 1187:13
move [19] - 1032:4, 1033:8, 1039:4, 1039:8, 1050:25, 1051:1, 1067:19, 1068:5, 1074:24, 1119:9, 1119:25, 1122:18, 1132:16, 1138:10, 1193:11, 1218:24, 1228:12, 1244:2, 1246:15
movement [6] - 1092:21, 1093:10, 1121:16, 1121:17, 1204:3, 1205:16
movers [1] - 1270:13
moving [6] - 1047:23, 1061:18, 1082:15, 1104:21, 1193:17, 1235:5
MPEG [2] - 1073:14, 1074:7
MR [235] - 1023:1, 1023:21, 1023:22, 1024:3, 1024:17, 1024:20, 1025:1, 1025:5, 1025:8, 1025:11, 1025:17, 1025:23, 1026:2, 1026:6, 1026:8, 1026:15, 1026:19, 1026:24, 1027:4, 1027:5, 1027:17, 1027:20, 1028:8, 1028:11, 1029:14, 1029:16, 1031:14, 1031:16, 1038:6, 1038:8, 1039:17, 1039:21, 1039:25, 1040:2, 1044:14, 1044:20, 1044:25, 1045:5, 1045:10, 1045:12, 1045:15, 1045:24, 1046:2, 1046:9, 1046:10, 1046:12, 1046:22, 1048:12, 1049:8,

1049:20, 1050:8,
1056:8, 1056:12,
1056:16, 1072:19,
1072:23, 1073:7,
1073:17, 1073:19,
1075:6, 1075:9,
1075:16, 1095:18,
1105:11, 1105:14,
1105:19, 1106:3,
1106:21, 1107:7,
1107:15, 1107:21,
1107:24, 1108:10,
1108:14, 1108:21,
1109:3, 1109:12,
1109:16, 1109:22,
1109:24, 1110:2,
1110:8, 1110:20,
1111:2, 1111:12,
1111:18, 1111:21,
1111:24, 1112:2,
1112:7, 1112:9,
1112:11, 1112:18,
1112:21, 1113:1,
1113:5, 1113:9,
1113:12, 1113:19,
1114:7, 1114:10,
1114:17, 1114:22,
1114:24, 1115:4,
1115:13, 1115:21,
1116:1, 1116:4,
1116:10, 1116:15,
1116:21, 1117:4,
1117:9, 1117:12,
1117:15, 1117:21,
1118:5, 1118:16,
1118:21, 1118:24,
1119:4, 1119:14,
1119:16, 1122:23,
1123:3, 1123:9,
1123:24, 1124:15,
1124:20, 1125:8,
1125:13, 1125:15,
1126:1, 1127:8,
1127:14, 1127:18,
1127:20, 1127:23,
1128:1, 1128:12,
1128:14, 1128:19,
1128:23, 1129:3,
1129:6, 1129:8,
1129:14, 1129:17,
1129:21, 1129:25,
1130:4, 1130:9,
1130:18, 1130:21,
1131:3, 1131:21,
1132:19, 1132:23,
1132:25, 1133:3,
1133:5, 1133:7,
1133:9, 1133:18,
1133:20, 1133:24,
1134:2, 1134:19,
1134:25, 1135:4,
1135:12, 1136:1,
1136:6, 1137:3,
1137:17, 1138:9,
1139:20, 1140:7,
1140:25, 1141:8,
1141:22, 1141:25,
1142:8, 1142:13,
1142:15, 1143:19,
1144:24, 1145:1,
1145:15, 1145:18,
1145:25, 1146:10,
1146:13, 1147:12,
1147:17, 1148:8,
1148:17, 1149:17,
1150:6, 1150:21,
1151:11, 1151:17,
1152:17, 1152:23,
1153:5, 1153:20,
1154:18, 1154:23,

1155:3, 1155:12,
1155:21, 1155:23,
1156:3, 1156:8,
1156:20, 1158:16,
1158:22, 1167:9,
1167:14, 1168:2,
1169:14, 1169:16,
1170:19, 1172:9,
1225:19, 1300:11,
1301:10, 1301:22,
1302:6, 1304:7,
1304:9, 1304:12,
1304:20, 1305:2
MS [20] - 1095:23,
1095:24, 1116:23,
1119:8, 1156:21,
1157:3, 1157:8,
1157:15, 1157:23,
1158:6, 1159:15,
1161:11, 1172:3,
1173:19, 1192:7,
1300:7, 1301:14,
1302:2, 1304:8,
1304:10
mule [1] - 1239:20
multi [3] - 1295:7,
1298:11, 1298:12
multi-generational
[3] - 1295:7, 1298:11,
1298:12
multitude [2] -
1037:4, 1037:16
municipal [4] -
1178:1, 1209:11,
1224:7, 1287:12
Municipal [2] -
1287:11, 1287:14
must [9] - 1057:16,
1101:2, 1179:13,
1180:7, 1181:10,
1183:14, 1228:2,
1236:24, 1246:10

N

name [10] - 1023:4,
1023:9, 1023:13,
1024:3, 1090:10,
1096:2, 1107:5,
1113:4, 1239:15,
1292:4
namely [1] - 1181:9
nameplate [2] -
1176:17, 1200:5
names [2] - 1170:8,
1170:16
narrow [1] - 1121:8
nationally [1] -
1207:5
native [32] - 1114:14,
1115:1, 1177:20,
1196:25, 1199:8,
1199:9, 1199:13,
1199:16, 1199:19,
1199:20, 1199:24,
1200:2, 1200:9,
1200:14, 1200:23,
1201:1, 1201:6,
1201:10, 1244:2,
1244:3, 1244:11,
1244:12, 1244:20,
1244:24, 1245:15,
1245:18, 1245:21,
1245:23, 1246:4,
1246:14, 1298:24
natural [4] - 1091:9,
1091:10, 1193:13,
1252:23
nature [5] - 1022:1,
1087:16, 1149:25,

1176:6, 1219:3
Nature [8] - 1064:14,
1065:20, 1066:2,
1066:8, 1066:14,
1067:3, 1069:1,
1103:13
navigation [1] -
1071:6
near [10] - 1032:22,
1040:25, 1043:24,
1071:15, 1078:19,
1086:19, 1189:21,
1199:16, 1221:3,
1240:12
nearby [4] - 1125:25,
1217:15, 1240:12,
1274:21
nearest [5] -
1079:19, 1273:19,
1274:11, 1274:14,
1274:17
nearly [2] - 1161:3,
1174:22
necessarily [3] -
1098:5, 1160:7,
1166:17
necessary [3] -
1181:4, 1210:19,
1288:21
need [37] - 1022:22,
1031:9, 1046:6,
1049:9, 1056:8,
1070:12, 1072:12,
1078:23, 1096:23,
1098:5, 1106:19,
1112:4, 1117:16,
1136:17, 1140:1,
1159:3, 1166:15,
1171:19, 1171:22,
1172:1, 1173:12,
1187:19, 1242:10,
1242:14, 1242:16,
1243:17, 1253:4,
1253:13, 1254:21,
1269:14, 1269:15,
1276:23, 1283:6,
1283:10, 1283:25,
1285:9, 1292:4
needed [3] -
1192:23, 1251:23,
1258:1
needs [7] - 1086:23,
1093:10, 1120:9,
1197:10, 1215:20,
1235:8, 1253:24
negate [1] - 1278:12
negative [7] -
1133:14, 1175:12,
1179:23, 1222:16,
1224:21, 1225:3,
1253:16
negatively [3] -
1209:1, 1245:6,
1286:25
neighbours [3] -
1296:4, 1296:7,
1296:10
Nelson [1] - 1295:1
Ness [31] - 1214:20,
1270:5, 1270:7,
1271:21, 1272:6,
1272:11, 1273:11,
1273:12, 1273:18,
1274:10, 1274:12,
1274:14, 1274:15,
1275:6, 1275:9,
1276:19, 1277:4,
1277:5, 1280:1,
1280:12, 1280:23,
1280:24, 1281:1,

1281:2, 1285:25,
1288:10, 1293:18,
1293:20, 1293:24,
1297:20
Ness's [1] - 1273:17
Nesses [2] -
1209:22, 1280:9
nests [1] - 1197:16
network [1] -
1104:22
neutral [2] - 1137:12,
1144:12
never [10] - 1035:15,
1057:18, 1089:2,
1094:1, 1094:2,
1094:3, 1242:3,
1245:16, 1284:8,
1296:2
new [10] - 1063:7,
1083:23, 1090:24,
1132:21, 1133:15,
1134:9, 1174:20,
1266:11, 1288:5,
1288:23
New [12] - 1069:11,
1104:11, 1152:18,
1226:14, 1231:24,
1267:9, 1271:14,
1271:15, 1278:2,
1279:8, 1294:15,
1295:16
news [2] - 1156:2,
1180:20
next [27] - 1023:11,
1035:17, 1038:9,
1039:2, 1039:22,
1040:24, 1045:25,
1048:24, 1054:16,
1057:3, 1069:15,
1070:3, 1074:23,
1075:20, 1076:8,
1092:6, 1097:13,
1098:23, 1114:1,
1114:18, 1119:25,
1171:17, 1230:21,
1259:8, 1262:9,
1263:6, 1277:10
NIA [50] - 1029:23,
1030:9, 1030:12,
1030:23, 1031:18,
1032:6, 1033:9,
1041:6, 1043:3,
1049:16, 1049:25,
1106:17, 1107:14,
1117:8, 1117:9,
1117:11, 1117:20,
1123:1, 1128:3,
1139:2, 1149:1,
1153:17, 1154:2,
1157:16, 1158:8,
1158:15, 1182:24,
1183:3, 1183:9,
1183:16, 1184:3,
1184:8, 1184:18,
1184:21, 1184:25,
1185:14, 1185:25,
1186:7, 1186:24,
1187:1, 1259:8,
1259:12, 1259:15,
1259:20, 1261:22,
1263:10, 1264:5,
1267:3, 1269:14,
1305:5
NIA's [1] - 1153:17
NIAs [4] - 1034:4,
1042:1, 1183:14,
1185:2
nice [2] - 1023:2,
1271:1
night [11] - 1076:4,

1120:18, 1153:24,
1202:20, 1202:21,
1240:1, 1270:20,
1271:12, 1276:11,
1279:7, 1282:15
nightly [1] - 1087:4
nighttime [11] -
1041:4, 1043:8,
1071:6, 1075:20,
1128:5, 1141:4,
1146:20, 1167:5,
1183:7, 1260:6,
1260:12
Nighttime [1] -
1128:20
nine [3] - 1168:3,
1168:16, 1272:14
ninth [1] - 1288:4
NLG [1] - 1051:17
noise [147] -
1024:23, 1025:20,
1025:22, 1025:25,
1027:21, 1027:23,
1027:25, 1028:12,
1028:15, 1028:16,
1029:16, 1029:24,
1030:4, 1030:6,
1030:21, 1031:3,
1031:4, 1031:7,
1032:13, 1033:10,
1033:22, 1034:12,
1034:14, 1034:24,
1037:2, 1037:4,
1037:5, 1037:12,
1037:13, 1037:14,
1037:20, 1038:12,
1038:17, 1039:4,
1040:19, 1041:4,
1041:8, 1041:10,
1041:12, 1041:13,
1041:14, 1041:16,
1041:24, 1042:11,
1042:13, 1042:18,
1043:8, 1043:16,
1043:17, 1046:15,
1047:2, 1047:4,
1047:11, 1047:22,
1048:7, 1049:5,
1050:4, 1106:4,
1106:10, 1106:15,
1107:1, 1108:24,
1109:8, 1109:14,
1109:19, 1109:23,
1110:18, 1110:25,
1111:5, 1112:5,
1112:16, 1113:6,
1117:18, 1117:20,
1117:23, 1118:6,
1118:15, 1118:17,
1118:22, 1118:25,
1124:8, 1124:14,
1124:18, 1125:24,
1126:25, 1130:23,
1134:15, 1135:6,
1135:19, 1137:19,
1137:21, 1138:4,
1138:22, 1143:20,
1145:2, 1145:3,
1145:7, 1146:3,
1146:5, 1146:21,
1147:1, 1147:2,
1148:23, 1150:2,
1151:2, 1151:10,
1152:13, 1152:16,
1153:3, 1153:23,
1156:25, 1157:10,
1162:14, 1177:18,
1182:23, 1183:5,
1183:11, 1183:19,
1183:20, 1187:6,

1187:9, 1187:16, 1187:17, 1199:22, 1222:8, 1227:3, 1228:15, 1258:2, 1258:7, 1258:9, 1259:6, 1259:7, 1259:10, 1259:11, 1259:18, 1260:22, 1260:24, 1261:18, 1262:14, 1265:13, 1265:17, 1267:12, 1268:12, 1268:22, 1269:12

Noise [9] - 1023:8, 1024:6, 1030:17, 1033:18, 1034:9, 1128:20, 1137:6, 1183:2, 1259:16

non [9] - 1091:9, 1105:7, 1148:1, 1181:11, 1202:5, 1219:15, 1227:18, 1260:25, 1291:5

non-compliance [1] - 1260:25

non-instrument [1] - 1291:5

non-natural [1] - 1091:9

non-participating [2] - 1219:15, 1227:18

non-partisan [2] - 1105:7, 1181:11

non-representative [1] - 1148:1

non-turbine [1] - 1202:5

none [11] - 1022:4, 1099:24, 1165:17, 1169:15, 1189:6, 1207:9, 1220:24, 1225:10, 1272:20, 1291:16, 1292:18

normal [7] - 1065:5, 1069:18, 1277:22, 1277:25, 1278:6, 1278:12

normally [1] - 1172:10

norms [1] - 1089:24

north [7] - 1065:8, 1075:11, 1159:18, 1187:25, 1272:2, 1273:13, 1278:3

North [7] - 1204:8, 1226:24, 1227:10, 1246:18, 1246:24, 1246:25, 1276:8

north-northwest [2] - 1272:2, 1273:13

north-south [1] - 1065:8

northeast [2] - 1234:17, 1273:23

northeastern [1] - 1234:21

northwest [8] - 1272:2, 1272:4, 1273:13, 1273:16, 1276:20, 1277:1, 1281:4, 1281:5

northwest-southeast [1] - 1281:4

northwesterly [1] - 1138:16

notable [3] - 1206:11, 1207:25, 1211:12

note [10] - 1034:2, 1034:6, 1037:3,

1100:1, 1133:15, 1187:18, 1201:18, 1209:9, 1213:14, 1221:7

noted [12] - 1082:8, 1100:22, 1105:4, 1107:3, 1143:12, 1181:12, 1181:19, 1196:2, 1239:13, 1239:22, 1240:10, 1246:3

notes [19] - 1186:15, 1187:14, 1189:6, 1198:17, 1199:22, 1199:25, 1200:4, 1200:12, 1206:25, 1208:8, 1208:21, 1213:21, 1214:4, 1214:14, 1218:15, 1222:1, 1253:1, 1300:16, 1303:7

nothing [5] - 1113:23, 1175:23, 1205:21, 1213:5, 1232:21

notice [4] - 1070:19, 1121:21, 1142:9, 1170:25

noticed [2] - 1036:5, 1092:4

notification [1] - 1219:20

notify [1] - 1217:15

noting [3] - 1181:6, 1189:4, 1203:25

notwithstanding [7] - 1197:4, 1209:25, 1215:12, 1242:4, 1258:23, 1259:13, 1267:14

November [1] - 1062:4

nowhere [1] - 1226:18

nuisance [1] - 1150:13

number [73] - 1020:24, 1027:9, 1028:17, 1029:6, 1030:1, 1031:11, 1038:13, 1040:21, 1042:25, 1043:5, 1043:9, 1051:18, 1055:12, 1055:13, 1055:23, 1084:11, 1090:14, 1092:11, 1097:23, 1111:17, 1116:11, 1116:12, 1116:15, 1116:17, 1116:25, 1124:1, 1138:2, 1140:9, 1140:12, 1142:20, 1155:1, 1158:3, 1158:18, 1159:19, 1162:25, 1163:7, 1166:15, 1168:17, 1168:19, 1168:20, 1168:25, 1169:1, 1176:9, 1176:13, 1176:23, 1180:19, 1185:8, 1186:15, 1188:6, 1189:4, 1191:18, 1192:17, 1192:20, 1195:18, 1199:15, 1200:6, 1203:10, 1205:25, 1208:22, 1216:9, 1219:9, 1221:1, 1221:11, 1221:13, 1223:15, 1224:12,

1240:7, 1241:3, 1253:7, 1256:5, 1259:6, 1269:20

Number [10] - 1055:17, 1056:11, 1063:19, 1088:6, 1088:10, 1090:3, 1200:19, 1201:11, 1274:10, 1274:16

numbered [2] - 1061:19, 1061:23

numbers [21] - 1045:7, 1063:20, 1086:20, 1087:1, 1087:2, 1094:5, 1095:5, 1142:6, 1153:13, 1154:3, 1154:9, 1154:15, 1156:4, 1159:5, 1166:22, 1204:15, 1204:19, 1208:13, 1208:15, 1241:6, 1253:3

numerical [1] - 1151:3

numerous [2] - 1194:16, 1268:19

O

O'Connor [12] - 1201:8, 1224:12, 1273:1, 1295:14, 1295:19, 1295:23, 1296:6, 1296:12, 1296:21, 1296:25, 1297:18

oath [1] - 1273:1

object [4] - 1064:15, 1161:6, 1164:9, 1164:10

objective [27] - 1060:25, 1085:3, 1093:18, 1093:22, 1095:13, 1105:7, 1106:2, 1161:19, 1161:25, 1162:5, 1162:12, 1162:14, 1163:14, 1163:15, 1163:16, 1163:19, 1163:20, 1163:21, 1164:5, 1164:6, 1164:10, 1169:20, 1170:9, 1170:10, 1181:1, 1181:24, 1232:8

objectively [1] - 1188:8

objectives [11] - 1059:18, 1060:9, 1060:10, 1060:15, 1061:4, 1165:15, 1165:21, 1166:3, 1166:4, 1166:17, 1193:3

objectivity [2] - 1181:5, 1182:14

objects [4] - 1142:17, 1161:1, 1210:9, 1213:21

obscuring [1] - 1064:21

observability [3] - 1084:3, 1084:14, 1232:14

observance [1] - 1178:18

observation [8] - 1062:13, 1062:17, 1062:19, 1063:13,

1063:24, 1079:15, 1087:17, 1234:3

observations [2] - 1031:19, 1207:13

observed [6] - 1186:25, 1240:5, 1240:21, 1240:24, 1240:25, 1244:25

observes [1] - 1240:1

obstacle [9] - 1210:1, 1213:8, 1281:21, 1283:11, 1290:2, 1290:8, 1290:11, 1290:17, 1291:1

Obstacle [1] - 1290:1

obstacles [8] - 1211:6, 1212:11, 1213:10, 1279:18, 1282:21, 1282:24, 1290:5, 1291:10

obstruction [1] - 1288:23

obstructions [1] - 1283:20

obtain [1] - 1218:11

obtaining [1] - 1180:12

obvious [2] - 1068:4, 1237:16

obviously [6] - 1085:18, 1085:22, 1091:8, 1144:10, 1258:7, 1302:21

occasion [1] - 1188:15

occupy [1] - 1082:7

occupying [1] - 1079:9

occur [11] - 1042:14, 1042:21, 1045:3, 1048:19, 1090:20, 1118:10, 1141:14, 1146:7, 1154:24, 1155:16, 1253:17

occurred [2] - 1146:20, 1235:25

occurrence [3] - 1084:11, 1088:16, 1214:20

occurring [1] - 1191:2

occurs [6] - 1048:13, 1141:3, 1147:20, 1148:2, 1154:19, 1265:7

octave [2] - 1125:16

October [5] - 1107:2, 1109:17, 1109:18, 1291:24, 1291:25

odd [1] - 1250:13

off-the-top-of-my-head [1] - 1300:24

offered [1] - 1293:17

offices [1] - 1020:1

Official [3] - 1020:15, 1303:15, 1303:19

offset [1] - 1161:2

offsets [1] - 1201:10

often [12] - 1051:24, 1089:25, 1093:15, 1154:16, 1165:2, 1192:13, 1195:1, 1220:16, 1241:11, 1265:7, 1266:11, 1278:18

OG-2 [1] - 1030:24

oil [7] - 1052:20, 1096:16, 1177:9,

1221:14, 1222:7, 1257:11, 1266:14

OIS [5] - 1213:9, 1213:22, 1290:8, 1290:24

old [4] - 1228:4, 1271:4, 1295:1, 1295:5

Oldman [3] - 1050:2, 1050:10, 1050:12

OLENIUK [17] - 1095:23, 1095:24, 1116:23, 1119:8, 1156:21, 1157:3, 1157:8, 1157:15, 1157:23, 1158:6, 1172:3, 1173:19, 1192:7, 1300:7, 1301:14, 1302:2, 1304:8

Oleniuk [8] - 1020:12, 1095:22, 1096:2, 1173:17, 1299:24, 1300:11, 1300:18, 1301:5

OLS [9] - 1210:1, 1210:5, 1210:8, 1210:12, 1211:2, 1211:4, 1211:13, 1215:15, 1290:3

omitted [5] - 1031:15, 1067:14, 1143:15, 1144:1, 1145:11

omitting [1] - 1144:22

once [8] - 1076:12, 1084:19, 1094:11, 1152:2, 1237:21, 1245:14, 1302:21

One [1] - 1156:22

one [169] - 1020:24, 1021:10, 1037:9, 1040:4, 1041:13, 1042:2, 1047:24, 1049:2, 1050:8, 1050:9, 1050:20, 1052:1, 1055:21, 1055:23, 1056:10, 1057:22, 1057:25, 1058:1, 1058:2, 1060:24, 1064:13, 1064:15, 1065:19, 1065:20, 1065:22, 1065:25, 1066:1, 1066:8, 1066:22, 1067:18, 1067:21, 1070:6, 1071:5, 1076:2, 1076:8, 1081:18, 1082:20, 1083:12, 1086:14, 1088:2, 1088:18, 1088:19, 1088:22, 1091:18, 1093:8, 1093:14, 1093:20, 1093:22, 1093:23, 1094:6, 1094:10, 1094:11, 1095:9, 1096:2, 1100:22, 1100:23, 1100:24, 1101:15, 1101:18, 1102:13, 1103:7, 1105:3, 1107:13, 1107:23, 1108:1, 1108:2, 1108:19, 1109:14, 1109:16, 1109:17, 1109:19, 1109:20, 1111:6, 1111:15, 1112:22, 1121:14, 1121:16,

1062:15, 1067:6, 1068:9, 1081:24, 1086:14, 1093:8, 1097:2, 1109:7, 1118:9, 1161:19, 1172:11, 1208:23, 1209:13, 1209:23, 1226:8, 1237:17, 1237:20, 1249:7, 1254:8, 1254:11, 1254:25, 1264:25, 1266:10, 1269:11, 1276:14, 1279:1, 1281:23, 1282:8, 1284:12, 1285:15, 1286:9, 1286:10, 1289:5, 1289:10, 1290:25, 1291:18, 1293:8, 1297:23

Point [1] - 1088:6
pointed [3] - 1062:6, 1074:14, 1134:20
points [19] - 1029:8, 1043:6, 1062:6, 1062:13, 1062:17, 1062:20, 1063:13, 1063:24, 1079:15, 1087:8, 1087:10, 1087:17, 1093:6, 1121:7, 1192:20, 1192:22, 1193:7, 1233:5, 1234:3
pole [2] - 1103:1, 1160:14
poles [4] - 1092:17, 1102:10, 1103:10, 1190:9
policy [3] - 1194:6, 1198:19, 1221:20
Policy [5] - 1197:7, 1198:18, 1198:25, 1253:10, 1253:15
polite [1] - 1234:8
pollution [3] - 1178:22, 1193:21, 1223:11
polygons [1] - 1038:15
ponds [1] - 1226:23
poor [2] - 1034:12, 1097:4
population [8] - 1165:13, 1239:18, 1241:6, 1242:9, 1247:10, 1250:14, 1250:17
populations [2] - 1208:20, 1252:9
pore [1] - 1300:18
porous [2] - 1034:17, 1131:18
portion [1] - 1190:19
portions [4] - 1026:17, 1059:4, 1238:9, 1248:11
Portland [1] - 1295:13
portray [3] - 1091:19, 1101:21, 1122:7
pose [1] - 1214:12
posed [2] - 1193:24, 1195:16
position [14] - 1102:3, 1121:7, 1203:14, 1203:24, 1210:19, 1215:19, 1238:8, 1257:20, 1289:7, 1292:19, 1292:23, 1293:25, 1294:7

positioning [1] - 1122:16
positions [1] - 1258:4
positive [2] - 1152:7, 1225:1
possibilities [1] - 1142:16
possible [9] - 1030:18, 1040:8, 1097:12, 1197:18, 1197:21, 1222:14, 1224:22, 1257:19, 1276:10
possibly [4] - 1055:20, 1055:22, 1300:20
post [19] - 1050:4, 1152:13, 1152:16, 1167:23, 1187:9, 1187:17, 1194:3, 1198:3, 1201:19, 1203:4, 1241:17, 1243:23, 1245:4, 1246:6, 1266:25, 1269:7, 1269:10, 1269:16, 1269:21
post-construction [18] - 1050:4, 1152:13, 1152:16, 1167:23, 1187:9, 1187:17, 1194:3, 1198:3, 1201:19, 1203:4, 1241:17, 1243:23, 1246:6, 1266:25, 1269:7, 1269:10, 1269:16, 1269:21
posted [1] - 1044:15
posts [3] - 1092:17, 1190:10, 1190:23
potential [18] - 1110:13, 1110:23, 1117:19, 1148:22, 1176:20, 1180:3, 1195:5, 1195:16, 1196:22, 1200:13, 1201:14, 1203:11, 1208:3, 1215:25, 1216:10, 1224:21, 1225:2, 1259:7
potentially [10] - 1028:14, 1031:17, 1046:18, 1148:22, 1152:19, 1202:23, 1219:18, 1243:17, 1243:20, 1301:5
pothole [6] - 1226:23, 1246:17, 1246:22, 1246:25, 1248:11, 1248:14
Power [7] - 1051:17, 1108:20, 1110:5, 1112:23, 1118:18, 1231:12, 1261:13
power [43] - 1028:18, 1028:19, 1032:4, 1032:6, 1036:17, 1036:18, 1092:17, 1103:11, 1105:16, 1105:17, 1105:19, 1107:8, 1123:1, 1123:7, 1123:11, 1130:10, 1130:11, 1149:2, 1160:8, 1160:14, 1160:23, 1176:11, 1176:22, 1178:9, 1179:2, 1179:15, 1180:24, 1184:4, 1184:16, 1184:24, 1186:3,

1186:4, 1190:24, 1193:10, 1193:19, 1195:6, 1205:5, 1221:15, 1222:23, 1225:4, 1227:20, 1293:6, 1295:2
Power's [1] - 1107:1
power's [1] - 1184:4
powered [1] - 1203:8
powerful [1] - 1171:9
powers [1] - 1219:4
practice [6] - 1030:17, 1036:2, 1036:20, 1089:6, 1106:17, 1285:24
Practices [2] - 1285:8, 1285:13
practices [4] - 1178:18, 1209:16, 1237:6, 1245:11
practising [1] - 1024:10
practitioner [9] - 1024:4, 1094:18, 1115:10, 1232:7, 1233:13, 1233:14, 1264:5, 1264:20, 1268:7
practitioners [15] - 1033:10, 1047:15, 1049:16, 1049:18, 1049:21, 1107:13, 1163:1, 1163:7, 1163:22, 1184:13, 1185:3, 1185:9, 1188:19, 1263:10, 1267:2
prairie [14] - 1114:14, 1115:1, 1184:10, 1200:3, 1201:10, 1226:23, 1239:14, 1245:15, 1246:17, 1246:22, 1246:25, 1248:11, 1248:14
pre [1] - 1245:13
pre-construction [1] - 1245:13
precedent [1] - 1227:19
precedent-setting [1] - 1227:19
precise [1] - 1297:5
precisely [2] - 1235:25, 1287:22
predict [3] - 1132:1, 1135:5, 1256:14
predicted [7] - 1041:22, 1050:5, 1167:15, 1169:4, 1241:14, 1260:18, 1262:14
predicting [2] - 1042:19, 1133:2
prediction [3] - 1142:1, 1151:10, 1265:17
predictions [4] - 1140:12, 1146:17, 1150:25, 1241:21
predictive [1] - 1142:4
predicts [5] - 1145:23, 1146:21, 1187:6, 1260:24
prefer [2] - 1062:12, 1147:10
preferred [5] - 1121:19, 1191:18, 1215:6, 1275:24,

1284:13
preliminary [1] - 1022:1
preparation [4] - 1021:23, 1165:9, 1172:13, 1188:23
prepare [6] - 1136:17, 1171:22, 1173:12, 1188:6, 1189:23, 1254:12
prepared [33] - 1025:2, 1025:12, 1025:21, 1026:13, 1026:22, 1026:25, 1027:21, 1043:10, 1054:8, 1058:25, 1059:7, 1074:3, 1074:4, 1123:1, 1128:6, 1152:17, 1172:6, 1183:14, 1183:17, 1188:21, 1189:3, 1190:5, 1191:8, 1191:17, 1191:18, 1192:16, 1192:19, 1194:4, 1201:18, 1203:16, 1235:16, 1254:2, 1258:8
preparing [4] - 1098:6, 1100:21, 1145:20, 1189:9
prescribed [2] - 1177:18, 1252:18
presence [5] - 1028:25, 1040:21, 1093:4, 1148:25, 1175:9
present [14] - 1033:20, 1033:25, 1037:9, 1041:13, 1042:2, 1050:11, 1050:23, 1110:23, 1123:19, 1168:22, 1173:20, 1175:15, 1190:11, 1207:9
presentation [2] - 1151:24, 1162:2
presented [6] - 1156:22, 1157:19, 1180:19, 1182:16, 1215:5, 1236:9
presenting [1] - 1233:23
presents [2] - 1027:14, 1266:5
preservation [1] - 1166:5
press [2] - 1180:20, 1297:9
pressed [1] - 1302:19
presumably [3] - 1103:5, 1103:9, 1213:25
pretend [1] - 1235:11
pretty [9] - 1021:25, 1022:10, 1150:13, 1155:19, 1161:23, 1168:9, 1169:4, 1220:8, 1258:5
prevailing [1] - 1266:14
prevalent [1] - 1134:7
prevent [2] - 1072:2, 1241:25
previous [3] - 1179:20, 1199:17, 1232:1
previously [2] -

1197:3, 1238:10
prices [3] - 1222:6, 1223:9, 1266:14
primarily [4] - 1078:2, 1208:1, 1208:3, 1229:19
primary [1] - 1293:25
principal [2] - 1034:17, 1236:1
printed [1] - 1142:21
prioritize [1] - 1210:20
private [5] - 1209:2, 1209:12, 1210:3, 1213:16, 1282:5
privilege [1] - 1225:22
pro [1] - 1142:10
proactive [1] - 1195:3
problem [14] - 1026:10, 1051:24, 1069:6, 1208:13, 1236:5, 1257:6, 1259:4, 1261:2, 1278:8, 1278:15, 1280:13, 1281:14, 1294:5, 1300:13
problems [2] - 1259:15, 1261:3
procedural [2] - 1182:8, 1182:17
procedure [6] - 1089:14, 1097:15, 1097:19, 1168:11, 1213:12, 1213:13
procedures [5] - 1024:11, 1143:4, 1213:11, 1213:15, 1214:1
proceed [9] - 1027:19, 1038:7, 1040:1, 1045:14, 1054:24, 1059:12, 1061:11, 1136:20, 1225:18
Proceeding [1] - 1019:7
proceeding [31] - 1026:1, 1026:14, 1033:9, 1046:14, 1058:22, 1105:13, 1106:11, 1106:16, 1109:4, 1128:4, 1174:7, 1175:8, 1180:13, 1180:18, 1181:22, 1181:23, 1182:5, 1189:14, 1194:13, 1206:3, 1207:2, 1207:14, 1208:9, 1209:5, 1215:10, 1216:14, 1236:19, 1238:19, 1261:9, 1289:1, 1294:22
Proceedings [1] - 1020:1
proceedings [1] - 1303:6
PROCEEDINGS [6] - 1020:18, 1172:22, 1172:24, 1173:5, 1302:23, 1302:25
process [9] - 1029:18, 1061:2, 1100:7, 1122:5, 1163:25, 1165:24, 1199:12, 1219:23, 1220:8
processes [1] -

1077:11
proclamation [1] - 1218:8
produce [1] - 1280:22
produced [2] - 1064:9, 1065:11
producing [1] - 1266:13
production [4] - 1177:3, 1266:7, 1266:10, 1266:13
productive [1] - 1248:22
professional [4] - 1094:2, 1094:21, 1182:12, 1194:4
professionals [1] - 1080:8
profile [3] - 1068:12, 1068:13, 1083:22
profound [1] - 1227:17
program [5] - 1103:8, 1108:11, 1219:1, 1220:3, 1223:5
progressed [2] - 1176:3, 1296:1
progressive [2] - 1051:8, 1090:7
progressively [1] - 1199:14
prohibition [1] - 1213:17
project [254] - 1024:24, 1025:14, 1029:1, 1030:20, 1031:18, 1050:9, 1050:13, 1054:5, 1101:2, 1102:2, 1103:5, 1105:21, 1105:25, 1107:2, 1107:8, 1107:17, 1108:4, 1110:6, 1114:13, 1152:15, 1152:25, 1155:11, 1159:19, 1173:24, 1174:5, 1174:6, 1174:12, 1175:3, 1175:18, 1175:21, 1176:7, 1176:15, 1176:19, 1176:21, 1177:4, 1177:6, 1177:12, 1177:16, 1177:21, 1178:3, 1178:4, 1178:8, 1178:14, 1179:21, 1179:24, 1180:9, 1182:22, 1182:24, 1183:3, 1183:9, 1183:13, 1183:16, 1184:4, 1184:5, 1184:8, 1184:10, 1184:11, 1185:16, 1185:25, 1186:10, 1186:13, 1186:17, 1187:4, 1187:7, 1188:3, 1188:7, 1188:9, 1188:10, 1188:13, 1189:4, 1189:7, 1189:15, 1189:18, 1189:21, 1190:6, 1190:13, 1191:15, 1193:4, 1193:8, 1193:14, 1193:24, 1194:10, 1194:20, 1194:23, 1194:25, 1195:11, 1195:16, 1195:23,

1196:9, 1196:16, 1196:23, 1196:24, 1197:1, 1197:2, 1197:6, 1197:12, 1197:14, 1197:21, 1197:23, 1197:24, 1198:1, 1198:11, 1198:13, 1198:14, 1198:21, 1199:7, 1199:11, 1199:14, 1199:15, 1199:17, 1200:5, 1200:7, 1200:11, 1200:14, 1200:16, 1200:20, 1200:24, 1201:3, 1202:2, 1202:5, 1202:8, 1202:10, 1202:18, 1202:24, 1203:11, 1203:13, 1203:14, 1203:17, 1203:21, 1203:22, 1204:1, 1204:2, 1204:17, 1205:15, 1205:17, 1205:24, 1206:23, 1207:10, 1207:21, 1207:22, 1208:4, 1208:25, 1209:1, 1209:3, 1209:10, 1210:2, 1210:9, 1210:20, 1211:2, 1212:22, 1214:14, 1214:16, 1214:18, 1215:17, 1215:22, 1216:10, 1216:19, 1217:9, 1217:11, 1217:14, 1217:18, 1217:23, 1218:2, 1218:13, 1218:18, 1218:20, 1219:1, 1219:3, 1219:5, 1219:8, 1219:14, 1219:19, 1220:6, 1220:11, 1220:18, 1220:19, 1220:24, 1221:3, 1221:12, 1222:4, 1222:17, 1223:5, 1223:10, 1223:15, 1223:19, 1223:22, 1223:24, 1224:9, 1224:20, 1224:25, 1225:2, 1226:12, 1227:8, 1227:14, 1228:4, 1231:5, 1232:23, 1235:24, 1236:25, 1237:8, 1237:22, 1237:25, 1238:9, 1240:3, 1240:12, 1241:2, 1241:4, 1242:5, 1242:8, 1242:13, 1242:18, 1243:12, 1243:25, 1244:11, 1247:4, 1247:20, 1247:22, 1248:4, 1249:10, 1249:16, 1250:18, 1252:10, 1253:23, 1256:12, 1257:21, 1258:8, 1263:22, 1264:17, 1264:19, 1264:23, 1267:10, 1269:25, 1270:5, 1274:25, 1287:12, 1289:11, 1294:11, 1295:10, 1295:15, 1295:25, 1296:1, 1296:9, 1296:23, 1297:3, 1297:8, 1297:10, 1297:12, 1298:3,

1298:6, 1298:11, 1298:22, 1299:11, 1299:12
Project [2] - 1156:11, 1157:6
PROJECT [3] - 1019:10, 1156:13, 1304:22
project's [5] - 1174:9, 1187:11, 1196:18, 1218:4, 1222:21
projects [31] - 1042:5, 1091:1, 1100:14, 1105:16, 1105:17, 1105:20, 1106:12, 1109:1, 1174:15, 1174:21, 1175:16, 1184:13, 1193:10, 1193:19, 1195:7, 1203:8, 1205:5, 1216:18, 1223:4, 1227:20, 1230:6, 1231:3, 1235:17, 1236:6, 1237:18, 1238:13, 1239:2, 1245:1, 1252:21, 1252:25
proof [1] - 1159:6
propagated [1] - 1036:20
propagates [2] - 1137:21, 1138:4
propagation [41] - 1029:2, 1033:21, 1033:22, 1035:6, 1037:7, 1037:10, 1037:18, 1037:19, 1038:17, 1038:19, 1038:21, 1038:24, 1039:1, 1039:6, 1039:13, 1040:19, 1042:8, 1043:16, 1043:20, 1044:4, 1045:19, 1047:1, 1047:2, 1047:5, 1047:12, 1048:3, 1048:19, 1124:22, 1125:3, 1127:1, 1127:5, 1131:12, 1135:21, 1137:6, 1137:19, 1144:6, 1146:1, 1183:23, 1259:11, 1263:17, 1267:12
propagations [1] - 1040:7
proper [2] - 1241:7, 1270:14
properly [1] - 1049:14
properties [2] - 1216:17, 1218:1
property [8] - 1199:24, 1216:8, 1216:11, 1216:18, 1216:20, 1221:6, 1224:4, 1294:19
proponent [13] - 1027:22, 1060:12, 1105:24, 1108:19, 1134:9, 1147:18, 1184:3, 1207:16, 1227:10, 1235:21, 1236:10, 1253:13, 1269:15
proponent's [2] - 1105:20, 1180:1
proponents [6] - 1105:16, 1109:1,

1166:12, 1232:2, 1261:21, 1263:3
proportion [1] - 1087:20
proposal [2] - 1254:9, 1298:16
propose [1] - 1297:24
proposed [23] - 1024:23, 1054:4, 1063:13, 1101:2, 1138:16, 1175:4, 1175:20, 1179:2, 1179:15, 1188:4, 1191:22, 1199:17, 1207:4, 1211:15, 1214:25, 1215:3, 1227:9, 1229:7, 1230:5, 1246:6, 1261:11, 1276:15, 1289:11
proposition [2] - 1206:16, 1235:4
propositions [1] - 1232:21
prospect [1] - 1062:15
protect [4] - 1210:12, 1211:13, 1244:9, 1294:23
protecting [1] - 1211:2
Protection [2] - 1218:10, 1230:4
protection [3] - 1211:6, 1237:16, 1252:22
protects [1] - 1177:17
protein [1] - 1251:22
protocols [3] - 1183:15, 1188:23, 1191:20
proud [1] - 1177:3
prove [1] - 1094:3
proved [1] - 1227:11
proven [2] - 1047:16, 1184:15
proverbial [1] - 1228:3
provide [28] - 1034:13, 1034:15, 1042:22, 1046:19, 1071:19, 1088:20, 1092:23, 1093:4, 1093:17, 1105:6, 1106:3, 1107:11, 1107:19, 1140:11, 1143:20, 1147:3, 1154:3, 1175:5, 1178:6, 1178:15, 1180:25, 1181:10, 1181:24, 1184:20, 1222:18, 1236:10, 1287:6
provided [33] - 1024:13, 1028:1, 1030:3, 1031:23, 1040:23, 1044:23, 1045:17, 1047:17, 1053:13, 1098:7, 1106:18, 1106:23, 1110:21, 1111:3, 1111:7, 1114:5, 1121:13, 1127:9, 1128:7, 1135:8, 1142:20, 1145:14, 1147:6, 1151:23, 1168:3, 1174:6, 1185:13, 1196:21,

1198:14, 1201:6, 1206:17, 1236:24, 1271:5
provides [12] - 1027:1, 1034:23, 1035:3, 1059:9, 1211:5, 1218:2, 1236:15, 1248:15, 1253:6, 1264:15, 1287:7, 1289:8
providing [6] - 1048:14, 1221:23, 1243:10, 1253:2, 1292:16, 1300:8
province [14] - 1166:4, 1174:21, 1175:5, 1195:7, 1196:12, 1204:16, 1221:16, 1223:2, 1223:6, 1226:20, 1230:6, 1230:13, 1231:17, 1299:15
Province [1] - 1303:9
provincial [6] - 1177:25, 1180:10, 1193:3, 1209:11, 1223:8, 1250:20
provincially [1] - 1166:16
provision [2] - 1101:10, 1257:16
proximity [8] - 1063:12, 1135:11, 1160:19, 1207:6, 1209:12, 1214:18, 1247:20, 1292:2
proxy [1] - 1266:24
PSL [23] - 1029:5, 1029:25, 1041:18, 1041:25, 1043:4, 1043:8, 1045:19, 1124:2, 1147:24, 1152:20, 1152:21, 1153:21, 1167:5, 1167:14, 1167:25, 1260:2, 1260:5, 1260:6, 1260:11, 1260:12, 1268:21, 1269:17, 1269:20
PSLs [1] - 1261:5
public [28] - 1041:14, 1061:4, 1097:21, 1099:14, 1099:19, 1174:9, 1175:18, 1178:16, 1178:19, 1179:3, 1179:10, 1179:15, 1179:21, 1189:17, 1207:24, 1218:24, 1219:23, 1222:17, 1228:19, 1233:24, 1233:25, 1237:1, 1237:10, 1253:13, 1253:14, 1254:22, 1272:23, 1298:6
publication [2] - 1098:10, 1213:2
publications [1] - 1182:13
pull [8] - 1022:19, 1071:23, 1073:20, 1101:14, 1114:2, 1133:11, 1162:3, 1273:6
pulled [3] - 1022:13, 1157:17, 1272:7
pulling [1] - 1297:16
pump [1] - 1092:20
pumping [6] - 1029:19, 1048:4,

1048:5, 1259:7, 1266:1, 1266:6
purchased [1] - 1266:11
pure [1] - 1144:2
purely [1] - 1074:25
purple [8] - 1057:10, 1057:12, 1057:13, 1078:24, 1079:8, 1079:21, 1079:23, 1079:24
purports [1] - 1188:8
purpose [8] - 1030:19, 1031:10, 1094:15, 1164:19, 1179:6, 1212:10, 1252:6, 1294:23
purposely [2] - 1063:9, 1087:17
purposes [10] - 1178:13, 1178:14, 1179:1, 1184:8, 1188:14, 1189:10, 1208:5, 1223:11, 1237:18, 1288:25
pursuant [4] - 1174:2, 1180:10, 1181:12, 1181:18
pursue [1] - 1169:17
push [2] - 1022:17, 1022:18
put [26] - 1052:13, 1060:22, 1069:16, 1075:7, 1080:17, 1095:6, 1097:11, 1101:11, 1102:8, 1116:19, 1138:14, 1139:15, 1153:19, 1169:22, 1177:11, 1210:19, 1233:21, 1235:1, 1235:4, 1245:16, 1249:15, 1265:4, 1279:21, 1283:17, 1295:21, 1296:21
puts [1] - 1294:6
putting [6] - 1097:7, 1167:23, 1168:15, 1211:1, 1238:13, 1301:8

Q

QC [1] - 1020:14
qualification [1] - 1102:4
qualifications [6] - 1024:2, 1024:15, 1051:5, 1053:14, 1182:10, 1182:12
qualified [2] - 1090:16, 1234:20
qualify [1] - 1047:20
qualities [1] - 1099:10
quality [17] - 1036:7, 1060:10, 1060:15, 1060:25, 1113:10, 1142:5, 1166:2, 1166:4, 1166:17, 1170:10, 1184:5, 1188:10, 1193:3, 1250:3, 1250:16, 1253:20, 1270:25
quantify [1] - 1144:11
quantitative [1] - 1099:13
quantitatively [1] - 1188:8

quantities [2] - 1033:21, 1217:24
quarter [4] - 1063:8, 1136:6, 1250:24, 1270:15
questioned [2] - 1048:25, 1194:8
questioning [8] - 1080:18, 1095:20, 1120:11, 1136:13, 1136:23, 1156:17, 1161:24, 1185:2
QUESTIONING [2] - 1156:19, 1305:1
QUESTIONS [6] - 1119:16, 1159:15, 1161:14, 1304:9, 1304:10, 1304:11
questions [33] - 1046:13, 1053:19, 1079:25, 1096:4, 1098:16, 1100:16, 1105:3, 1115:17, 1119:8, 1119:10, 1119:12, 1120:5, 1127:24, 1136:14, 1141:20, 1149:12, 1155:24, 1155:25, 1159:11, 1159:13, 1161:11, 1169:9, 1169:11, 1170:22, 1184:23, 1210:24, 1225:6, 1225:9, 1236:11, 1276:18, 1296:21, 1299:21, 1299:23
quick [4] - 1098:20, 1103:7, 1150:13, 1258:3
quickly [3] - 1028:10, 1258:6, 1270:9
quiet [4] - 1090:9, 1151:21, 1227:2, 1297:25
quite [14] - 1028:10, 1050:23, 1085:16, 1091:5, 1097:12, 1116:8, 1241:11, 1261:7, 1262:15, 1270:9, 1279:7, 1280:5, 1284:24, 1300:14
quote [25] - 1034:11, 1035:1, 1035:12, 1036:7, 1181:25, 1182:5, 1230:7, 1245:1, 1245:10, 1248:8, 1251:6, 1258:14, 1258:15, 1264:13, 1278:9, 1279:22, 1279:23, 1279:24, 1279:25, 1280:25, 1283:7, 1283:9, 1285:4, 1289:14, 1295:22
quotes [1] - 1099:17

R

R14 [2] - 1167:3, 1169:3
R16 [1] - 1169:6
R19 [2] - 1167:3, 1169:6
R20 [2] - 1038:22, 1039:7
R22 [2] - 1038:11, 1038:18
R23 [2] - 1038:11,

1038:18
R25 [2] - 1167:3, 1169:6
R32 [2] - 1167:3, 1169:6
R35 [6] - 1129:18, 1129:23, 1129:24, 1136:1, 1168:3, 1169:6
R35A [1] - 1167:3
radar [6] - 1203:2, 1203:7, 1242:21, 1243:3, 1243:7, 1243:9
radiate [1] - 1146:5
radiation [1] - 1138:1
radius [7] - 1110:18, 1148:10, 1148:11, 1148:13, 1285:1, 1291:5
raise [1] - 1240:14
raised [11] - 1031:16, 1032:5, 1081:12, 1083:21, 1193:12, 1200:10, 1201:15, 1214:13, 1219:24, 1221:8, 1240:13
raises [1] - 1256:5
Ralph [2] - 1270:12, 1270:18
Ranches [2] - 1273:11, 1281:2
ranching [2] - 1177:9, 1226:14
range [5] - 1133:13, 1133:22, 1150:15, 1188:19, 1197:20
Range [1] - 1270:16
ranges [2] - 1129:19, 1129:22
rapid [1] - 1284:18
raptors [3] - 1197:16, 1240:21, 1240:25
rare [7] - 1200:11, 1214:20, 1244:13, 1244:16, 1244:17, 1244:20
rarely [1] - 1189:22
rate [1] - 1280:12
rates [1] - 1048:22
rather [13] - 1048:8, 1055:13, 1066:7, 1075:24, 1078:3, 1080:5, 1086:20, 1092:15, 1093:23, 1104:22, 1185:14, 1188:18, 1191:24
rating [8] - 1060:17, 1086:5, 1086:6, 1086:10, 1096:20, 1162:2, 1169:21
ravines [1] - 1048:3
RDI [12] - 1023:12, 1052:14, 1055:6, 1055:9, 1058:10, 1064:9, 1078:11, 1188:5, 1190:5, 1191:18, 1192:16, 1232:6
RDI's [1] - 1190:21
RE [2] - 1169:16, 1304:12
re [5] - 1030:22, 1055:18, 1238:22, 1253:25, 1266:12
re-enter [1] - 1266:12
RE-EXAMINES [2] - 1169:16, 1304:12
re-measured [2] -

1030:22, 1055:18
re-sited [2] - 1238:22, 1253:25
reached [1] - 1194:11
reaching [2] - 1223:6, 1232:22
read [42] - 1028:4, 1031:12, 1035:1, 1061:14, 1081:25, 1089:21, 1090:5, 1099:9, 1100:20, 1105:4, 1116:6, 1124:6, 1137:8, 1139:21, 1140:2, 1142:25, 1144:9, 1144:10, 1149:19, 1149:24, 1179:12, 1182:1, 1206:5, 1208:12, 1245:1, 1245:10, 1253:1, 1278:9, 1278:14, 1279:2, 1280:2, 1280:14, 1280:25, 1283:18, 1286:16, 1286:22, 1290:12, 1290:16, 1291:21, 1292:14, 1295:22
reading [3] - 1078:15, 1094:4, 1249:6
ready [3] - 1095:22, 1136:16, 1225:18
real [12] - 1022:15, 1132:3, 1146:7, 1208:13, 1226:2, 1227:1, 1238:13, 1260:25, 1281:19, 1293:14, 1294:5, 1298:25
realism [1] - 1066:7
realistic [9] - 1122:8, 1181:15, 1190:6, 1191:10, 1191:24, 1192:11, 1233:10, 1258:15, 1258:16
realistic.. [1] - 1191:25
realistically [5] - 1245:22, 1264:6, 1265:18, 1266:4, 1268:13
reality [3] - 1132:15, 1186:17, 1191:4
realize [2] - 1251:25, 1268:6
really [40] - 1022:22, 1028:5, 1040:14, 1050:22, 1051:25, 1052:2, 1053:4, 1059:23, 1060:2, 1069:10, 1082:25, 1094:15, 1162:14, 1163:13, 1163:15, 1163:18, 1163:20, 1164:5, 1168:14, 1172:12, 1191:4, 1228:17, 1233:8, 1243:20, 1244:5, 1244:14, 1244:15, 1251:13, 1252:8, 1257:13, 1262:16, 1262:25, 1264:5, 1281:17, 1282:7, 1298:19, 1301:4, 1301:17, 1302:18, 1302:19
rearranging [1] - 1119:12
reason [11] -

1033:11, 1078:4, 1115:17, 1118:2, 1118:4, 1210:14, 1249:8, 1266:18, 1285:21, 1288:11, 1288:13
reasonable [11] - 1153:16, 1154:1, 1180:7, 1220:13, 1220:15, 1263:5, 1263:14, 1300:2, 1300:10, 1301:15, 1301:25
reasonably [1] - 1111:6
reasons [7] - 1043:14, 1174:13, 1176:4, 1191:19, 1246:9, 1266:19, 1299:1
rebuttal [1] - 1296:19
recalculate [1] - 1112:5
recalculated [2] - 1027:25, 1044:7
recalculations [1] - 1044:23
receive [1] - 1180:9
received [5] - 1184:17, 1184:20, 1199:1, 1216:11, 1230:3
receiver [5] - 1035:10, 1035:16, 1043:18, 1047:3, 1125:4
receivers [2] - 1041:1, 1043:17
receivership [2] - 1255:7, 1257:2
recent [8] - 1034:4, 1106:12, 1106:17, 1107:25, 1184:3, 1208:10, 1261:8, 1263:2
recently [5] - 1113:24, 1230:15, 1230:25, 1231:17, 1239:16
receptor [35] - 1032:19, 1033:23, 1037:5, 1037:7, 1037:13, 1037:15, 1039:3, 1040:20, 1047:23, 1109:10, 1124:9, 1124:23, 1124:24, 1125:2, 1125:4, 1125:17, 1132:13, 1135:7, 1135:15, 1135:16, 1135:19, 1138:17, 1138:23, 1146:2, 1146:15, 1148:19, 1148:23, 1149:7, 1153:14, 1187:18, 1187:25, 1259:8, 1263:18, 1266:22, 1267:2
Receptor [11] - 1038:18, 1038:22, 1039:7, 1039:11, 1133:2, 1133:4, 1133:6, 1133:8, 1134:18, 1134:24, 1135:1
receptors [33] - 1038:8, 1040:3, 1042:6, 1043:24, 1044:9, 1044:23, 1045:20, 1047:22,

1108:17, 1109:4, 1109:25, 1110:5, 1111:11, 1112:1, 1112:3, 1113:4, 1113:5, 1113:7, 1113:12, 1117:8, 1117:16, 1138:9, 1141:2, 1144:10, 1149:2, 1192:23, 1198:14, 1199:2, 1203:20, 1204:11, 1205:1, 1205:2, 1205:7, 1206:2, 1215:10, 1232:9, 1233:9, 1236:18, 1236:25, 1246:2, 1248:2, 1248:18, 1249:3, 1249:15, 1249:20, 1259:18, 1260:9

REPORT [2] - 1156:14, 1304:23

reported [1] - 1145:2

Reporter [2] - 1303:15, 1303:19

reporter [7] - 1022:20, 1023:16, 1023:22, 1028:6, 1029:11, 1136:11, 1225:11

Reporters [1] - 1020:15

reporters [1] - 1302:18

reports [9] - 1107:20, 1107:24, 1193:23, 1194:1, 1194:12, 1236:3, 1236:10, 1236:12, 1236:21

represent [8] - 1028:19, 1102:1, 1115:3, 1118:6, 1118:8, 1168:7, 1204:3, 1225:23

representations [1] - 1190:6

representative [36] - 1029:2, 1029:6, 1042:8, 1042:16, 1043:1, 1043:13, 1044:4, 1045:3, 1102:8, 1115:11, 1118:11, 1147:11, 1147:13, 1147:19, 1148:1, 1148:3, 1153:15, 1153:22, 1154:20, 1155:6, 1155:10, 1155:13, 1169:2, 1169:5, 1186:9, 1187:10, 1189:12, 1189:25, 1191:15, 1192:12, 1195:20, 1259:14, 1260:15, 1267:15, 1268:3, 1268:9

representatives [1] - 1194:11

represented [1] - 1116:13

representing [3] - 1114:12, 1168:16, 1240:18

represents [7] - 1102:3, 1168:4, 1168:5, 1168:6, 1201:12, 1221:12, 1223:24

request [10] - 1026:23, 1028:2,

1039:19, 1042:20, 1043:11, 1105:8, 1185:12, 1185:24, 1225:3, 1274:24

requested [3] - 1042:22, 1201:13, 1201:24

requests [10] - 1025:19, 1027:23, 1030:10, 1031:21, 1108:15, 1201:22, 1201:23, 1206:17, 1271:4, 1272:11

require [5] - 1056:25, 1174:20, 1176:25, 1213:10, 1253:18

required [15] - 1021:20, 1176:15, 1180:9, 1181:5, 1183:5, 1195:19, 1198:13, 1198:23, 1198:24, 1209:21, 1218:11, 1219:4, 1242:12, 1255:5, 1256:12

requirements [5] - 1174:10, 1183:4, 1197:25, 1218:22, 1219:21

requires [4] - 1071:24, 1071:25, 1178:25, 1179:22

requisite [1] - 1225:4

reran [2] - 1045:7, 1260:16

rerun [1] - 1074:6

RES [2] - 1231:5, 1261:12

resale [1] - 1217:21

research [1] - 1206:19

researched [1] - 1162:18

researcher [1] - 1206:16

researchers [2] - 1206:2, 1206:6

reserves [1] - 1251:23

reservoir [1] - 1050:12

reside [4] - 1220:24, 1221:3, 1294:14, 1297:3

residence [3] - 1041:24, 1088:12, 1189:21

residences [12] - 1029:6, 1043:5, 1043:9, 1145:22, 1168:6, 1168:8, 1216:4, 1220:23, 1234:7, 1267:10, 1269:20, 1297:7

residents [4] - 1216:23, 1217:14, 1217:15, 1294:17

residual [8] - 1201:10, 1224:22, 1238:2, 1238:3, 1238:7, 1242:13, 1244:19, 1254:18

Resource [3] - 1023:12, 1188:5, 1232:6

resource [13] - 1051:8, 1051:11, 1051:15, 1052:25, 1059:17, 1059:24, 1060:2, 1060:8,

1060:13, 1176:6, 1177:3, 1177:7, 1253:13

resources [4] - 1052:24, 1208:9, 1222:5, 1255:6

respect [32] - 1096:4, 1100:17, 1105:13, 1106:9, 1117:7, 1167:24, 1173:10, 1173:11, 1181:19, 1187:18, 1188:11, 1188:25, 1200:10, 1201:14, 1203:2, 1213:17, 1214:13, 1221:22, 1239:4, 1244:24, 1250:7, 1253:25, 1261:15, 1264:12, 1266:22, 1270:11, 1276:19, 1277:4, 1277:5, 1279:23, 1286:6, 1291:7

respectful [1] - 1219:17

respectfully [14] - 1174:5, 1175:23, 1177:1, 1185:24, 1191:13, 1192:15, 1195:13, 1196:13, 1200:18, 1209:6, 1215:4, 1219:23, 1225:3, 1299:18

respective [1] - 1180:21

respects [1] - 1192:17

respond [2] - 1171:4, 1203:6

responded [2] - 1049:2, 1183:1

responding [2] - 1087:9, 1170:22

response [25] - 1027:22, 1028:2, 1031:20, 1043:11, 1093:24, 1094:19, 1094:21, 1097:25, 1105:8, 1184:22, 1185:12, 1201:22, 1205:22, 1206:17, 1210:24, 1217:3, 1217:8, 1217:10, 1230:2, 1271:4, 1272:10, 1274:23, 1276:18, 1297:6, 1300:24

responses [4] - 1025:22, 1025:25, 1030:9, 1204:22

responsibilities [1] - 1051:10

responsibility [2] - 1236:14, 1257:1

responsible [4] - 1168:12, 1168:21, 1195:3, 1237:7

responsibly [1] - 1175:17

rest [10] - 1022:21, 1104:24, 1123:25, 1124:9, 1131:10, 1131:11, 1136:13, 1139:11, 1144:6, 1233:18

restoration [2] - 1201:2, 1246:1

restoring [1] - 1200:22

restraints [1] -

1061:5

restrict [3] - 1173:10, 1202:16, 1288:22

restricted [2] - 1050:16, 1166:23

restriction [1] - 1166:23

restrictions [3] - 1168:15, 1209:11, 1215:13

restrictive [1] - 1166:14

rests [1] - 1292:23

result [16] - 1034:14, 1035:20, 1041:8, 1133:15, 1133:25, 1147:10, 1205:5, 1205:19, 1220:6, 1232:5, 1241:3, 1260:2, 1260:9, 1260:14, 1268:20, 1268:21

resulted [1] - 1265:16

resulting [4] - 1190:12, 1218:9, 1235:20, 1245:5

results [59] - 1025:13, 1026:21, 1027:3, 1031:5, 1033:14, 1036:10, 1036:11, 1036:13, 1040:6, 1040:24, 1043:7, 1043:10, 1043:12, 1044:1, 1044:7, 1045:18, 1127:17, 1128:3, 1129:10, 1129:13, 1130:2, 1132:1, 1132:17, 1132:18, 1135:25, 1139:7, 1140:10, 1140:11, 1141:23, 1144:23, 1145:13, 1145:20, 1145:21, 1146:16, 1147:10, 1147:16, 1152:22, 1152:24, 1153:5, 1154:3, 1154:6, 1167:7, 1183:9, 1184:21, 1185:14, 1185:15, 1203:9, 1240:6, 1240:10, 1242:16, 1258:9, 1262:5, 1262:11, 1265:14, 1265:15, 1265:16, 1267:16

Results [1] - 1044:16

resume [1] - 1072:25

retained [7] - 1024:21, 1054:2, 1180:23, 1182:2, 1188:5, 1232:6, 1259:16

retainer [1] - 1025:2

retains [1] - 1198:6

retention [4] - 1166:6, 1166:11

retiring [1] - 1221:15

retreated [1] - 1203:24

return [6] - 1078:10, 1137:2, 1169:12, 1220:5, 1282:14, 1295:3

revealed [1] - 1031:4

revegetation [1] - 1245:20

revenue [3] - 1222:1, 1222:5, 1224:6

review [14] - 1024:23, 1030:13, 1031:23, 1061:21, 1098:22, 1100:11, 1128:10, 1164:15, 1178:6, 1194:2, 1201:7, 1204:9, 1259:17, 1292:15

Review [3] - 1291:23, 1292:9, 1292:12

reviewed [24] - 1026:12, 1026:16, 1026:21, 1026:24, 1027:21, 1027:22, 1027:25, 1058:24, 1059:3, 1107:5, 1108:12, 1113:5, 1113:7, 1117:22, 1132:6, 1139:23, 1146:18, 1182:25, 1185:9, 1193:6, 1200:16, 1201:20, 1204:10, 1264:1

reviewer [2] - 1113:10, 1184:5

Reviewer [1] - 1113:12

reviewing [1] - 1034:6

reviews [2] - 1204:11, 1236:8

revised [9] - 1026:21, 1027:2, 1033:13, 1043:10, 1129:10, 1288:5, 1288:8, 1289:18, 1292:1

revisited [1] - 1253:24

rewarding [1] - 1220:8

rich [1] - 1090:9

ridiculous [1] - 1234:9

right-hand [13] - 1038:10, 1038:24, 1102:17, 1102:21, 1103:1, 1275:23, 1276:4, 1276:7, 1277:3, 1277:8, 1277:15, 1280:20

rights [1] - 1219:4

rigorously [1] - 1091:13

risk [19] - 1084:16, 1085:8, 1086:13, 1095:12, 1162:10, 1193:25, 1195:16, 1196:23, 1198:15, 1202:23, 1202:25, 1207:7, 1214:12, 1238:13, 1238:25, 1239:3, 1256:23, 1260:25

River [2] - 1050:12, 1051:17

road [13] - 1038:19, 1063:14, 1064:21, 1078:19, 1084:5, 1087:2, 1094:7, 1094:10, 1121:14, 1189:19, 1189:25, 1200:1, 1223:20

road-based [1] - 1189:25

roads [20] - 1034:2, 1057:9, 1063:9, 1078:20, 1079:8, 1088:15, 1089:19,

1104:22, 1111:22, 1112:6, 1113:18, 1130:16, 1160:2, 1161:5, 1176:15, 1186:14, 1224:7, 1238:16, 1238:24, 1254:5
roadway [3] - 1065:3, 1065:8, 1092:4
roadways [7] - 1051:23, 1078:18, 1189:18, 1189:22, 1191:3, 1234:10, 1246:20
role [3] - 1125:23, 1151:10, 1298:5
roles [1] - 1236:13
rolling [4] - 1080:1, 1090:17, 1226:22, 1234:18
room [3] - 1021:10, 1022:21, 1119:13
roosting [1] - 1206:9
rooted [1] - 1227:4
roots [1] - 1034:15
rose [1] - 1154:7
Ross [7] - 1208:11, 1229:10, 1239:12, 1239:19, 1239:23, 1257:9, 1294:16
rotate [1] - 1082:6
rotor [10] - 1050:17, 1228:24, 1230:18, 1230:22, 1231:1, 1231:6, 1231:9, 1231:13, 1240:24, 1241:1
rotor-swept [1] - 1241:1
rough [5] - 1244:24, 1245:4, 1246:1, 1246:4, 1280:10
roughly [4] - 1069:18, 1126:19, 1138:19, 1145:10
round [2] - 1223:4, 1224:15
rounding [1] - 1063:6
rounds [3] - 1214:17, 1220:2, 1224:18
routinely [1] - 1189:17
row [2] - 1056:3, 1274:13
rows [2] - 1115:2, 1205:15
Royal [1] - 1024:9
RPR [2] - 1020:16, 1303:18
rubber [4] - 1227:23, 1228:4, 1287:14, 1298:16
rule [2] - 1183:5, 1269:13
Rule [30] - 1032:11, 1032:20, 1032:25, 1041:5, 1105:5, 1147:22, 1153:25, 1154:18, 1155:13, 1155:16, 1167:16, 1167:17, 1174:4, 1177:19, 1180:4, 1181:5, 1181:18, 1183:4, 1183:11, 1183:14, 1184:15, 1185:17, 1187:11, 1197:17, 1219:2, 1219:21, 1261:1,

1261:5, 1268:23, 1270:1
rules [4] - 1167:24, 1213:25, 1215:8, 1275:16
ruling [1] - 1182:6
Run [1] - 1051:17
run [6] - 1074:5, 1220:2, 1237:9, 1252:19, 1270:8, 1299:11
running [2] - 1024:2, 1051:22
runoff [1] - 1272:8
runs [2] - 1159:18, 1274:2
runway [4] - 1211:7, 1211:20, 1290:4, 1290:25
rural [1] - 1033:1
RWDI [45] - 1024:25, 1026:18, 1026:22, 1027:21, 1029:19, 1030:6, 1030:15, 1031:24, 1031:25, 1032:9, 1032:12, 1036:19, 1041:6, 1042:25, 1043:10, 1044:3, 1049:4, 1058:9, 1058:12, 1109:8, 1111:25, 1117:13, 1119:2, 1122:22, 1140:1, 1148:20, 1149:2, 1182:25, 1185:13, 1187:6, 1258:8, 1258:12, 1259:1, 1259:12, 1261:18, 1261:22, 1263:9, 1265:24, 1266:3, 1268:8, 1268:11, 1268:12, 1268:20, 1268:22
RWDI's [13] - 1027:2, 1028:22, 1028:24, 1029:1, 1033:12, 1043:7, 1129:9, 1132:16, 1145:21, 1259:6, 1260:22, 1266:9, 1267:13

S

S.W [1] - 1020:2
S12.57 [1] - 1030:8
safe [10] - 1178:18, 1210:3, 1210:15, 1210:22, 1211:3, 1211:10, 1282:21, 1293:1, 1293:14, 1294:2
safely [5] - 1210:11, 1210:13, 1212:22, 1215:18, 1215:21
safety [10] - 1209:17, 1215:2, 1216:21, 1216:22, 1283:25, 1286:24, 1287:23, 1288:1, 1288:12, 1293:20
salvage [1] - 1217:22
sample [1] - 1260:11
sand [2] - 1228:3, 1298:15
sands [2] - 1052:21, 1096:16
Saskatchewan [1] - 1206:22
satisfied [2] - 1180:7, 1287:25

savvy [2] - 1022:10, 1072:22
saw [8] - 1035:13, 1085:23, 1134:20, 1226:3, 1226:16, 1246:20, 1296:20, 1302:8
saw-off [1] - 1302:8
scale [4] - 1064:14, 1103:16, 1160:12, 1192:13
scaled [1] - 1204:5
scan [1] - 1062:2
scarcity [1] - 1083:16
scavengers [1] - 1241:24
scenarios [1] - 1268:19
scenery [1] - 1083:16
schedule [1] - 1300:3
scholars [1] - 1093:21
schools [1] - 1224:7
scientific [1] - 1205:3
scientists [1] - 1220:14
scrap [6] - 1256:3, 1256:6, 1256:8, 1256:14, 1256:21, 1257:4
screen [7] - 1022:14, 1099:6, 1109:6, 1112:20, 1140:20, 1157:14, 1157:18
screened [2] - 1067:10, 1067:11
screening [8] - 1048:1, 1064:20, 1067:14, 1067:18, 1082:1, 1092:16, 1102:24
screens [1] - 1022:11
scroll [3] - 1124:5, 1137:5, 1273:7
scrub [3] - 1075:13, 1075:14, 1075:15
scrutiny [1] - 1244:22
se [1] - 1088:4
season [5] - 1042:15, 1045:4, 1154:20, 1155:18, 1208:24
seasonal [4] - 1115:6, 1116:18, 1221:4, 1251:9
seat [1] - 1276:1
seated [7] - 1020:20, 1023:7, 1023:11, 1073:10, 1119:14, 1137:1, 1225:17
seats [1] - 1275:25
sec [1] - 1130:11
second [36] - 1028:16, 1028:21, 1028:25, 1032:7, 1032:8, 1032:10, 1032:13, 1041:3, 1041:4, 1041:11, 1041:15, 1041:17, 1041:21, 1041:24, 1042:1, 1042:6, 1044:11, 1061:21, 1099:5, 1099:8, 1110:3, 1115:25,

1134:10, 1156:24, 1157:18, 1158:7, 1207:25, 1209:23, 1213:7, 1247:18, 1254:25, 1259:9, 1266:24, 1267:10, 1293:8
SECOND [2] - 1158:15, 1305:4
second-storey [6] - 1028:25, 1041:3, 1041:17, 1041:21, 1041:24, 1042:6
secondly [3] - 1255:21, 1256:16, 1258:20
seconds [1] - 1133:12
section [3] - 1081:19, 1100:13, 1283:5
Section [19] - 1030:12, 1178:12, 1178:25, 1179:4, 1179:11, 1181:5, 1181:18, 1210:2, 1270:15, 1273:10, 1273:11, 1273:15, 1283:2, 1287:10, 1287:14, 1288:14, 1290:10, 1290:15, 1292:13
Sections [3] - 1174:2, 1178:11
sector [2] - 1175:2, 1179:9
secure [3] - 1178:17, 1219:10, 1219:12
securing [1] - 1223:8
Sedalia [14] - 1030:22, 1104:11, 1152:19, 1168:4, 1168:5, 1187:15, 1187:18, 1187:21, 1226:13, 1226:17, 1231:24, 1267:8, 1294:15, 1295:16
see [84] - 1022:12, 1023:2, 1030:12, 1035:7, 1038:19, 1038:24, 1038:25, 1039:1, 1039:5, 1039:8, 1049:8, 1053:11, 1055:5, 1060:3, 1065:25, 1068:4, 1068:12, 1068:16, 1069:15, 1069:25, 1073:1, 1076:2, 1078:23, 1080:6, 1083:1, 1085:6, 1085:15, 1089:6, 1094:1, 1094:7, 1094:11, 1099:15, 1103:1, 1111:4, 1112:25, 1114:5, 1115:16, 1120:16, 1121:13, 1122:7, 1139:7, 1139:15, 1140:11, 1142:22, 1152:4, 1152:6, 1152:7, 1152:9, 1157:3, 1157:5, 1160:3, 1161:1, 1165:18, 1168:12, 1169:17, 1172:20, 1212:11, 1225:9, 1229:14, 1232:15, 1241:20, 1262:10, 1262:16, 1273:10, 1273:14,

1273:17, 1273:18, 1273:22, 1274:2, 1274:3, 1274:9, 1274:11, 1274:14, 1276:23, 1285:16, 1288:20, 1290:1, 1290:12, 1291:4, 1291:23, 1292:4, 1292:5, 1302:10, 1302:21
seeded [2] - 1086:1, 1272:8
seeing [3] - 1022:4, 1134:23, 1225:10
seek [1] - 1099:18
seem [3] - 1093:7, 1113:14, 1113:16
seemingly [1] - 1226:19
segments [1] - 1078:20
select [3] - 1087:17, 1187:9, 1189:11
selected [5] - 1045:20, 1184:9, 1189:16, 1223:4, 1252:22
selecting [1] - 1176:5
selection [8] - 1029:18, 1044:9, 1108:15, 1176:17, 1259:4, 1259:21, 1265:25, 1267:25
self [3] - 1231:22, 1232:21, 1233:4
self-evident [3] - 1231:22, 1232:21, 1233:4
semipermanent [1] - 1115:6
sense [10] - 1036:16, 1063:1, 1070:14, 1089:25, 1102:5, 1123:5, 1123:14, 1171:8, 1191:4, 1237:19
sensitivity [1] - 1166:22
sensors [1] - 1216:25
sent [1] - 1098:20
sentence [3] - 1057:20, 1149:18, 1149:23
separate [2] - 1034:3, 1187:20
separately [9] - 1033:19, 1034:1, 1103:15, 1129:24, 1258:22, 1259:1, 1263:8, 1264:22, 1265:1
September [2] - 1289:18, 1292:1
serious [1] - 1279:24
seriously [2] - 1233:5, 1247:8
servant [1] - 1192:9
serve [2] - 1085:2, 1190:8
served [1] - 1252:6
serves [1] - 1094:15
Service [2] - 1247:12, 1247:13
service [1] - 1162:19
services [2] - 1223:21, 1224:8
Session [1] - 1173:3
set [30] - 1021:16,

1064:14, 1066:13,
1071:17, 1074:4,
1075:23, 1076:24,
1076:25, 1093:22,
1093:25, 1094:3,
1121:15, 1123:13,
1131:9, 1147:10,
1153:12, 1169:20,
1182:7, 1202:23,
1203:3, 1205:2,
1210:4, 1219:21,
1222:24, 1234:16,
1235:22, 1252:19,
1252:21
setback [12] -
1177:21, 1198:12,
1202:3, 1202:6,
1202:12, 1202:14,
1202:17, 1206:1,
1219:13, 1252:17,
1253:4, 1293:17
setbacks [8] -
1178:1, 1197:8,
1197:20, 1198:10,
1211:16, 1215:15,
1253:8, 1292:25
sets [3] - 1024:14,
1053:14, 1178:12
setting [7] - 1025:13,
1060:9, 1061:3,
1165:14, 1165:20,
1166:3, 1227:19
settings [13] -
1047:18, 1118:13,
1130:9, 1134:4,
1134:6, 1135:5,
1135:9, 1139:1,
1139:2, 1140:18,
1143:25, 1146:22,
1154:5
settle [1] - 1161:7
seven [1] - 1154:8
several [20] -
1024:11, 1025:19,
1030:21, 1031:25,
1042:3, 1042:5,
1047:6, 1091:12,
1126:20, 1137:23,
1138:18, 1142:16,
1168:9, 1227:21,
1251:21, 1255:12,
1258:12, 1276:14,
1295:17, 1296:16
severe [1] - 1298:12
severely [1] -
1057:16
SH [1] - 1019:10
shacks [1] - 1029:21
shade [1] - 1092:7
shaded [3] -
1091:22, 1129:12,
1129:16
shadow [3] -
1215:25, 1216:2,
1216:5
shallow [1] - 1246:19
shame [1] - 1226:2
shape [2] - 1040:10,
1085:25
share [3] - 1089:25,
1117:25
Sharp [26] - 1024:24,
1054:5, 1062:3,
1067:7, 1090:3,
1093:10, 1111:16,
1113:25, 1116:9,
1117:2, 1117:11,
1173:22, 1173:24,
1174:8, 1174:23,
1207:10, 1227:14,

1231:15, 1246:16,
1247:3, 1247:18,
1247:22, 1247:25,
1250:2, 1261:19,
1270:5
SHARP [1] - 1019:10
sharp [5] - 1197:15,
1201:16, 1202:2,
1202:12, 1239:15
sharp-tailed [5] -
1197:15, 1201:16,
1202:2, 1202:12,
1239:15
shear [6] - 1151:5,
1151:7, 1151:9,
1151:11, 1151:15,
1176:7
sheer [1] - 1248:8
Sheerness [1] -
1221:16
Sheldon [3] -
1099:20, 1214:22,
1226:7
shielding [3] -
1034:15, 1035:17,
1035:19
shift [1] - 1130:12
shifting [1] - 1235:19
shocking [1] -
1229:10
shoot [1] - 1208:18
shorebirds [2] -
1207:7, 1251:22
short [9] - 1029:9,
1035:7, 1035:13,
1036:15, 1136:10,
1136:21, 1192:1,
1246:7, 1301:11
shortcomings [2] -
1242:23, 1259:20
shorter [7] -
1189:19, 1229:15,
1230:19, 1230:24,
1231:8, 1231:11,
1231:14
shortfall [1] - 1256:4
shorthand [2] -
1303:6, 1303:7
shortly [1] - 1180:5
show [9] - 1022:11,
1070:17, 1070:22,
1076:7, 1077:25,
1078:2, 1080:25,
1087:14, 1181:15
showed [5] -
1033:14, 1058:3,
1058:4, 1092:15,
1260:21
shown [6] - 1033:9,
1050:5, 1063:15,
1131:25, 1141:11,
1191:3
shows [2] - 1042:17,
1260:2
shrink [1] - 1285:10
shrubs [3] - 1035:2,
1035:13, 1264:14
side [14] - 1020:25,
1021:2, 1040:4,
1040:5, 1063:2,
1068:12, 1068:14,
1069:24, 1075:13,
1084:18, 1102:17,
1102:21, 1103:1,
1276:5
sides [1] - 1146:14
sight [1] - 1083:24
sign [1] - 1296:8
signature [2] -
1107:12, 1107:15

significance [13] -
1084:15, 1085:9,
1086:10, 1086:11,
1086:17, 1162:10,
1185:6, 1188:13,
1193:8, 1232:17,
1247:7, 1254:15,
1267:6
significant [24] -
1043:19, 1086:21,
1088:15, 1111:16,
1117:22, 1125:23,
1160:10, 1171:10,
1177:11, 1191:6,
1208:22, 1214:12,
1215:15, 1223:15,
1223:24, 1227:15,
1237:11, 1238:1,
1238:3, 1238:18,
1242:14, 1242:17,
1244:20, 1286:24
significantly [6] -
1033:6, 1174:23,
1231:16, 1232:25,
1243:13, 1262:24
signing [1] - 1296:4
signposts [1] -
1190:23
similar [7] - 1080:22,
1092:13, 1092:15,
1143:18, 1187:3,
1224:16, 1272:9
similarities [1] -
1163:10
similarity [2] -
1070:18, 1074:15
similarly [5] -
1186:6, 1204:19,
1207:9, 1208:21,
1242:6
simple [4] - 1138:15,
1139:12, 1289:7,
1301:15
simpler [1] - 1154:10
simplest [1] -
1044:18
simply [20] -
1037:25, 1153:17,
1155:7, 1228:3,
1229:9, 1230:8,
1236:9, 1242:7,
1253:12, 1267:3,
1269:6, 1269:13,
1269:21, 1279:22,
1286:2, 1291:15,
1293:20, 1294:2,
1295:22, 1298:16
Simpson [1] - 1295:5
simulated [1] -
1066:10
simulating [1] -
1191:22
simulation [15] -
1067:13, 1068:9,
1069:17, 1073:23,
1073:24, 1076:17,
1076:18, 1091:15,
1101:25, 1103:18,
1119:22, 1120:16,
1189:6, 1190:2
simulations [39] -
1064:10, 1065:4,
1065:11, 1066:19,
1070:7, 1088:21,
1089:10, 1091:12,
1092:12, 1100:17,
1100:25, 1101:15,
1120:25, 1121:1,
1121:3, 1122:11,
1188:6, 1188:21,

1188:24, 1189:1,
1189:3, 1189:10,
1189:24, 1190:5,
1190:7, 1190:21,
1191:7, 1191:10,
1191:14, 1191:17,
1191:23, 1192:12,
1192:16, 1192:24,
1232:10, 1233:9,
1233:10, 1233:16,
1233:21
single [8] - 1031:11,
1033:1, 1139:4,
1139:8, 1234:11,
1294:23, 1298:16,
1299:14
sit [2] - 1266:16,
1266:20
site [6] - 1070:7,
1101:22, 1165:2,
1217:8, 1224:20,
1238:5
site-specific [1] -
1217:8
sited [8] - 1196:3,
1196:24, 1197:14,
1211:17, 1212:22,
1237:18, 1238:22,
1253:25
sites [1] - 1265:7
siting [15] - 1193:10,
1193:14, 1197:6,
1197:11, 1198:21,
1199:6, 1199:12,
1199:17, 1200:21,
1235:17, 1235:23,
1237:22, 1238:9,
1238:16, 1246:12
sits [2] - 1240:1,
1276:1
sitting [1] - 1171:11
situated [2] -
1078:22, 1090:1
situation [9] -
1041:19, 1049:14,
1050:21, 1117:1,
1173:13, 1255:8,
1281:12, 1281:19,
1302:8
situations [5] -
1035:11, 1041:6,
1097:25, 1135:18,
1217:16
six [6] - 1061:17,
1061:18, 1061:20,
1267:9, 1272:15,
1292:11
size [8] - 1047:8,
1142:16, 1203:20,
1205:23, 1210:6,
1227:24, 1230:4,
1230:12
sized [2] - 1037:16,
1256:24
skepticism [1] -
1297:19
skiff [1] - 1085:24
skill [1] - 1303:8
sky [2] - 1093:3,
1190:11
slickers [1] -
1226:21
slide [1] - 1081:25
slight [2] - 1130:12,
1134:21
slope [6] - 1083:20,
1083:21, 1083:23,
1084:19, 1097:6,
1097:9
slot [1] - 1095:6

sloughs [1] -
1226:23
slow [2] - 1028:8,
1082:6
slowing [1] - 1243:6
small [13] - 1035:3,
1089:22, 1092:20,
1092:21, 1135:18,
1156:6, 1168:6,
1193:20, 1246:18,
1250:2, 1264:15,
1279:4
smaller [6] -
1081:22, 1176:9,
1176:23, 1205:25,
1276:24, 1280:10
snafu [1] - 1073:12
snafus [1] - 1073:12
snapshot [1] -
1266:5
snow [2] - 1077:20,
1085:24
snow-covered [1] -
1077:20
snuck [1] - 1058:11
social [12] - 1089:22,
1095:2, 1174:11,
1177:13, 1179:16,
1208:6, 1224:15,
1224:24, 1228:18,
1294:11, 1298:8,
1298:10
Society [2] - 1024:5,
1024:9
soft [3] - 1038:21,
1131:1
software [23] -
1036:5, 1036:8,
1064:13, 1065:6,
1065:21, 1065:23,
1074:5, 1076:13,
1076:21, 1076:22,
1103:8, 1103:11,
1119:2, 1138:14,
1138:21, 1141:25,
1142:1, 1142:4,
1142:5, 1144:18,
1191:6, 1191:9
softwares [1] -
1066:1
soil [1] - 1034:16
solar [2] - 1077:13,
1138:1
sold [1] - 1266:11
soliciting [1] -
1099:14
solid [1] - 1082:7
solution [1] -
1167:18
someone [3] -
1094:19, 1245:14,
1287:24
sometimes [4] -
1103:16, 1129:1,
1168:21, 1266:17
somewhat [4] -
1092:2, 1095:10,
1121:6, 1161:2
somewhere [3] -
1046:24, 1071:9,
1152:1
son [3] - 1171:9,
1295:2, 1295:4
son's [1] - 1171:1
songbirds [1] -
1240:19
soon [1] - 1192:3
Sorry [1] - 1072:5
sorry [38] - 1026:8,
1045:14, 1053:1,

1053:18, 1056:6, 1068:14, 1069:21, 1071:14, 1071:15, 1071:16, 1073:19, 1074:3, 1077:24, 1080:12, 1088:9, 1104:20, 1112:10, 1114:7, 1117:2, 1128:24, 1129:14, 1133:10, 1133:14, 1135:2, 1138:11, 1139:10, 1141:5, 1147:4, 1163:3, 1170:8, 1171:13, 1192:2, 1248:3, 1273:10, 1273:20, 1273:24, 1288:15, 1294:8

sort [25] - 1020:22, 1061:15, 1066:1, 1072:20, 1072:24, 1073:5, 1075:13, 1081:23, 1093:1, 1108:6, 1116:19, 1120:17, 1134:20, 1140:24, 1162:11, 1162:12, 1162:25, 1191:1, 1265:21, 1267:19, 1281:6, 1281:16, 1285:18, 1301:8

sorted [3] - 1022:5, 1022:8, 1073:11

sorts [1] - 1282:24

sound [46] - 1028:18, 1028:19, 1028:23, 1032:4, 1032:6, 1032:11, 1032:15, 1032:19, 1032:20, 1033:3, 1033:17, 1036:17, 1036:18, 1036:20, 1036:21, 1037:1, 1048:22, 1123:1, 1123:7, 1123:11, 1125:24, 1126:3, 1126:4, 1126:21, 1127:2, 1130:10, 1130:11, 1131:22, 1139:4, 1141:18, 1149:2, 1149:6, 1149:21, 1150:8, 1150:11, 1150:22, 1150:23, 1183:10, 1183:23, 1184:16, 1184:24, 1185:17, 1185:22, 1186:3, 1186:4, 1187:24

sounds [2] - 1162:23, 1255:11

source [31] - 1033:23, 1035:9, 1035:16, 1036:21, 1036:23, 1037:6, 1037:12, 1038:17, 1039:4, 1040:19, 1043:18, 1047:2, 1047:11, 1048:7, 1048:10, 1049:5, 1123:15, 1124:8, 1124:20, 1124:21, 1124:23, 1124:24, 1124:25, 1125:4, 1125:17, 1126:25, 1127:1, 1135:19, 1139:14, 1263:18

source-receptor [1] - 1033:23

sources [24] - 1030:11, 1032:21,

1037:5, 1037:13, 1038:12, 1040:25, 1043:16, 1047:4, 1111:5, 1123:16, 1134:15, 1134:16, 1135:13, 1142:17, 1146:3, 1146:14, 1147:2, 1148:12, 1174:18, 1183:19, 1222:5, 1223:2, 1224:2, 1259:7

south [17] - 1065:8, 1067:23, 1069:2, 1075:11, 1076:11, 1076:20, 1159:18, 1249:12, 1271:11, 1272:2, 1273:13, 1273:20, 1274:5, 1277:7, 1278:4, 1278:18, 1293:12

south-southeast [4] - 1272:2, 1273:13, 1274:5, 1277:7

south-southwest [2] - 1271:11, 1278:4

southeast [11] - 1070:20, 1074:19, 1090:7, 1272:2, 1272:5, 1273:13, 1273:16, 1273:19, 1274:5, 1277:7, 1281:4

southerly [1] - 1280:16

southern [1] - 1239:20

southwest [7] - 1270:15, 1271:11, 1271:14, 1273:20, 1278:4, 1278:6, 1278:17

space [3] - 1205:23, 1210:10, 1290:4

spaced [1] - 1302:3

spacing [1] - 1205:14

SPEAKER [2] - 1072:4, 1072:8

speaking [2] - 1053:22, 1180:13

Special [12] - 1090:3, 1100:2, 1100:6, 1100:10, 1165:19, 1193:6, 1217:6, 1218:16, 1222:2, 1224:5, 1226:12, 1287:13

special [11] - 1090:10, 1090:12, 1100:14, 1138:21, 1144:17, 1177:2, 1199:21, 1223:25, 1224:15, 1226:13, 1237:16

specialized [1] - 1182:12

species [11] - 1195:22, 1206:19, 1207:7, 1240:18, 1240:20, 1240:22, 1241:3, 1245:21, 1251:21, 1252:22

specific [37] - 1037:6, 1037:8, 1037:14, 1082:12, 1087:8, 1097:19, 1100:13, 1104:9, 1104:18, 1107:24, 1123:15, 1131:6, 1131:10, 1131:13,

1135:1, 1135:6, 1147:7, 1153:6, 1153:11, 1153:14, 1153:24, 1167:12, 1168:12, 1169:1, 1179:23, 1182:21, 1183:24, 1187:12, 1198:17, 1201:5, 1201:15, 1217:8, 1221:4, 1221:8, 1241:18, 1248:3, 1292:17

specifically [14] - 1096:11, 1106:16, 1107:16, 1184:4, 1212:2, 1216:19, 1239:2, 1249:20, 1250:5, 1272:25, 1278:7, 1288:4, 1288:8, 1292:13

specifications [2] - 1082:8, 1082:14

specified [2] - 1183:10, 1185:17

specifies [1] - 1183:14

spectacularly [1] - 1208:15

spectrum [1] - 1130:13

speculated [1] - 1076:19

speculative [1] - 1221:11

speed [19] - 1029:9, 1029:10, 1032:7, 1032:8, 1032:12, 1033:5, 1044:10, 1108:6, 1134:10, 1138:1, 1141:4, 1141:7, 1141:8, 1141:10, 1141:13, 1143:10, 1151:12, 1152:8, 1176:8

speeds [3] - 1141:15, 1141:16, 1152:4

spend [3] - 1083:8, 1224:3, 1302:14

spending [2] - 1170:21, 1189:20

spent [1] - 1185:1

sphere [2] - 1036:20, 1127:5

spike [1] - 1242:2

spoken [1] - 1055:21

sponsored [1] - 1080:15

spot [2] - 1031:5, 1036:12

spot-on [1] - 1036:12

spraying [6] - 1214:14, 1214:15, 1214:18, 1214:20, 1214:23, 1215:1

spread [1] - 1168:18

spreadsheet [1] - 1133:11

spring [5] - 1151:24, 1202:20, 1240:23, 1247:6, 1251:15

Springbank [4] - 1271:10, 1278:1, 1278:3, 1282:16

square [10] - 1056:25, 1057:14, 1057:21, 1069:21, 1079:16, 1082:5, 1204:16, 1247:23, 1248:4, 1248:6

squiggly [1] - 1079:18

stability [33] - 1029:4, 1044:3, 1044:9, 1044:24, 1045:2, 1045:12, 1118:11, 1134:9, 1137:10, 1137:16, 1137:20, 1137:23, 1138:7, 1139:5, 1139:8, 1139:9, 1139:10, 1139:13, 1139:18, 1140:23, 1143:11, 1144:14, 1145:14, 1146:25, 1147:18, 1151:16, 1260:9, 1260:15, 1260:17, 1267:25, 1268:3

stable [25] - 1042:9, 1042:10, 1042:12, 1042:13, 1042:20, 1048:20, 1117:24, 1118:7, 1118:8, 1137:12, 1137:25, 1138:4, 1138:14, 1140:4, 1146:19, 1147:13, 1147:25, 1183:22, 1222:5, 1259:12, 1260:8, 1267:13, 1267:17, 1268:9

stacked [2] - 1131:16

staff [4] - 1021:1, 1158:12, 1217:12, 1302:16

Staff [3] - 1020:10, 1020:11, 1020:11

stages [1] - 1198:1

staging [2] - 1248:15, 1248:24

stairwells [2] - 1021:13, 1021:17

stakeholders [2] - 1216:7, 1219:18

stamp [4] - 1227:23, 1228:4, 1287:14, 1298:16

stand [2] - 1025:11, 1033:15

standard [25] - 1034:23, 1036:6, 1046:23, 1047:6, 1047:7, 1117:18, 1118:19, 1119:1, 1129:4, 1131:21, 1135:14, 1162:12, 1163:14, 1164:5, 1183:17, 1183:18, 1183:21, 1184:2, 1188:17, 1188:23, 1191:20, 1211:5, 1275:15, 1275:23, 1277:22

Standards [2] - 1285:7, 1285:12

standards [13] - 1179:25, 1180:2, 1180:4, 1183:16, 1207:18, 1207:23, 1209:15, 1209:17, 1209:20, 1210:1, 1210:4, 1212:4, 1235:22

standing [1] - 1255:6

stands [1] - 1095:16

STANDS [1] - 1171:14

Stantec [9] - 1107:5,

1108:4, 1110:8, 1111:9, 1113:1, 1113:3, 1116:14, 1119:5, 1123:10

stars [1] - 1038:13

start [22] - 1038:16, 1038:23, 1056:22, 1059:16, 1061:8, 1078:13, 1096:5, 1119:17, 1119:19, 1148:9, 1156:10, 1159:13, 1161:15, 1173:7, 1173:12, 1173:18, 1193:13, 1225:12, 1228:11, 1237:11, 1266:13, 1301:13

started [2] - 1062:16, 1271:13

starting [3] - 1051:9, 1182:22, 1254:8

starts [3] - 1055:6, 1137:6, 1139:11

state [9] - 1081:12, 1137:7, 1137:17, 1142:25, 1149:19, 1202:15, 1245:12, 1257:19, 1281:10

statement [43] - 1027:1, 1027:6, 1027:10, 1027:13, 1027:19, 1031:10, 1037:25, 1044:15, 1045:22, 1046:7, 1050:20, 1057:1, 1058:5, 1059:7, 1059:9, 1059:12, 1061:13, 1061:17, 1062:18, 1078:10, 1082:17, 1088:8, 1088:9, 1090:11, 1093:13, 1096:19, 1097:14, 1100:2, 1101:5, 1104:4, 1106:9, 1126:25, 1132:8, 1140:6, 1158:17, 1158:23, 1190:15, 1192:21, 1203:25, 1206:4, 1206:13, 1220:14, 1230:11

STATEMENT [4] - 1046:11, 1159:8, 1304:20, 1305:7

statements [2] - 1189:13, 1216:12

states [9] - 1034:25, 1044:3, 1093:3, 1140:2, 1179:12, 1206:4, 1245:10, 1253:15, 1286:16

States [7] - 1063:6, 1080:16, 1093:21, 1169:25, 1234:18, 1234:21, 1234:23

static [5] - 1092:20, 1093:5, 1159:25, 1161:7, 1235:6

station [2] - 1187:25, 1221:16

statistical [1] - 1143:24

status [1] - 1175:10

statutorily [3] - 1218:11, 1228:18, 1294:12

statutory [1] - 1218:22

stay [3] - 1119:14, 1166:13, 1295:6

steel [1] - 1217:24
steep [1] - 1126:6
steeper [2] - 1048:17, 1048:22
Stelling [2] - 1206:10, 1206:13
step [2] - 1037:11, 1171:23
steps [3] - 1171:17, 1199:12, 1210:15
sterile [1] - 1197:13
still [24] - 1051:21, 1053:10, 1053:11, 1070:23, 1079:14, 1087:20, 1092:17, 1096:1, 1103:4, 1111:10, 1111:13, 1140:20, 1160:4, 1164:23, 1190:16, 1240:17, 1246:13, 1256:12, 1258:20, 1268:4, 1287:21, 1291:15, 1292:16, 1301:7
stitch [2] - 1121:21, 1122:2
stock [2] - 1103:23, 1103:24
stop [6] - 1037:22, 1044:12, 1063:20, 1146:9, 1173:8, 1243:19
stopped [1] - 1084:23
stopping [2] - 1062:6, 1243:6
store [1] - 1272:18
stored [1] - 1272:15
storey [12] - 1028:25, 1041:3, 1041:4, 1041:12, 1041:15, 1041:17, 1041:21, 1041:24, 1042:1, 1042:6, 1185:19, 1266:24
storeys [3] - 1259:9, 1267:7, 1267:11
story [2] - 1296:17
straight [2] - 1021:15, 1147:3
straightforward [1] - 1209:7
strategies [1] - 1052:12
strategy [1] - 1241:16
stratum [2] - 1247:24, 1248:3
Stratum [1] - 1248:2
stretch [1] - 1136:12
stretching [1] - 1227:4
strict [1] - 1093:25
strike [1] - 1126:4
strip [33] - 1075:4, 1270:15, 1270:23, 1271:1, 1271:2, 1271:25, 1272:4, 1272:12, 1272:13, 1273:13, 1273:16, 1273:17, 1273:18, 1273:21, 1274:10, 1274:12, 1274:14, 1274:15, 1274:16, 1274:18, 1274:19, 1275:2, 1275:6, 1275:9, 1276:20, 1277:4, 1277:5, 1277:11, 1280:2, 1280:6, 1280:24,

1281:2
stripped [1] - 1202:2
strips [12] - 1270:25, 1272:20, 1272:24, 1273:11, 1274:20, 1275:1, 1280:14, 1282:10, 1288:11, 1289:12, 1293:21, 1299:8
strive [1] - 1106:1
striving [1] - 1265:19
strong [4] - 1048:20, 1090:6, 1253:21, 1287:4
stronger [1] - 1253:18
strongly [2] - 1087:4, 1091:9
structure [2] - 1179:8, 1283:7
structures [6] - 1082:2, 1091:7, 1092:17, 1213:18, 1288:23, 1289:9
struggling [1] - 1154:22
stubble [2] - 1069:9, 1085:24
studied [2] - 1093:22, 1097:22
studies [7] - 1080:5, 1091:23, 1194:5, 1204:10, 1205:4, 1205:8, 1206:16
Studio [8] - 1064:14, 1065:20, 1066:2, 1066:8, 1066:14, 1067:4, 1069:1, 1103:13
study [34] - 1029:3, 1033:25, 1037:17, 1042:21, 1043:1, 1044:5, 1050:22, 1080:5, 1081:5, 1090:23, 1097:22, 1098:22, 1109:8, 1110:10, 1110:11, 1110:15, 1111:17, 1113:22, 1115:15, 1118:10, 1118:11, 1131:24, 1149:1, 1187:1, 1187:2, 1187:9, 1194:10, 1194:19, 1195:10, 1258:21, 1259:1, 1263:7, 1263:16
stuff [2] - 1111:9, 1147:24
STW [1] - 1275:4
subcontractor [1] - 1108:4
subject [6] - 1108:8, 1182:21, 1204:10, 1222:6, 1225:6, 1258:3
subjective [5] - 1093:16, 1094:20, 1095:10, 1098:24, 1232:3
subjectiveness [1] - 1094:24
submission [20] - 1227:13, 1228:6, 1231:21, 1232:20, 1233:5, 1235:14, 1238:21, 1253:23, 1258:11, 1259:24, 1260:19, 1262:3, 1263:8, 1266:8, 1268:22, 1269:19,

1269:23, 1284:11, 1298:18, 1299:11
submissions [7] - 1173:23, 1174:14, 1182:18, 1214:19, 1216:13, 1225:7, 1299:20
submit [23] - 1191:13, 1218:15, 1228:1, 1233:3, 1235:12, 1237:23, 1240:5, 1244:21, 1254:3, 1260:22, 1261:24, 1262:19, 1264:4, 1266:2, 1269:5, 1282:7, 1292:18, 1293:2, 1294:3, 1298:21, 1298:22, 1299:2, 1299:5
submits [18] - 1174:5, 1177:1, 1183:3, 1192:15, 1195:2, 1195:13, 1196:13, 1197:10, 1200:19, 1203:3, 1208:24, 1211:21, 1212:19, 1215:4, 1225:1, 1243:22, 1246:10, 1298:10
submitted [2] - 1031:21, 1039:18
submitting [2] - 1230:7, 1233:19
subordinate [5] - 1085:12, 1085:17, 1092:18, 1166:24, 1190:16
subsequently [2] - 1031:23, 1042:24
subset [1] - 1195:21
subsidiary [1] - 1175:10
substantial [4] - 1033:24, 1169:4, 1195:10, 1249:17
substation [1] - 1225:5
succeed [2] - 1091:4, 1246:5
success [1] - 1201:5
successful [3] - 1244:23, 1245:25, 1246:8
successor [1] - 1052:12
suffer [1] - 1216:18
sufficient [6] - 1196:22, 1203:5, 1210:5, 1210:15, 1241:6, 1269:21
sufficiently [4] - 1035:4, 1035:15, 1205:15, 1264:16
suggest [7] - 1072:17, 1191:14, 1205:22, 1206:21, 1230:10, 1301:10, 1301:15
suggested [7] - 1090:20, 1091:23, 1176:24, 1195:24, 1209:5, 1233:19, 1301:13
suggesting [1] - 1034:8
suggestion [7] - 1148:24, 1155:4, 1186:18, 1246:12, 1264:9, 1291:16,

1293:4
suggestions [4] - 1175:9, 1203:1, 1220:17, 1301:24
suggests [3] - 1203:20, 1204:12, 1214:11
suitably [1] - 1187:10
sum [1] - 1123:3
summarize [3] - 1028:11, 1086:4, 1292:22
summarizes [2] - 1027:1, 1059:9
summary [1] - 1196:19
summed [1] - 1037:12
summer [6] - 1077:16, 1077:17, 1077:21, 1216:2, 1279:16, 1279:19
sums [1] - 1048:6
sun [12] - 1069:2, 1070:20, 1076:23, 1076:24, 1076:25, 1077:2, 1077:3, 1077:10, 1077:14, 1092:5, 1092:8, 1192:25
Suncor [6] - 1082:22, 1085:15, 1231:9, 1261:13, 1261:17, 1261:22
superimpose [1] - 1121:2
superimposed [1] - 1120:22
superseded [1] - 1212:1
support [10] - 1174:6, 1194:17, 1195:14, 1205:4, 1205:18, 1206:16, 1226:10, 1239:7, 1249:6, 1298:3
supported [3] - 1095:16, 1205:3, 1249:1
supporting [2] - 1249:21, 1254:16
supports [3] - 1143:1, 1222:17, 1234:14
supposed [6] - 1021:3, 1057:22, 1079:25, 1084:20, 1093:12, 1130:25
Supreme [3] - 1173:15, 1181:13, 1181:24
surface [29] - 1039:2, 1127:3, 1210:1, 1210:8, 1211:6, 1211:18, 1211:24, 1212:3, 1212:5, 1212:8, 1212:9, 1212:13, 1212:20, 1213:8, 1213:9, 1264:22, 1285:1, 1288:19, 1288:25, 1289:21, 1289:22, 1290:2, 1290:7, 1290:9, 1290:12, 1290:18, 1291:2, 1291:5, 1291:13
surfaces [19] - 1028:23, 1033:17, 1034:3, 1037:9,

1037:17, 1038:14, 1038:20, 1040:4, 1041:1, 1091:8, 1111:20, 1112:6, 1130:3, 1130:16, 1131:1, 1131:8, 1258:23, 1259:2, 1265:2
surrounded [2] - 1207:4, 1229:16
surrounding [3] - 1216:17, 1238:17, 1296:10
survey [20] - 1042:12, 1149:22, 1194:14, 1194:24, 1195:17, 1195:19, 1195:25, 1196:2, 1196:3, 1200:16, 1239:24, 1240:6, 1240:10, 1240:23, 1244:14, 1247:10, 1247:14, 1247:16, 1247:25
surveys [16] - 1152:13, 1152:16, 1194:5, 1194:16, 1195:14, 1196:21, 1200:11, 1200:12, 1202:18, 1240:5, 1240:11, 1240:16, 1241:7, 1242:11, 1242:12, 1242:16
suspended [3] - 1266:9, 1266:16, 1266:20
Sutherland [31] - 1209:14, 1210:25, 1211:24, 1212:2, 1212:24, 1215:5, 1275:13, 1276:13, 1276:17, 1276:25, 1277:6, 1277:12, 1282:1, 1282:2, 1282:4, 1282:20, 1282:25, 1283:4, 1284:7, 1284:14, 1284:21, 1284:24, 1285:19, 1287:4, 1287:21, 1288:17, 1289:13, 1290:6, 1291:8, 1293:2
Sutherland's [4] - 1282:11, 1284:13, 1292:19, 1292:23
swan [1] - 1250:14
swans [1] - 1204:1
sweep [4] - 1082:4, 1082:7, 1122:12, 1240:25
swept [1] - 1241:1
switch [1] - 1280:20
switched [1] - 1021:1
sworn [2] - 1023:5, 1023:14
sworn/affirmed [1] - 1023:20
symbolic [3] - 1093:5, 1099:10, 1191:1
system [24] - 1052:3, 1082:16, 1085:5, 1086:3, 1086:5, 1086:22, 1089:12, 1093:20, 1095:14, 1096:7, 1097:22, 1158:5, 1164:12, 1164:13, 1164:24, 1165:14, 1165:15,

1165:16, 1166:3, 1166:21, 1175:6, 1188:11, 1188:16, 1236:22
System [1] - 1052:17
systematic [1] - 1094:25
systems [5] - 1051:11, 1095:15, 1162:17, 1163:11, 1176:14

T

TABLE [2] - 1046:3, 1304:18
Table [15] - 1044:8, 1044:16, 1044:23, 1045:6, 1045:8, 1045:15, 1045:17, 1045:25, 1055:16, 1056:2, 1114:19, 1128:18, 1138:11, 1285:14, 1285:15
table [16] - 1056:9, 1112:19, 1127:10, 1127:12, 1127:15, 1128:2, 1128:10, 1129:9, 1132:21, 1133:1, 1140:8, 1140:19, 1145:16, 1145:17, 1274:17, 1291:4
tag [2] - 1023:9, 1023:13
tail [1] - 1280:11
tail-dragger [1] - 1280:11
tailed [5] - 1197:15, 1201:16, 1202:2, 1202:12, 1239:15
takeoff [1] - 1284:4
takeoffs [2] - 1271:8, 1272:11
talks [3] - 1115:19, 1288:24, 1290:11
tall [8] - 1229:10, 1231:22, 1241:23, 1279:18, 1282:19, 1283:14, 1283:19, 1289:8
taller [4] - 1227:9, 1229:5, 1231:16, 1231:18
tallest [2] - 1227:8, 1228:22
tame [1] - 1115:1
tamped [16] - 1034:2, 1036:9, 1040:5, 1040:25, 1111:22, 1112:6, 1112:12, 1113:17, 1130:16, 1131:7, 1185:5, 1186:14, 1259:2, 1265:2, 1265:6, 1265:21
target [3] - 1174:19, 1271:16, 1282:16
targets [1] - 1222:24
task [1] - 1121:10
taught [1] - 1275:21
tax [2] - 1222:1, 1224:5
taxes [1] - 1224:4
taxiways [1] - 1285:18
teach [1] - 1283:22
teaching [1] - 1052:4
technical [5] - 1020:21, 1022:5,

1073:12, 1108:25, 1177:12
technically [4] - 1100:24, 1101:9, 1101:11, 1101:16
techniques [1] - 1200:22
technological [2] - 1072:21, 1072:22
technology [4] - 1022:10, 1176:1, 1176:3, 1192:8
tedious [1] - 1061:15
teeming [2] - 1226:15, 1239:5
teeny [1] - 1026:4
teeth [1] - 1297:16
temperature [2] - 1138:1, 1139:2
temporary [5] - 1115:5, 1199:3, 1251:3, 1251:4, 1251:10
ten [4] - 1064:1, 1214:21, 1225:14, 1302:3
tend [2] - 1057:17, 1280:10
tendency [2] - 1028:5, 1069:3
tension [1] - 1092:19
tentatively [1] - 1164:17
term [10] - 1059:24, 1111:8, 1143:20, 1143:21, 1146:16, 1153:24, 1212:3, 1246:7, 1247:24, 1291:12
terminology [2] - 1082:24, 1085:10
terms [11] - 1087:8, 1120:11, 1123:23, 1134:21, 1166:5, 1171:21, 1172:12, 1176:13, 1246:7, 1263:6, 1298:17
terrain [18] - 1030:15, 1031:2, 1035:25, 1036:15, 1036:23, 1036:25, 1043:21, 1043:23, 1080:22, 1083:22, 1090:25, 1095:12, 1097:10, 1112:9, 1112:12, 1127:2, 1127:3, 1195:25
terrestrial [1] - 1193:20
Terri [1] - 1096:2
Terri-Lee [1] - 1096:2
Terry [1] - 1052:12
test [9] - 1137:14, 1138:15, 1139:12, 1139:14, 1139:15, 1181:8, 1236:20, 1236:23, 1236:25
tested [3] - 1055:6, 1055:8, 1080:3
testified [20] - 1220:22, 1221:1, 1234:20, 1242:20, 1247:2, 1247:19, 1255:25, 1271:9, 1271:12, 1271:14, 1271:22, 1273:1, 1274:24, 1275:21, 1276:19, 1277:1, 1277:6, 1277:12, 1279:16, 1279:20

testify [4] - 1248:1, 1272:16, 1275:14, 1290:6
testifying [1] - 1046:14
testimony [8] - 1034:6, 1182:20, 1206:25, 1251:6, 1270:6, 1270:7, 1270:21, 1271:23
text [1] - 1265:5
texture [1] - 1191:3
thanking [1] - 1225:20
THAT [2] - 1156:20, 1305:1
thaw [1] - 1251:16
THE [86] - 1020:19, 1023:16, 1023:21, 1027:16, 1028:4, 1028:9, 1029:11, 1029:15, 1038:4, 1039:23, 1044:19, 1046:1, 1046:5, 1056:6, 1056:11, 1056:14, 1059:15, 1059:20, 1061:9, 1072:6, 1072:10, 1072:13, 1072:17, 1072:20, 1072:24, 1073:4, 1073:9, 1073:18, 1074:24, 1075:3, 1075:8, 1075:12, 1075:18, 1095:21, 1095:24, 1119:9, 1119:16, 1136:9, 1136:25, 1156:10, 1156:15, 1157:2, 1157:5, 1157:12, 1157:21, 1157:25, 1158:9, 1158:15, 1158:19, 1158:25, 1159:9, 1159:15, 1161:13, 1161:14, 1169:8, 1169:16, 1170:20, 1171:3, 1171:8, 1171:15, 1172:8, 1172:15, 1173:6, 1192:1, 1192:5, 1225:8, 1225:17, 1299:22, 1300:9, 1300:23, 1301:12, 1301:20, 1301:23, 1302:4, 1302:7, 1304:7, 1304:8, 1304:9, 1304:10, 1304:11, 1304:12, 1305:5
themselves [1] - 1022:5
theory [1] - 1289:15
therefore [12] - 1029:5, 1034:17, 1101:13, 1149:22, 1212:17, 1215:19, 1224:9, 1232:4, 1236:3, 1255:14, 1283:25, 1292:25
thesis [1] - 1141:18
they've [4] - 1208:17, 1226:8, 1226:9, 1292:24
thick [1] - 1079:11
thinking [3] - 1083:13, 1167:12, 1171:11
Third [1] - 1020:2
third [29] - 1028:13,

1028:23, 1029:16, 1029:18, 1030:7, 1031:17, 1036:17, 1040:24, 1049:10, 1108:12, 1110:1, 1110:9, 1113:6, 1115:19, 1135:11, 1136:2, 1148:7, 1168:22, 1168:24, 1183:12, 1187:20, 1228:14, 1259:3, 1259:5, 1260:1, 1265:3, 1265:25, 1274:13, 1294:24
third-party [24] - 1028:13, 1029:16, 1029:18, 1030:7, 1031:17, 1036:17, 1040:24, 1049:10, 1108:12, 1110:1, 1110:9, 1113:6, 1135:11, 1136:2, 1148:7, 1168:22, 1168:24, 1183:12, 1187:20, 1259:3, 1259:5, 1260:1, 1265:3, 1265:25
thirdly [1] - 1255:24
thorough [3] - 1177:15, 1219:22, 1300:19
those.. [1] - 1133:10
thoughts [1] - 1046:19
thousand [1] - 1081:24
threat [1] - 1227:8
threatened [2] - 1244:4, 1244:7
three [36] - 1062:12, 1062:19, 1064:11, 1065:12, 1087:19, 1091:11, 1108:25, 1124:17, 1125:12, 1142:10, 1168:10, 1177:23, 1199:18, 1208:2, 1214:16, 1220:2, 1224:13, 1231:4, 1242:2, 1256:25, 1260:20, 1261:11, 1261:20, 1262:17, 1267:7, 1268:15, 1270:3, 1270:4, 1272:20, 1272:21, 1273:22, 1275:1, 1276:17, 1282:9, 1289:12
three-dimensional [2] - 1064:11, 1065:12
threshold [7] - 1080:7, 1150:2, 1150:5, 1150:9, 1150:20, 1181:8, 1202:22
Threshold [1] - 1081:2
thresholds [1] - 1180:6
thriving [1] - 1226:20
throughout [10] - 1076:4, 1094:24, 1104:12, 1166:4, 1194:22, 1199:11, 1221:24, 1223:22, 1246:20, 1297:19
throw [1] - 1037:2
tied [1] - 1176:6
timber [1] - 1060:23
time-consuming [1] - 1122:4

timing [4] - 1171:21, 1196:15, 1215:1, 1222:13
tip [2] - 1080:11, 1175:21
title [2] - 1286:12, 1290:16
titled [5] - 1044:16, 1045:25, 1081:1, 1285:7, 1286:10
TITLED [2] - 1046:3, 1304:18
titles [1] - 1129:2
TO [5] - 1156:19, 1158:15, 1172:24, 1305:1, 1305:5
today [14] - 1021:21, 1100:19, 1132:21, 1165:20, 1170:22, 1173:23, 1184:22, 1185:8, 1191:5, 1234:20, 1257:19, 1268:4, 1268:25, 1270:10
together [10] - 1065:6, 1079:14, 1091:20, 1102:5, 1102:6, 1116:2, 1121:21, 1122:2, 1162:25, 1168:9
tomorrow [1] - 1301:16
tone [1] - 1227:11
tonnes [1] - 1174:25
took [9] - 1025:14, 1065:1, 1085:8, 1097:23, 1101:12, 1160:25, 1199:12, 1261:16, 1300:13
tool [1] - 1103:7
tools [1] - 1242:24
top [18] - 1027:11, 1064:16, 1067:2, 1070:9, 1101:21, 1102:9, 1103:2, 1113:23, 1116:5, 1119:21, 1131:17, 1138:19, 1141:3, 1149:2, 1153:12, 1274:10, 1300:24
topographical [1] - 1195:21
topography [2] - 1084:17, 1190:22
Toronto [1] - 1295:12
total [18] - 1037:14, 1062:21, 1063:8, 1063:24, 1082:4, 1087:18, 1153:13, 1154:6, 1154:7, 1228:24, 1230:19, 1230:23, 1231:2, 1231:6, 1231:10, 1231:13, 1256:21, 1298:22
totalling [1] - 1078:21
touches [1] - 1038:25
tough [1] - 1093:6
tour [3] - 1064:6, 1099:20, 1099:25
towards [11] - 1036:22, 1048:22, 1061:6, 1064:16, 1070:20, 1087:14, 1127:4, 1146:5, 1146:24, 1274:16, 1278:5

1063:23, 1122:7,
1122:10, 1250:17
unable [3] - 1181:23,
1204:18, 1204:20
uncertainty [25] -
1040:11, 1049:4,
1049:6, 1049:11,
1049:13, 1049:18,
1122:21, 1122:25,
1123:6, 1123:11,
1123:12, 1123:15,
1123:17, 1123:21,
1129:11, 1145:22,
1184:15, 1184:19,
1184:24, 1185:19,
1186:3, 1186:8,
1262:12, 1262:20,
1262:25
uncertified [2] -
1285:24, 1288:9
unchallenged [1] -
1270:8
unclear [2] - 1046:5,
1168:1
uncommon [1] -
1279:9
uncontradicted [2] -
1239:21, 1241:10
under [28] - 1029:6,
1042:17, 1045:19,
1117:23, 1122:14,
1138:5, 1138:23,
1144:12, 1146:18,
1146:21, 1167:5,
1169:2, 1169:4,
1178:7, 1179:4,
1183:6, 1197:20,
1198:6, 1198:20,
1222:25, 1227:8,
1241:21, 1260:24,
1265:17, 1273:1,
1274:8, 1275:16,
1290:16
under-prediction [1]
- 1265:17
under-predicts [2] -
1146:21, 1260:24
underestimate [2] -
1117:20, 1240:7
underestimated [3] -
1028:13, 1028:17,
1029:17
underestimates [1] -
1117:23
underground [1] -
1254:5
underlying [1] -
1194:5
underneath [1] -
1241:20
underpredict [1] -
1043:7
underrepresented
[2] - 1062:22, 1063:11
undersigned [1] -
1303:4
understated [1] -
1227:1
understood [3] -
1148:11, 1162:1,
1255:21
undertaken [6] -
1195:14, 1196:20,
1200:15, 1218:25,
1245:21, 1247:11
undertaking [4] -
1185:12, 1187:9,
1274:23, 1297:6
undervalued [1] -
1097:6

undetected [2] -
1149:22, 1150:18
unfair [2] - 1229:7,
1229:8
unforeseen [1] -
1147:24
unfortunately [7] -
1064:17, 1066:8,
1071:7, 1091:18,
1221:21, 1232:1,
1299:25
ungrateful [1] -
1298:4
UNIDENTIFIED [2] -
1072:4, 1072:8
uniform [3] -
1084:16, 1084:17,
1084:18
unimaginable [1] -
1256:23
unique [5] - 1175:23,
1227:25, 1245:3,
1248:12, 1298:19
unit [2] - 1089:23,
1169:21
United [7] - 1080:16,
1093:21, 1169:25,
1234:18, 1234:21,
1234:23
universe [1] -
1020:24
unless [1] - 1251:12
unless.. [1] -
1070:13
unlike [2] - 1093:1,
1193:18
unlikely [5] - 1091:4,
1216:24, 1244:23,
1245:11, 1246:8
unobstructed [1] -
1276:3
unprecedented [4] -
1230:1, 1230:13,
1298:17, 1299:12
unprecedentedly [1]
- 1231:22
unprecedently [1] -
1297:24
unpublished [1] -
1206:14
unrealistic [1] -
1188:22
unreasonable [2] -
1154:12, 1186:19
unregistered [3] -
1285:25, 1286:7,
1288:10
unsafe [1] - 1281:18
unstable [5] -
1137:10, 1137:24,
1138:5, 1138:14,
1151:19
unusual [1] -
1222:12
unwarranted [2] -
1183:25, 1198:18
unwieldy [1] -
1121:10
up [111] - 1022:11,
1022:13, 1022:14,
1028:7, 1035:13,
1046:13, 1046:24,
1047:11, 1047:12,
1047:23, 1048:6,
1048:7, 1048:8,
1048:24, 1049:15,
1054:21, 1057:16,
1058:3, 1058:4,
1059:13, 1061:4,
1065:10, 1071:9,

1071:17, 1071:23,
1072:10, 1072:13,
1073:20, 1074:9,
1081:23, 1083:4,
1083:16, 1084:2,
1084:14, 1084:24,
1085:7, 1088:7,
1091:18, 1092:9,
1093:14, 1094:13,
1094:17, 1099:6,
1101:14, 1106:22,
1108:6, 1109:4,
1109:13, 1114:2,
1117:16, 1122:19,
1123:17, 1124:4,
1137:4, 1139:11,
1140:1, 1140:20,
1148:2, 1149:9,
1150:22, 1150:24,
1151:20, 1152:9,
1152:11, 1155:4,
1157:13, 1157:18,
1157:22, 1160:16,
1162:4, 1163:1,
1163:12, 1163:17,
1164:20, 1166:8,
1167:2, 1169:7,
1170:7, 1171:20,
1172:6, 1172:19,
1174:17, 1174:20,
1192:6, 1217:13,
1223:16, 1229:2,
1244:21, 1245:19,
1248:6, 1249:11,
1252:11, 1262:6,
1268:16, 1273:6,
1273:18, 1274:1,
1282:4, 1283:10,
1283:15, 1283:21,
1284:17, 1285:8,
1291:20, 1292:16,
1293:16, 1295:3,
1296:4, 1300:16,
1301:1
up-to-date [2] -
1217:13, 1292:16
Updated [1] -
1044:16
updated [5] -
1045:15, 1127:14,
1127:16, 1145:17,
1212:16
uploaded [4] -
1027:7, 1037:24,
1157:13, 1157:25
upper [2] - 1038:10,
1038:16
urge [1] - 1292:14
urged [1] - 1182:19
US [3] - 1162:17,
1162:19, 1170:4
USA [2] - 1024:7,
1095:15
usable [1] - 1250:6
useful [2] - 1192:8,
1273:6
uses [13] - 1046:25,
1124:13, 1124:17,
1177:1, 1177:14,
1205:24, 1215:20,
1261:14, 1261:22,
1265:6, 1277:20,
1288:5, 1292:17
UTILITIES [1] -
1019:1
Utilities [7] - 1020:1,
1120:5, 1178:12,
1179:2, 1179:4,
1179:6, 1179:11
utility [1] - 1190:9

utilize [1] - 1177:6
utilized [3] - 1184:2,
1184:7, 1249:18

V

V136-3.6 [2] -
1176:5, 1186:5
vacate [1] - 1021:20
vague [2] - 1246:6,
1257:7
valid [9] - 1032:6,
1033:1, 1047:5,
1048:2, 1153:6,
1234:12, 1292:15,
1293:5
value [10] - 1032:25,
1165:11, 1182:9,
1208:7, 1216:18,
1217:23, 1253:18,
1256:3, 1256:8,
1256:21
values [10] -
1048:15, 1061:3,
1086:23, 1089:24,
1170:11, 1170:12,
1216:8, 1216:11,
1216:20, 1221:6
VanDenBerg [1] -
1141:18
VanDerZee [6] -
1194:15, 1194:18,
1195:8, 1197:9,
1248:8, 1295:13
variable [1] - 1076:1
variance [1] -
1076:14
variation [1] -
1134:21
variations [1] -
1134:23
various [12] - 1021:5,
1027:23, 1060:18,
1097:25, 1163:11,
1164:18, 1183:19,
1190:7, 1195:25,
1201:24, 1213:21,
1249:5
vary [1] - 1075:23
vast [2] - 1297:4,
1297:14
vegetation [15] -
1064:19, 1067:14,
1081:21, 1083:15,
1092:13, 1102:10,
1170:11, 1184:11,
1186:20, 1190:25,
1194:16, 1200:14,
1223:21, 1245:3,
1264:10
vegetations [1] -
1034:24
vegetative [3] -
1064:17, 1064:24,
1101:10
vehicle [1] - 1283:7
vehicles [2] - 1040:6,
1217:12
verification [1] -
1041:23
verify [2] - 1030:19,
1055:23
version [9] - 1046:6,
1065:24, 1066:11,
1142:10, 1142:11,
1142:19, 1215:11
versions [1] -
1142:10
versus [7] - 1046:17,
1070:20, 1087:19,

1132:18, 1135:23,
1170:9, 1170:10
vertical [5] - 1080:2,
1081:20, 1091:25,
1190:23
vessel [1] - 1283:7
Vesta [2] - 1065:17,
1066:10
Vestas [5] - 1064:11,
1065:11, 1065:13,
1176:5, 1186:4
VIA [4] - 1089:13,
1089:15, 1233:13,
1233:14
viability [1] - 1287:1
vicinity [9] - 1209:10,
1212:15, 1213:4,
1213:18, 1216:22,
1274:3, 1286:20,
1287:18, 1293:7
Vicinity [1] - 1286:11
videos [4] - 1072:4,
1072:6, 1072:8,
1073:14
view [35] - 1027:15,
1035:5, 1041:11,
1043:12, 1062:13,
1064:21, 1067:25,
1069:19, 1070:16,
1070:20, 1073:25,
1075:4, 1075:12,
1075:21, 1109:7,
1111:16, 1117:19,
1118:1, 1120:19,
1121:8, 1121:9,
1121:23, 1161:1,
1164:4, 1165:5,
1180:22, 1189:18,
1189:19, 1190:3,
1206:11, 1222:15,
1242:25, 1264:16,
1300:14
viewed [3] - 1072:16,
1087:15, 1197:11
viewer [1] - 1060:19
viewers [1] - 1104:25
viewing [10] -
1060:19, 1071:6,
1084:10, 1088:14,
1088:25, 1097:9,
1162:9, 1162:20,
1190:16, 1190:18
viewpoint [6] -
1055:16, 1055:18,
1055:20, 1063:2,
1070:22, 1121:15
viewpoints [11] -
1051:24, 1052:2,
1055:8, 1055:13,
1062:7, 1062:11,
1062:12, 1062:24,
1064:11, 1079:15,
1121:4
views [20] - 1063:21,
1073:22, 1079:15,
1087:21, 1087:23,
1088:11, 1099:19,
1121:4, 1121:11,
1121:18, 1122:3,
1171:16, 1189:1,
1189:8, 1189:25,
1220:10, 1234:1,
1234:6, 1234:11,
1234:12
viewscape [3] -
1161:21, 1165:6,
1189:12
viewsheds [1] -
1192:13
violation [1] - 1237:9

virtue [1] - 1048:10
visibility [4] - 1080:7, 1092:1, 1092:13, 1196:4
Visibility [1] - 1081:1
visible [4] - 1112:12, 1159:24, 1189:22, 1246:19
vision [1] - 1276:3
visit [2] - 1092:3, 1115:14
visited [2] - 1032:2, 1062:3
visitors [1] - 1122:7
visits [1] - 1295:23
Vissering [1] - 1090:16
visual [100] - 1051:8, 1051:11, 1051:12, 1051:15, 1052:11, 1052:16, 1052:25, 1053:1, 1054:4, 1059:17, 1059:24, 1059:25, 1060:2, 1060:6, 1060:8, 1060:9, 1060:10, 1060:15, 1060:17, 1060:25, 1064:10, 1065:3, 1065:11, 1078:16, 1078:17, 1080:7, 1082:16, 1085:5, 1086:2, 1086:5, 1089:3, 1089:9, 1089:11, 1089:15, 1090:19, 1093:4, 1093:16, 1093:18, 1093:20, 1094:20, 1095:14, 1096:7, 1097:15, 1097:20, 1098:8, 1098:21, 1098:25, 1100:20, 1101:2, 1121:18, 1159:20, 1160:17, 1164:13, 1165:14, 1166:2, 1166:4, 1166:17, 1166:21, 1170:10, 1188:1, 1188:3, 1188:6, 1188:7, 1188:9, 1188:11, 1188:21, 1188:23, 1188:25, 1189:3, 1189:9, 1190:1, 1190:2, 1190:5, 1190:21, 1191:15, 1191:17, 1192:15, 1192:18, 1192:24, 1193:3, 1193:7, 1213:12, 1213:25, 1215:8, 1221:5, 1228:12, 1229:19, 1229:20, 1231:25, 1232:3, 1232:7, 1233:12, 1233:21, 1233:22, 1234:13, 1235:2, 1235:11, 1275:16, 1291:5
Visual [10] - 1052:17, 1064:14, 1065:20, 1066:2, 1066:8, 1066:14, 1067:3, 1069:1, 1081:1, 1103:13
visuality [1] - 1190:8
visualizations [1] - 1189:4
visually [1] - 1091:8
vitae [4] - 1024:14, 1053:14, 1107:4, 1182:15

VLS [8] - 1086:5, 1095:12, 1096:7, 1096:20, 1162:2, 1162:24, 1169:21, 1188:16
VNS [2] - 1092:12, 1121:19
volatile [1] - 1222:6
voltage [1] - 1160:14
Volume [5] - 1019:20, 1020:4, 1173:1, 1251:7, 1295:21
VOLUME [1] - 1304:3
voluntarily [4] - 1178:2, 1215:15, 1285:4, 1292:25
voluntary [1] - 1202:14
VQO [1] - 1166:8
VQOs [1] - 1060:15
VRM [1] - 1052:4
vulnerability [3] - 1051:23, 1078:16, 1080:21

W

Wagstaff [4] - 1215:23, 1215:25, 1222:9, 1227:5
Wagstaffs [1] - 1216:4
wait [1] - 1022:4
waivers [1] - 1219:13
walk [1] - 1189:2
wall [2] - 1072:2, 1249:11
Wallis [13] - 1195:24, 1198:5, 1202:11, 1203:7, 1207:14, 1240:9, 1240:13, 1242:10, 1242:19, 1242:22, 1243:4, 1245:15, 1246:3
Wallis's [3] - 1203:1, 1244:3, 1246:2
wants [4] - 1216:3, 1225:11, 1293:23, 1295:6
warn [1] - 1173:7
warranted [1] - 1200:20
warrants [1] - 1180:15
watch [1] - 1244:1
Water [2] - 1198:20, 1198:22
water [20] - 1034:7, 1043:18, 1047:5, 1050:23, 1083:15, 1130:16, 1170:12, 1193:21, 1251:16, 1258:23, 1258:24, 1260:1, 1263:12, 1263:13, 1263:23, 1264:7, 1264:22, 1264:24, 1272:8, 1273:14
waterbird [1] - 1252:9
waterbodies [22] - 1033:19, 1033:24, 1034:3, 1035:14, 1035:23, 1035:24, 1037:9, 1037:17, 1038:14, 1039:6, 1039:9, 1040:11, 1040:21, 1043:15,

1050:10, 1111:17, 1112:6, 1113:17, 1113:21, 1115:3, 1115:15, 1123:19
waterbody [3] - 1038:25, 1113:22, 1115:5
waterfowl [34] - 1193:16, 1201:16, 1203:12, 1203:13, 1203:14, 1203:22, 1204:15, 1204:22, 1204:23, 1205:6, 1205:9, 1205:16, 1205:20, 1206:8, 1208:22, 1239:13, 1240:19, 1240:20, 1246:15, 1246:23, 1247:5, 1247:10, 1247:17, 1247:19, 1248:16, 1248:19, 1249:7, 1249:16, 1249:18, 1250:6, 1250:12, 1251:20, 1253:4, 1253:8
Waterfowl [1] - 1242:21
wavering [1] - 1053:6
waves [4] - 1126:3, 1126:4, 1126:21, 1127:3
ways [4] - 1049:2, 1060:7, 1085:25, 1260:20
WDI [1] - 1026:13
weather [1] - 1143:24
website [4] - 1065:13, 1065:17, 1090:5, 1142:9
websites [1] - 1180:21
week [12] - 1022:16, 1023:10, 1108:23, 1221:10, 1226:1, 1226:4, 1245:14, 1246:17, 1246:21, 1264:17, 1270:3, 1302:11
weekend [1] - 1074:8
weekly [1] - 1270:18
weeks [1] - 1270:22
weigh [1] - 1088:22
weight [3] - 1182:11, 1182:18, 1192:18
weighty [1] - 1164:13
welcome [9] - 1020:21, 1020:24, 1021:5, 1021:7, 1073:9, 1136:25, 1173:6, 1192:5, 1225:17
wells [13] - 1029:19, 1029:20, 1029:21, 1029:23, 1030:2, 1030:4, 1259:7, 1266:1, 1266:6, 1266:11, 1266:13, 1266:16, 1266:19
wen [1] - 1020:11
west [15] - 1036:12, 1050:12, 1057:15, 1065:8, 1067:25, 1079:13, 1113:22, 1234:21, 1240:2, 1270:16, 1270:17, 1273:20, 1273:22, 1274:3, 1277:13

West [1] - 1265:13
west-southwest [1] - 1273:20
western [2] - 1080:8, 1090:21
Western [1] - 1081:2
wet [1] - 1251:13
wetland [16] - 1115:23, 1116:3, 1187:3, 1198:12, 1250:4, 1250:5, 1250:9, 1250:10, 1250:19, 1251:1, 1252:11, 1252:18, 1253:17, 1253:25, 1254:4, 1299:4
Wetland [5] - 1197:7, 1198:18, 1198:25, 1253:10, 1253:15
wetlands [47] - 1035:22, 1113:17, 1114:15, 1115:3, 1115:11, 1116:9, 1116:17, 1117:1, 1186:14, 1187:1, 1187:2, 1196:25, 1197:5, 1197:14, 1197:22, 1198:13, 1199:4, 1226:23, 1238:12, 1246:15, 1246:19, 1247:21, 1247:22, 1248:5, 1248:9, 1251:3, 1251:4, 1251:10, 1251:14, 1251:15, 1252:7, 1252:8, 1252:11, 1252:13, 1253:2, 1253:6, 1253:12, 1253:13, 1253:17, 1253:21, 1258:24, 1263:12, 1263:13, 1263:22, 1263:25, 1264:9, 1264:23
whereas [6] - 1134:14, 1148:12, 1259:9, 1265:22, 1276:3, 1285:20
whichever [2] - 1068:18, 1252:16
Whidden [1] - 1194:15
White [2] - 1181:13, 1181:20
white [14] - 1069:5, 1070:23, 1070:24, 1074:16, 1074:17, 1078:1, 1078:3, 1078:6, 1091:22, 1092:4, 1092:8, 1092:25, 1190:11
whiteness [2] - 1076:7, 1091:24
Whitla [21] - 1107:2, 1107:8, 1107:17, 1107:24, 1108:4, 1112:16, 1114:4, 1114:12, 1115:15, 1118:14, 1156:11, 1156:23, 1157:1, 1157:6, 1157:16, 1158:7, 1184:4, 1186:24, 1187:1, 1231:12, 1261:13
WHITLA [4] - 1156:13, 1158:15, 1304:22, 1305:5
whole [14] - 1061:2, 1122:15, 1123:13, 1135:24, 1138:13,

1168:11, 1171:11, 1228:7, 1233:9, 1237:17, 1263:24, 1269:10, 1282:8, 1302:8
wholistic [1] - 1222:15
wide [3] - 1033:13, 1080:22, 1197:20
widely [1] - 1047:7
widespread [1] - 1205:5
width [1] - 1079:9
Wikipedia [2] - 1089:20, 1104:7
Wildlife [2] - 1247:12, 1247:13
wildlife [44] - 1177:20, 1193:15, 1193:25, 1194:16, 1194:24, 1195:10, 1195:16, 1195:17, 1196:6, 1196:8, 1196:21, 1196:23, 1197:8, 1197:15, 1197:25, 1198:7, 1198:15, 1201:14, 1208:4, 1226:15, 1226:16, 1227:16, 1236:7, 1237:4, 1237:5, 1238:25, 1239:1, 1239:5, 1239:6, 1240:8, 1240:16, 1241:5, 1242:11, 1244:25, 1245:7, 1247:14, 1250:24, 1252:20, 1252:22, 1252:24, 1299:3
willful [1] - 1235:13
willing [1] - 1201:9
willingness [2] - 1201:2, 1202:8
wind [181] - 1024:24, 1028:16, 1028:18, 1032:7, 1032:8, 1032:12, 1032:15, 1032:18, 1032:24, 1033:4, 1033:5, 1033:10, 1034:4, 1035:17, 1038:18, 1039:6, 1039:10, 1042:5, 1042:7, 1044:9, 1044:10, 1046:23, 1047:8, 1047:13, 1048:17, 1049:9, 1050:1, 1050:2, 1054:5, 1055:9, 1055:10, 1057:7, 1060:5, 1063:10, 1065:21, 1068:10, 1070:21, 1070:23, 1078:12, 1080:6, 1084:1, 1086:16, 1090:15, 1091:1, 1091:4, 1091:6, 1092:3, 1093:5, 1094:11, 1096:21, 1098:9, 1098:22, 1100:13, 1105:16, 1105:17, 1105:19, 1107:8, 1117:19, 1120:22, 1123:15, 1125:22, 1125:24, 1126:15, 1131:25, 1132:5, 1132:14, 1132:18, 1134:6, 1134:7, 1134:10, 1134:12, 1138:1, 1138:15,