Evaluating the Effectiveness of User Panels in the GBA Program

Year 1: Analysis of the Cooper and Beetaloo User Panels

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Images on front cover

Top: Coongie Lakes, Malkumba-Coongie Lakes National Park, South Australia (Cooper GBA region) Courtesy of the Geological and Bioregional Assessment Program's Alex Tomlinson (Department of Energy and the Environment), September 2018.

Bottom: Bitter Springs part of Mataranka Thermal Pools, Northern Territory (Beetaloo GBA region) Courtesy of the Geological and Bioregional Assessment Program's Clare Brandon (CSIRO), September 2019.

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Executive summary

The Geological and Bioregional Assessment (GBA) Program (the Program), implemented and managed by the Department of Agriculture, Water and the Environment (DAWE), provides transparent, scientific evidence to increase understanding of potential environmental impacts of tight and shale gas development in Australia. The inclusion of user panels in the Program is a deliberate decision to create forums for targeted stakeholder engagement and dialogue throughout the life of the Program.

This report presents information regarding the effectiveness of the user panels formed and operating under the Program. To date, qualitative data have been collected for two of the Program's user panels (Cooper and Beetaloo) via interviews with 21 user panel members to discuss their expectations and experiences over the course of their involvement in the user panels. The interviewees represented a mix of government, industry and community stakeholders.

Primary themes from the interviews highlight the importance and value of connections between people and other stakeholders that are enabled by the user panels. Three of four primary themes in this research are associated with people connections, knowledge sharing and procedural matters. The next most prevalent primary theme is focused on potential impacts of tight and shale gas development.

In terms of what is working well, it is clear that stakeholder connections and engagement opportunities (including with scientists and DAWE staff in the broader Program) were highly valued by interviewees. Interviewees reported that the user panels provided the opportunity for them to represent their organisations'/constituents' concerns; engage directly with the science being developed; access divergent perspectives of other stakeholders; inform a process; and represent local community concerns.

In this first round of data collection, the user panel for the Cooper GBA region (Cooper User Panel) focused more on gaining a better understanding of the Program and placed stronger emphasis on anticipated impacts and potential risks of resource development, with a focus on surface and groundwater flows. The user panel for the Beetaloo GBA region (Beetaloo User Panel) focused more on how to provide broader community representation (through observation and feedback), with a focus on how the Program might engage more broadly with community.

Similar challenges and improvements were identified for both user panels. The opportunity to improve the communication, accessibility and relevance of highly technical scientific information was a priority. It was also observed this had improved during the Program, with scientists actively adapting presentation styles and formats to support more interactive meetings for non-specialists. Communicating complex scientific information to diverse audiences and meeting user needs are recognised as priorities for the Program.

The findings presented here are designed to be used to improve the user panel experience and inform effective stakeholder engagement within the Program. This report provides an analysis of the first round of interviews conducted with a representative sample of user panel members in the Cooper and Beetaloo GBA regions.

1　Background

The Geological and Bioregional Assessment (GBA) Program (the Program) is implemented and managed by the Department of Agriculture, Water and the Environment (DAWE) to provide transparent, scientific evidence to increase understanding of the potential environmental impacts of tight and shale gas development in Australia. As part of the Program, user panels have been formed for each of the three GBA regions under assessment – Cooper, Beetaloo and Isa – to provide a clear mechanism for supporting stronger relationships between the Program and key regional stakeholders and communities (see Figure 1). Inclusion of user panels in the Program provides forums for targeted stakeholder engagement and dialogue. There is also a strong commitment in the Program to improve community understanding of the industry (Australian Government, 2018) and it is anticipated that the user panels can play a role in contributing to this outcome.
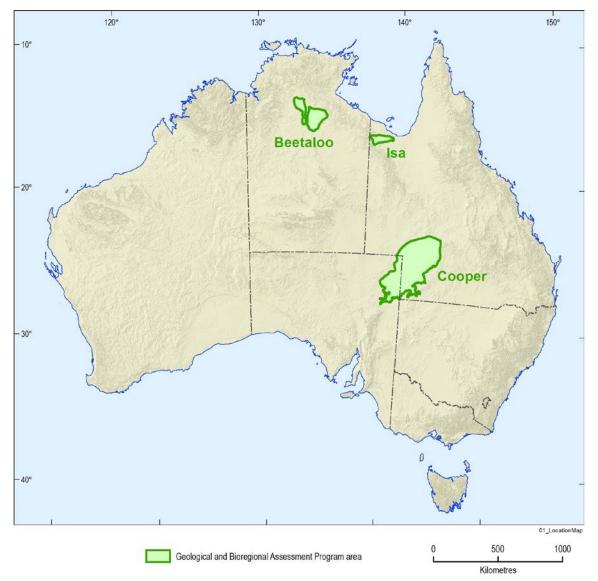

Figure 1 Beetaloo, Cooper and Isa GBA regions. Source: DAWE

Through these three user panels, the Program formally engages with a range of stakeholders in each region. This engagement primarily occurs through user panel meetings every six to 12 months. User panels have a broad membership comprising Commonwealth and state regulators; local and state government representatives; industry representatives (gas, agriculture, etc.); local Traditional Owners and Indigenous representatives; and other key stakeholders such as local landholders, local water users and natural resource management bodies.

This research presents information regarding the effectiveness of these user panels. In 2019, qualitative data was collected for user panels of two of the GBA regions (Cooper and Beetaloo). At this time, the Isa User Panel was not ready to be interviewed as outlined below. Data gathering was undertaken via interviews with user panel members to understand the expectations and experiences of their involvement in the user panels. This allows assessment of the effectiveness of the panels for members in each GBA region and to draw some comparisons about similarities and differences in panel functions across the Program. Outcomes from the analysis are intended to be used to improve the user panel experience and inform the effectiveness of stakeholder engagement with the Program, more broadly.

This report presents an analysis of the first round of interviews conducted with a representative sample of user panel members in the Cooper and Beetaloo GBA regions.

1.1　　Research plan and design – Year 1

This report presents findings of qualitative analysis of interviews conducted with user panel members to understand their perspectives of the GBA user panels. The study's original design, as outlined in the *Monitoring & Evaluation Plan for GBA User Panels 2018-2021* (Lacey et al., 2018), employed a mixed methods approach using a combination of qualitative and quantitative data to enable comparability across time and regions. This approach is considered appropriate to ensure better understanding of the problem as qualitative data provide deeper subjective understanding of perspectives embedded in interviewees' responses and quantitative data provide statistical testing and generalisation of findings across wider population scales (Creswell & Plano Clark, 2011).

A quantitative survey, launched to panel members in April 2019, yielded limited responses (n = 3). This result was insufficient to support statistical analysis. In June 2019, in agreement with the DAWE, the research design was modified to remove the quantitative survey yet retain focus on interview-based qualitative data collection. This was also considered a more personalised approach for data collection and engagement with the members of the user panels. In July 2019, the CSIRO research ethics clearance for this project was varied to reflect these changes.

At the same time, it was agreed only two of the three user panels were ready to be interviewed – the user panel for the Cooper GBA region (Cooper User Panel) and the user panel for the Beetaloo GBA region (Beetaloo User Panel). The criteria for commencing data collection was that two full panel meetings had been conducted in each region. This was considered sufficient to allow user panel members to have similar levels of familiarity and exposure to the process. Although the user panel for the Isa GBA region had also completed two meetings, full membership of the panel was continuing to form, and members were not ready to participate. For this reason, this report

presents the analysis of the initial interviews undertaken with members from the Cooper and Beetaloo user panels.

1.2 Representative sample

Interviewees represented a broad range of government, industry and community stakeholder representatives. Twenty-one interviews were conducted from a list of purposefully selected potential interviewees provided to CSIRO by DAWE. Potential interviewees were contacted via email and telephone to determine their willingness to take part in the interview process. Questions used during interviews are available in Appendix 1[1]. Response rates for each user panel were:

- Cooper User Panel = 83%
- Beetaloo User Panel = 65%.

Ten (10) telephone interviews were conducted with members of the Cooper User Panel between 12 March and 5 April 2019. Length of interviews averaged 30 minutes, ranging from 19 to 47 minutes.

Eleven (11) telephone interviews were conducted with members of the Beetaloo User Panel between 10 July and 7 August 2019. Length of interviews averaged 24 minutes, ranging from 10 to 41 minutes.

An aggregated representation of Round 1 interviewees from both regions is provided in Table 1.

Table 1 Representative sample of interviewees – Cooper and Beetaloo user panels

Aggregated representation of interviewees – Year 1	Cooper User Panel	Beetaloo User Panel
Government (local, state, federal)	5	5
Industry (oil and gas)	0	1
Peak bodies and associations (other industry, community)	3	3
Not-for-profit advocacy (community, legal, Indigenous)	2	2
Total number of interviewees	**10**	**11**

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[1] An abridged set of questions was developed for regulators in both regions.

1.3 User panel attendance

All ten Cooper User Panel interviewees attended one or more of the Cooper User Panel meetings; four attended one meeting only, while six attended both the first and second meetings in Queensland at Quilpie in February 2018 and Thargomindah in May 2019.

All eleven Beetaloo User Panel interviewees attended one or more of the Beetaloo User Panel meetings; three attended one meeting only, while eight attended both the first and second meetings in the Northern Territory at Darwin in July 2018 and May 2019.

1.4 Research methods and analysis

Interviews were semi-structured, with question prompts used to ascertain:

1. interviewee background, role and participation in the user panels

2. interviewee expectations and the anticipated outcomes or benefits from participating in the user panel

3. interviewee experiences with attending the user panel, including what has been useful and valued, and observations regarding communications and program logistics

4. suggestions or recommendations for future improvements or changes with the user panels.

With the permission of the interviewees, interviews were audio recorded and transcribed. Responses for each region were manually coded according to the above four areas of enquiry, namely:

- background of the interviewee and attendance

- expectations/anticipation of involvement

- experience of involvement

- suggested improvements or changes.

The key findings from the Cooper and Beetaloo user panels are presented in sections 2 and 3, respectively. A deep qualitative analysis, as described in Minichiello et al. (2008), was undertaken for each dataset to better understand and articulate the themes that emerged from each set of responses. These sections provide a more detailed understanding of the findings from the Cooper and Beetaloo user panels within the broader Program.

In addition to the detailed analysis for each user panel, a computer-aided software package, Leximancer, was used to conduct a high-level quantitative text analysis of the combined interview data (Smith & Humphreys, 2006). Leximancer is useful for identifying the primary themes embedded within qualitative text, based on the frequency (i.e. number of times a concept appears in the text) and patterns of co-occurrence (how each of the concepts relate to one another in the text, enabling a clustering of concepts into themes based on 'proximal' – closeness to point of attachment). In this way, Leximancer serves to reduce the risk of subjectivity and bias during the qualitative data investigation. The results of the program-level analysis are presented in Section 4.

A summary of the main similarities and differences across the two user panels, as well as perspectives on what is working well, and emerging challenges are presented in Section 5.

2   Cooper User Panel analysis

This section provides a qualitative analysis of the interview responses of Cooper User Panel interviewees. The qualitative analysis involved:

- reviewing the ten individual interview transcripts

- isolating specific sets of question responses about expectations, anticipated benefits and outcomes, user panel experiences and suggested improvements

- transposing the data into software to cluster text across the full sample for further analysis

- manually identifying prominent 'influencing factors'

- summarising the corresponding text into short descriptive summaries.

Prior to presenting the results, we include a short contextual summary of the Cooper GBA region.

2.1   Cooper GBA region

The Cooper GBA region covers approximately 130,000 square kilometres and is a Permian-Triassic sedimentary geological basin. The Cooper GBA region is located mainly in the south west of Queensland extending into the north east of South Australia (see Figure 1).

The Cooper GBA region is named after the Cooper Creek, an ephemeral river that flows some 1,500 kilometres through Coongie Lakes Ramsar Wetland and into Lake Eyre (Australian Government, 2020). Alongside Cooper Creek, the Georgina and Diamantina rivers form a network of intertwined rivulets across the region, that has led to the area being referred to as the Channel Country. These river systems are critical to sustaining small towns and settlements in the arid and desert landscape of the Cooper GBA region. The primary land use in the Cooper GBA region is cattle grazing (Western Rivers Alliance, 2020).

The Cooper GBA region is also one of Australia's most important onshore oil and natural gas regions incorporating the Cooper-Eromanga Basin hydrocarbon system (Australian Government, 2020). The first commercial discovery of gas in the region occurred in 1963 (Gidgealpa 2), followed by the development of the Moomba gas field in 1966 (South Australian Government, 2020). The Cooper GBA region has been a gas producing region for some 60 years, houses significant pipeline and well infrastructure and active exploration for shale and tight gas is currently underway.

2.2   Expectations, anticipated benefits and outcomes

Analysis of the responses of Cooper User Panel interviewees indicated several factors ***motivating*** their ***decision to become involved*** in the user panel, including to (see Table 2):

- represent their organisation's interest

- increase understanding of the unconventional gas and oil industry

- contribute to policy development

- represent local community concerns and provide feedback.

Table 2 Cooper User Panel – motivations for initial involvement (qualitative analysis)

Influencing factor	Description	Responses (Sample = 10)
Represent organisation's interest	To represent their organisation's interests across governments, industry, not-for-profits and industry associations including the interests of local Traditional Owner and Indigenous groups in the Cooper GBA region	7
Increase understanding of the unconventional gas and oil industry	To increase understanding of the unconventional gas and oil industry's development and market potential and how these might intersect with natural resources and water management in the Cooper GBA region	4
Contribute to policy development	Represent and/or be involved in policy development	4
Represent local community concerns and provide feedback	To represent local community concerns and provide feedback to communities through active relationship management and community engagement	2

One interviewee expressed their motivation for involvement, highlighting the importance of broad representation and local perspectives:

> *The communities out here that actually live here - it's good to see representation from local government, from Aboriginal communities, and others because there might not be many of us out here but for those of us that are living here with our kids and grandkids, we are going to live here long-term. We've got a fair bit of stake in this – Cooper interviewee*

Another interviewee described the importance of building an understanding of the industry and how it would interact with other land users and the landscape:

> *…we need to be across what an expansion into that type of exploration and production, [what] it might mean for our region, for other land users, and also what it means longer term, for our resources, the surface water surface impacts and the groundwater impacts – Cooper interviewee*

When asked what Cooper User Panel interviewees **expected** as a result of **attending the user panel meetings**, their frequently expressed views included (see Table 3):

- better understanding of the GBA Program
- stakeholder representation
- information sharing
- relationship building
- advocacy.

Table 3 Cooper User Panel – expectations of attending panel meetings (qualitative analysis)

Influencing factor	Description	Responses (Sample = 10)
Better understanding of the GBA Program	To gain a better understanding of the GBA Program with emphasis on anticipated impacts and potential risks, specifically relating to resource development and water flows	7
Stakeholder representation	To see representation of different stakeholder groups within panel membership including from community, governments, industry and Indigenous people	4
Information sharing	Contribution and access to panel and GBA Program information	4
Relationship building	Engagement with, and development of, community relationships that enhance community knowledge	4
Advocacy	Opportunity to represent (and hear) the concerns and perspectives of the different and varied stakeholders of the GBA Program with an emphasis on risk management relating to resources and water flows (surface and ground) impacts	3

One response that captured the various roles of the user panel in building understanding across varied interests and doing it in ways that would enhance information sharing across those interests was expressed as follows:

> *For me, it is about engaging with the community and hearing what the community's concerns are; and, being part of the team that can helpfully address those concerns from the community. It's important to be listening to them…and then if there are data gaps, talk about what we can do to help fill those gaps – Cooper interviewee*

2.3   User panel experience

Aspects that influenced Cooper User Panel interviewees' ***experience*** of ***attending the Cooper User Panel meetings*** to date included (see Table 4):

- level of comfort

- establishing clarity of process

- science insights.

Table 4 Cooper User Panel – user panel experience (qualitative analysis)

Influencing factor	Description	Responses (Sample = 10)
Level of comfort	Both positive and negative aspects of being able to contribute, the degree of courteousness, openness and frankness used in delivery of content and in discussion, the level of preparedness of presenters and the mix of people in the room	6
Establishing clarity of process	Gaining clarity around the GBA Program's purpose, independence, science and complexity	5
Science insights	Emphasis on language and delivery, quality and complexity; some concern that the science presentations were too technical	3

The desire for greater science insights is an aspect that has been, and continues to be, actively addressed in the scientific and technical presentations since commencement of the GBA Program. Interviewees also described whether they perceived the right people were in the room and how open the panel discussions (and members) were:

> So even though we only had two days in Quilpie, I really felt that clearly there were concerns, there were also opportunities. I felt that they were the right mix of people to be at the meeting. And I think everyone had a voice – Cooper interviewee

> I thought it was quite good in the sense that the resource companies were reasonably open and upfront about their views, and any information that they had around risks. And I think a preparedness to discuss those, whereas in other forums they may have been less open to talking about the challenges that they experience – Cooper interviewee

One interviewee highlighted the importance of where the meetings were located as many user panel members travelled long distances to be involved:

> I think primarily it was really positive to have the stakeholder meetings in the affected region, or close to it. That was a real positive rather than meeting in Brisbane, or Sydney or wherever else, Canberra – Cooper interviewee

Regarding interviewees' **experiences during the field trip** to the Cooper GBA region, on the whole feedback was positive (n = 5) – noting that only six interviewees participated in the field trip. Comments by interviewees focused on how much they had appreciated the opportunity to meet in and walk the region where development may eventually occur. More specifically, comments focused on (see Table 5):

- sense of scale
- education and awareness
- industry engagement
- industry in action

- hydraulic fracturing knowledge
- impacts knowledge.

Table 5 Cooper User Panel – field trip experience (qualitative analysis)

Influencing factor	Description	Responses (Sample = 10)
Sense of scale	Opportunity for greater understanding of the sense of scale of the region	3
Education and awareness	Opportunity for education and awareness building	2
Industry engagement	Opportunity to hear industry people speak about what they do and their different activities	2
Industry in action	Opportunity for increased understanding of the intersection of environmental, industry, infrastructure and social issues that exist in the region	2
Fracking knowledge	Opportunity for improved awareness of uncertainty and concerns relating to fracking	2
Impacts knowledge	Increased understanding of the potential for impacts that infrastructure (such as roads) may have on water flows and flooding	2

Specific comments relating to the value of the field trip, including the value of having time to interact with other user panel members, include:

> I think it adds a lot of value to get out, see the facilities, walk the region, understand more clearly the challenges in a practical sense…get a better understanding of the channel country, [and of] potential impacts of linear infrastructure in that area was useful – Cooper interviewee

> What is really important with these processes is to all be together overnight, to be able to sit down and have a feed and a drink, and discuss all of the other stuff, and it makes the whole process run so much more smoothly. I've noticed this for many years with different processes. Just having a short one-day-meeting where everyone flies in and flies out, you miss a lot of the interaction that's necessary to make these processes work really well – Cooper interviewee

2.4   Suggestions for improvements

When Cooper User Panel interviewees were asked if there was anything they **would change about the panel meetings** to make them more beneficial, the following key messages emerged (see Table 6):

- improve information provision
- refine the meeting process.

Table 6 Cooper User Panel – suggestions for improvement (qualitative analysis)

Influencing factor	Description	Responses (Sample = 10)
Improve information provision	A need for greater focus on information provision including the amount of information provided and dissemination process, quality and language used with emphasis on the degree of technical complexity of information relating to the science	4
Refine the meeting process	Desire for refinement of the meeting process focused on greater (sustained) regional political and local member attendance where possible, summary presentations in layperson's terms (pre & post), more discussion within meetings to enhance greater transparency among stakeholders, and post-meeting information summarised in a format that can be easily communicated to those who had not attended the meeting	3

Specific comments relating to the suggestions for improvement, include:

> *… the second meeting felt like it didn't get drawn to a particularly tight set of information that could be easily communicated to people that hadn't been involved with the process. It was sort of left a bit open-ended, and there wasn't the follow-up packaging of that, in a form that could be easily disseminated – Cooper interviewee*

> *…missing are the actual local members because they're always too busy…we get some good feedback obviously, but it would be great to get the politicians more involved – Cooper interviewee*

When asked if Cooper User Panel interviewees were ***still motivated for continued involvement*** in the user panels, responses were mostly positive regarding the user panels meeting the interviewees' needs and delivering the GBA science. Some interviewees expressed a desire for greater participation and improved information dissemination (see Table 7):

- GBA science
- user panel process
- participation
- information dissemination.

Table 7 Cooper User Panel – motivation for continued involvement (qualitative analysis)

Influencing factor	Description	Responses (Sample = 10)
GBA science	Meeting interviewees' needs in relation to remaining engaged with the science	7
User panel process	Meeting interviewees' needs in relation to how the process is conducted	3
Participation	Interviewees seek greater opportunity to participate in the user panel meeting sessions	2
Information dissemination	Interviewees seek greater information dissemination that would enable two-way information flows between the GBA and broader audiences	2

The continued motivation for involvement and the importance of the process was expressed succinctly by one interviewee:

> *We can't move forward proactively and formulate good policy if we don't all get-together and understand what the issues are and what the science is – Cooper interviewee*

3 Beetaloo User Panel analysis

This section of the report provides a qualitative analysis of interview responses from Beetaloo User Panel interviewees. The qualitative analysis involved:

- reviewing the eleven individual interview transcripts

- isolating specific sets of question responses about expectations, anticipated benefits and outcomes, User Panel experiences, and suggested improvements

- transposing the data into software to cluster text across the full sample for further analysis

- manually identifying of prominent 'influencing factors'

- summarising the corresponding text into short descriptive summaries.

Prior to presenting the results, we include a short contextual summary of the Beetaloo GBA region.

3.1 Beetaloo GBA region

The Beetaloo GBA region covers approximately 30,000 square kilometres and forms part of the greater Macarthur Basin. The Beetaloo GBA region is located south east of Katherine in the Northern Territory (see Figure 1).

Within this region, the main regional centres are Katherine and Tennant Creek, surrounded by numerous smaller and more remote communities. The population in the region is characterised by a high level of remoteness and cultural diversity, and issues such as the PFAS contamination of water resources in Katherine and surrounding areas may directly influence broader community views about potential risks to water resources from potential unconventional gas development (Coffey, 2018). The Beetaloo GBA region has been assessed as *"one of the most prospective areas for shale gas in Australia, containing an estimated prospective resource of 178,200 petajoules of gas, as well as having liquids potential"* (Australian Government, 2019).

Of relevance, the Northern Territory Government announced a moratorium on hydraulic fracturing of unconventional gas reserves for exploration, extraction and production on 14 September 2016. In order to fully assess the environmental, social and economic risks and impacts of hydraulic fracturing in this jurisdiction, the Northern Territory Government announced the final Terms of Reference for the Scientific Inquiry into Hydraulic Fracturing of Onshore Unconventional Reservoirs and Associated Activities in the Northern Territory (the Inquiry) in December 2016. The final report of the Inquiry was released in March 2018 (Northern Territory Government, 2018) and the moratorium was subsequently lifted. A plan for implementing the findings and recommendations of the Inquiry is being progressed and includes the development of a Strategic Regional Environmental and Baseline Assessment (SREBA) for the Northern Territory (Northern Territory Government, 2019). There has been extensive stakeholder engagement involved in these processes.

3.2   Expectations, anticipated benefits and outcomes

Beetaloo User Panel interviewees noted their ***initial involvement was motivated by*** a number of opportunities, specifically related to (see Table 8):

- represent their organisation's interests
- gain access to information
- improve impacts knowledge
- ensure government involvement
- contribute to policy development
- support community engagement.

Table 8 Beetaloo User Panel – motivation for initial involvement (qualitative analysis)

Influencing factor	Description	Responses (Sample = 11)
Represent organisation's interests	To represent their organisation's interests, including state and national government, industry and not-for-profit sectors and their constituencies	4
Gain access to information	To have greater access to information, specifically relating to groundwater and to ensure a balanced approach in information delivery and dissemination to support increased access to greater quality information	4
Improve impacts knowledge	To gain increased understanding of the potential impacts a gas industry might present for the region, including how it might affect cattle production and exports, water access (ground and rivers), and ecological and environmental integrity in the region	4
Ensure government involvement	To ensure government involvement to better understand alignment of the GBA with existing government regional assessment initiatives, i.e. the *Strategic Regional Environment Baseline Assessment* (SREBA)	3
Contribute to policy development	Represent and/or be involved in policy development	2
Support community engagement	To provide an important community engagement opportunity between the GBA and local community stakeholders concerned about hydraulic fracturing and unconventional shale gas exploration in the Northern Territory	1

The importance of understanding how the GBA Program interacts with other existing processes was expressed by one interviewee:

> ...companies aren't negative toward this work, but they do want to ensure that it doesn't decrease company ability to operate, and the companies obviously see the value of what GBA are doing to address the needs of the SREBA as well. – Beetaloo interviewee

When asked about their **expectations in terms of attending the User Panel meetings**, interviewees responses were varied and included a desire for increased (see Table 9):

- knowledge and understanding of the science
- understanding of the GBA process
- community engagement
- information contribution and dissemination.

Table 9 Beetaloo User Panel – expectations of attending panel meetings (qualitative analysis)

Influencing factor	Description	Responses (Sample = 11)
Knowledge and understanding of the science	Greater knowledge and understanding of the science with emphasis on hydraulic fracturing, rock formations, water resource management (aquifers and water flow), and potential risks and mitigation opportunities	4
Understanding of the GBA process	Greater understanding of the GBA process with emphasis on desire to understand the linkages between industry, technical groups and regulatory frameworks	4
Community engagement	Opportunity to provide broader community representation (observation and feedback) and more specifically to observe how the GBA engages with community	3
Information contribution and dissemination	Opportunity to present and take away information and the need to fill existing information gaps	2

3.3   User panel experience

Similar to experiences described by Cooper User Panel interviewees, the main aspects that emerged in the discussion with Beetaloo User Panel interviewees' **experiences with involvement in the panel** related to comfort and clarity. However, how they were expressed with a slightly different focus, as can be seen in Table 10 below:

- level of comfort
- establishing clarity.

Table 10 Beetaloo User Panel – user panel experience (qualitative analysis)

Influencing factor	Description	Responses (Sample = 11)
Level of comfort	Level of comfort in terms of interest, usefulness, interaction ability) associated with meeting processes (structure, functionality, content, timing, communication). The timing of meeting notifications was thought sufficient; however, a lack of pre-reading material was noted	6
Establishing clarity	Establishing clarity on how to prioritise what should be presented at the user panel meeting. Accompanied by a request for greater focus on protection of environmental assets and some suggestion that complex data might be delivered via other pre-existing avenues	5

Some divergence of views was noted among Beetaloo User Panel interviewees. These views primarily related to how much time was allowed for interaction and discussion during the meetings (given the amount of material to be discussed) and how understandable and accessible the presented information was. For example, interviewees noted that to be able to work through the full agenda in a day, there was necessarily less time available for discussion or to hear from others in the room. This presented a significant imbalance or trade-off in how the time together was spent. Material presented in the meetings, though considered technical, was felt by some interviewees to be conveyed in ways that many people in the room could understand. However, this was not universally agreed with at least one interviewee noting becoming 'a bit lost' in the research updates presented by scientists. It was noted by one interviewee that the level of discussion was very high-level, targeting government-oriented discussion focused on industry rather than on community interests. Another interviewee also noted that it was not possible to establish the credibility of the research presented without having an understanding of the methodological rigour used to produce the science.

In all cases, these comments highlighted challenges with pitching information at the right level for a broad audience and so that discussions could be meaningful and useful. The volume of information coming out of the meetings was seen to be somewhat limited; however, this was qualified with the recognition that data collection was still active and Stage 2 reports to DAWE were yet to be completed (at the time of interviewing). This was accompanied by a suggestion to develop post-meeting information that could readily be communicated more widely. For example:

> *...one of the difficulties is that you've got a broad cross-section of the community at these meetings and people have a very different level of understanding and knowledge. So, I think that makes it quite hard for everyone to … pitch their presentations and have these discussions… - Beetaloo interviewee*

> *There was the tight agenda on the day, and I felt that there were probably some unresolved concerns and so the mechanism to go back to the group was the communique, which only recently came out. So, I think some community and industry stakeholders might still be a little bit confused... - Beetaloo interviewee*

Given the multiple processes underway in the NT arising from the Inquiry (Northern Territory Government, 2018), the potential for confusion and overlap about the focus of those distinct processes and the role of the GBA was succinctly expressed as follows:

> *It was like more of the same kind of stuff that we do in the community business reference group with many of the same people in the room and I feel like some of the conversations that were being played out maybe weren't happening in the right space –* Beetaloo interviewee

As plans for a field trip in the Beetaloo GBA region had yet to be explored at time of interview, when Beetaloo User Panel interviewees were asked to **consider the value of participating in a field trip**, the majority chose not to explore the question. However, two interviewees provided responses which focused on the following areas of interest (see Table 11):

- sense of scale

- education and awareness.

Table 11 Beetaloo User Panel – field trip anticipated experience (qualitative analysis)

Influencing factor	Description	Responses (Sample = 10)
Sense of scale	An opportunity for gaining greater understanding and appreciation of the sense of scale of the region	1
Education and awareness	An opportunity for education and awareness building	2

The possibility of a field trip to a well site was thought to be a valuable opportunity for people to experience firsthand how the industry presence might be realised in the landscape and to get a better understanding of the scale of area involved. Only one interviewee indicated a lack of interest in participating in a field trip.

3.4 Suggestions for improvements

Similar to interviewee responses for the Cooper User Panel, when interviewees were asked if there was **anything that they would change** to make the panel meetings more beneficial, the following suggestions were highlighted (see Table 12):

- improved information provision

- refine meeting process.

Table 12 Beetaloo User Panel – suggestions for improvement (qualitative analysis)

Influencing factor	Description	Responses (Sample = 10)
Improved information provision	A need for greater focus on information provided during and after the meetings and a focus on providing information in a more straightforward format that can be easily understood and communicated to representatives' communities/constituencies	7
Refine meeting process	Refine the meeting process itself to allow more time for discussion between stakeholders in the meeting setting and build in opportunity for pre-post meeting involvement	5

Regarding the meeting process, one interviewee noted it was important that stakeholders be given the opportunity to reveal their concerns at the meetings and that the user panel meetings should provide a discrete opportunity for such concerns to be debated. Another interviewee questioned whether the forum was meeting the needs of the people who are using the information it generates. It was noted that the meeting agendas were often filled with complex technical presentations and there might be opportunity to improve the agenda by circulating draft agendas to user panel members, calling for input prior to finalisation and dissemination. One interviewee expressed their views on the volume of information as follows:

> I think there's possibly too much crammed in one day. That last meeting, that was full on and it would have been pretty intense for some people who might not have that full technical understanding. It would be interesting to see what they felt they got out of it – Beetaloo interviewee

With respect to information provision, it was noted that time and distance commitments required of some user panel members to attend panel meetings, were influencing factors for why information should be presented and/or made available to members to support wider communication and outreach. Some user panel members noted travelling distances that required commitments of up to six hours (a common challenge in all regions). One interviewee emphasised not having the time to attempt to take comprehensive notes from highly complex presentations to then translate these to disseminate for others to understand. The importance of being able to disseminate the information was also expressed by one interviewee:

> I'd probably like more information in easily digestible formats that I was then able to pass on. It's difficult for me to attend a meeting that's a series of PowerPoint presentations about groundwater systems and ecology and so on, and then just walk away. I don't have time to take comprehensive notes and try and write that up for people. So, some communication materials would be helpful – Beetaloo interviewee

It should be noted that at least one interviewee did not see a need for change in the user panel meetings indicating that the GBA User Panel was achieving what it was set out to do. This interviewee noted the user panel was not a decision-making body; rather, it created opportunity to bring people together to have conversations they might otherwise not have.

When asked if Beetaloo User Panel interviewees were ***still motivated for continued involvement*** in the user panels, responses identified identical motivations to the Cooper User Panel but with greater emphasis on user panel process and participation (see Table 13):

- GBA science
- user panel process
- participation
- information dissemination.

Table 13 Beetaloo User Panel – motivation for continued involvement (qualitative analysis)

Influencing factor	Description	Responses (Sample = 10)
GBA science	Meeting interviewees' needs in relation to remaining engaged with the science	2
User panel process	Meeting interviewees' needs in relation to how the process is conducted	3
Participation	Interviewees seek greater opportunity to participate in the user panel meeting sessions	3
Information dissemination	Interviewees seek greater information dissemination that would enable two-way information flows between the GBA Program and broader audiences	2

The importance of broad representation and involvement was expressed by two interviewees:

> *…there's still some significant stakeholder groups that were conspicuously under represented, the Indigenous ones being the prime example and that's always difficult – Beetaloo interviewee*

> *I think it's important that I stay involved purely for that sort of access to information on behalf of clients and the community – Beetaloo interviewee*

4 Combined GBA Program-level analysis

A combined analysis of the interviews from both the Cooper and Beetaloo user panels was undertaken to identify key findings across the Program. An analysis of the combined dataset was carried out using Leximancer to identify the primary themes embedded within the text, by clustering concepts into proximal themes based on frequency and patterns of co-occurrence (Smith & Humphreys, 2006).

To make a clear distinction between the Program-level themes and the user panel-level findings presented in sections 2 and 3, themes identified in the combined analysis are referred to as 'primary' themes.

4.1 Combined panel analysis – primary themes

When datasets from both the Cooper and Beetaloo user panel interviews were combined, data cleaned (isolated to contain interviewee data only) and concept maps generated, four primary themes were identified in *response to all interview questions*. In order of prominence, these primary themes were:

- people connections
- concern for impacts
- knowledge sharing
- procedural matters

Table 14 provides a detailed overview of each primary theme including number of hits (concept connections); theme descriptions; and the concepts captured within each theme. The themes highlight a clear focus on 'connection' with other stakeholders and interviewees in the user panel setting – connections that appear to be highly valued. Focus on impacts is the second most frequent primary theme. Of interest, three of the themes highlight concepts that reflect exchange, communication, networking and knowledge sharing, as well as connection. This intersection of concepts across multiple themes highlight their priority for user panel members. The focus on these themes was expressed by interviewees across both user panels:

> *…for me, that's the whole use that I got out of it, to meet the other people and meet the panel members. I've learnt a lot new about what they're concerned about, what their experience has been, and that was the whole point, was to understand that, and then build that relationship – Cooper Interviewee*

> *…having a greater understanding of not just the rock formations – they're drilling through water tables and trying to better understand 'what are the potential risks', and how those risks are being mitigated. But understanding also 'what impact will it have' on water and the environment in that particular region – Beetaloo interviewee*

Table 14 Combined analysis – primary themes (Leximancer)

Primary theme	Hits	Descriptions	Concepts
People connections	786	Regarding relationships, stakeholders, information exchange and user panel processes	people, panel, work, industry, meeting, community, GBA, user, information, understanding, group, involved, process, government, meetings, different, issues, opportunity, members, groups, local, important, need, questions, useful, presentations, science, whole, feel, talking, level, main, interesting
Concern for impacts	325	Understanding impacts of industry development, on surface and below-ground water, concern with fracking in particular; and, other more technical matters	gas, development, water, area, better, coming, fracking, companies, region, areas, interest, country
Knowledge sharing	235	Sharing of knowledge, expression and representation and hearing differing perspectives	understand, terms, assessment, environmental, knowledge, happening, perspective, conversation, panels
Procedural matters	157	Commentary on the GBA Program purpose and procedures, the stakeholders involved	program, technical, CSIRO, stakeholders, working, meet

4.2   Expectations, anticipated benefits and outcomes

Expectations, anticipated benefits and outcomes considered here capture interviewee ***motivation for panel membership*** on one or other of the user panels. In order of prominence, and isolating for relevance (limited to responses to questions relating to motivation for involvement), Leximancer analysis of the text reveals the following secondary themes (see Table 15):

- role and purpose of GBA user panel
- understanding risk
- value inclusivity
- to be informed
- environmental protection.

When discussing these motivations, strong focus was placed on the role and purpose of the user panels by interviewees, including how the GBA Program intersected with other existing or potential processes (e.g. potential Strategic Assessments in Queensland, the Strategic Regional Environmental and Baseline Assessment in the Northern Territory).

Table 15 Combined analysis – expectations, anticipated benefits and outcome (Leximancer)

Secondary theme	Hits	Descriptions	Concepts
Role and purpose of GBA user panels	164	Seeking clarity on what drives this 'social' aspect of the broader GBA Program, why engage 'community' in this respect and how the user panel (outcomes) links with the broader industry/government development agenda and other local engagement activities.	people, panel, work, community, involved, GBA, process, gas, user, government, group, different, information, opportunity, fracking, CSIRO, questions, issues, region, area, important, groups, meeting, interest, local, presentations, feel, interesting, working, science, assessment, meet
Understanding risk	108	Regarding a desire to obtain a greater understanding of risks involved, or the confidence in procedures in place to assess and address these risks.	understanding, industry, development, members, terms, understand, water, areas, companies, better, coming, perspective, technical, country
Value inclusivity	47	Recognised value of inclusivity for the GBA Program – both to be heard and the hear diverse perspectives, including those from Traditional Owners, industry and other community representatives.	need, meetings, stakeholders, useful, program, main, whole, talking, level
To be informed	14	Regarding the sharing of knowledge and information, including where the science is at, timelines and the policy, regulatory and industry activities as they develop.	knowledge, happening, panels
Environmental protection	4	Concern for environmental impacts and seeking confidence that environmental assessments were being integrated.	environmental

4.3 User panel experience

Further analysis of the combined data captured the reflections of interviewees on ***experiences when attending user panel meetings***. Interviewees commented on what they found to be the most useful, the main benefits that had arisen, and their observations and satisfaction of post-meeting contact with other panel members and DAWE. In order of prominence and isolating for relevance (limited to responses to questions relating to experiences when attending user panel meetings), the following secondary themes emerged (see Table 16):

- divergent perspectives
- access to science

- technical knowledge
- people connections
- building awareness.

A focus on access to divergent perspectives and people connections came through strongly once more. In addition, specific focus was placed on the accessibility of scientific and technical information. Interviewees from both user panels commented on the high level of comfort and ease in the exchanges of the user panels and, that the exchanges were open, honest and frank. They also valued clarity with respect to a range of issues including the GBA Program's purpose, independence, science and complexity of the process.

Table 16 Combined analysis – user panel experience (Leximancer)

Secondary theme	Hits	Descriptions	Concepts
Divergent perspectives	311	Recognising where knowledge and information gaps exist, how best to accommodate these and divergent perspectives on the purpose of the GBA user panel and their roles in it.	people, meeting, industry, panel, meetings, different, understanding, process, government, group, issues, community, opportunity, local, user, coming, involved, level, terms, knowledge, questions, members, whole, feel, interest, perspective
Access to science	172	Comments about how the Program contributes to making science accessible, packaged in ways that allow stakeholders to engage and become advocates of the science that impacts on them and their members.	work, information, GBA, groups, understand, useful, technical, science, important, talking, presentations, program, CSIRO
Technical knowledge	147	Regarding opportunities to engage in more technical matters, including the sharing of knowledge on risks, potential impacts and procedures involved with gas extraction.	people, meeting, industry, panel, meetings, different, understanding, process, government, group, issues, community, opportunity, local, user, coming, involved, level, terms, knowledge, questions, members, whole, feel, interest, perspective
People connections	56	Positive reflections on the people to people connections and stakeholder relations that the GBA User Panel experience enables.	work, information, GBA, groups, understand, useful, technical, science, important, talking, presentations, program, CSIRO
Building awareness	18	Regarding opportunities to engage in more technical matters, including the sharing of knowledge on risks, potential impacts and procedures involved with gas extraction.	gas, water, better, area, development, environmental, companies, need, region, areas, fracking, assessment, country

4.4   Suggestions for improvement

Interviewees commented on what they **would change about the GBA user panels** (if anything), whether they were **still motivated to be involved** and if the user panels were **continuing to meet their needs**. In order of prominence and isolating for relevance (limited to responses to questions relating to suggestions for improvement), the following secondary themes emerged (see Table 17):

- prioritising relations
- strategic assessment
- transparency and translation
- context for development
- bridging science-local knowledge.

Several of the themes cut across both user panels, such as tailoring communication needs and appropriate science translation. Some additions and more nuanced, specific reflections emerged from Beetaloo User Panel interviews, such as raising questions regarding decisions about engaging user panel members early, providing appropriate detail and information beforehand and consideration of how user panel members may contribute to the design and agenda-setting for the Program (e.g. to ensure information is appropriately tailored and participation is improved).

Table 17 Combined analysis – suggestions for improvement (Leximancer)

Secondary theme	Hits	Descriptions	Concepts
Prioritising relations	205	Regarding an emphasis on prioritising value creation for all stakeholders through the user panel experience, how local stakeholders may be involved in setting agendas and how the forums may look differently should building these program-relevant relationships be prioritised	people, information, panel, user, meeting, community, group, work, understand, members, involved, groups, program, GBA, meetings, industry, issues, different, technical, local, process, understanding, important, presentations, whole, need, science, feel, terms, opportunity, useful, government, talking, fracking, questions, better, coming, happening, stakeholders, conversation, environmental, region, water, interest
Strategic assessment	36	Considerations toward region-specific risk management procedures, building confidence in the process and a strategic assessment of potential, risk and opportunities for the region	assessment, area, meet, areas, panels, working, knowledge
Transparency and translation	16	Comments regarding ways to ensure the transparency of GBA Program	level, CSIRO, interesting, companies

		progress and industry activities, including written updates and means for translating science for policy, regulatory and community purposes	
Context for development	15	Recognition that regions differ in terms of development potential, progression of development, the social, political and institutional context and that these differences matter	development, gas, main
Bridging science-local knowledge	8	Considerations about bridging the science with the observational and local knowledge systems, including local observations and perspectives on how country has changed over the years	perspective, country

5 Summary

Overall, the interviewees provided rich understanding of their user panel engagement to date. This summary highlights key differences and similarities that have emerged across the Cooper and Beetloo user panels, what is working well, and emerging challenges and opportunities, which may help improve the user panels for both the interviewees and the GBA Program.

5.1 Similarities and differences

The Program-level analysis highlighted a clear focus on the importance of connections between people and other stakeholders as a result of the user panels. Three of the four themes related to the more interactive or process-driven aspects of the user panels including people connections, knowledge sharing and procedural matters. The second primary theme emerging across the two user panels focused on concerns about potential impacts.

In terms of some generalised differences, the Cooper User Panel interviewees tended to speak more to concepts concerning water, country and knowledge, and expressed a stronger focus on understanding impact and risk. Given the critical nature of the inland river systems and floodplains in this region to sustaining populations, the environment and industries, this is not unexpected. By comparison, Beetaloo User Panel interviewees tended to speak more to procedural matters and those related to community. This included the nature of conversations, and the people, stakeholders and groups involved, expressing a stronger focus on stakeholder relations and trust building mechanisms in their responses. This likely reflects multiple assessment processes arising from the *Scientific Inquiry into Hydraulic Fracturing of Onshore Unconventional Reservoirs in the Northern Territory* and the subsequent lifting of the Northern Territory Government's moratorium on hydraulic fracturing of onshore unconventional reservoirs (Northern Territory Government, 2018).

These contextual differences are succinctly captured in the following quotes and highlight the importance of seeing how the social and political context in each region along with who sits at the table will shape the nature of the engagement in each GBA region. The importance of context can be seen quite distinctly across the regions after two panel meetings in each region:

> *I think the Cooper's different in that the community is pretty well familiar with the gas industry. It's been there for a very long time, and they understand it, and they've lived with it... [the Panel] was about getting to know people and building the relationships and understanding what they were concerned about – Cooper interviewee*

> *…basically what I think you're seeing here is that the GBA process has really been integrated into – or at least if not integrated into, from their perspective it's been adopted by the local processes and procedures and I think there's been a real eye on making sure that it can be seen as something that's beneficial, complementary, but that we don't double up on things – Beetaloo interviewee*

5.2   What is working well

In terms of what is working well in the user panels, it was clear that the people connections and engagement opportunities (including with those beyond the panel membership such as with scientists and DAWE staff) were highly valued by the Cooper and Beetaloo user panel interviewees for a range of reasons including:

- opportunity to represent their organisations'/constituents' concerns in the process

- engage directly with the science being developed to support the regional scale assessments

- access divergent perspectives from the stakeholders in the room

- opportunity to inform a process by being 'at the table'

- represent local community concerns.

For the Cooper User Panel, this tended to be more focused on gaining a better understanding of the GBA Program and a stronger emphasis on anticipated impacts and potential risks, specifically relating to resources and surface and groundwater flows. For the Beetaloo User Panel, this focused more on how to provide broader community representation (observation and feedback) and more specifically to observe how the GBA engages with community.

The benefits of the field trip, noting this had only taken place in the Cooper GBA region, were identified as:

- greater understanding of the sense of scale of the region

- an opportunity for education and awareness building

- opportunity to hear industry people speak about what they do and their different activities

- increased understanding of the intersection of environmental, industry, infrastructure and social issues in the region that exist in the region

- improved awareness of uncertainty and concerns relating to fracking

- increased understanding of the potential for impacts that infrastructure (such as roads) may have on water flows and flooding.

What emerged in the commentary around the Cooper User Panel field trip was that the additional time required (i.e. overnight) meant that user panel members had more opportunity to share a meal and discuss aspects of the GBA Program in a less formal setting (outside a tightly managed agenda). This may have been one of the unintended benefits of the field trip as the third Cooper User Panel meeting reflected some of the most engaged conversations in the room of any panel to date[2]. Trust takes time to build but the nature of the interactions leading up to this engagement

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[2] The third meeting was not subject of the data collection, so this is purely based on the field trip assessments provided during the interviews and the researchers' observations of the dynamics of the third Cooper User Panel meeting. Other factors supporting this dynamic are likely the active facilitation of the discussion to encourage a broader range of responses and the increased familiarity of user panel members with each other over time.

may also have supported the shift in these dynamics and an increased willingness to more actively and openly engage in exchanges in the more formal panel setting.

5.3 Emerging challenges

The challenges or improvements were similar for both GBA regions. One key opportunity highlighted across both user panels was the need to look at communication and accessibility of the information presented, particularly highly technical scientific information. For example:

> *Like I said at the last meeting we had, why don't you put something up there in the laymen's language, what we know, rather than all this highfalutin thing… – Cooper interviewee*

> *…sometimes a little technical…some <presenters> have been able to present material in lay terms in a way that's really easy to understand and some haven't – Beetaloo interviewee*

Improving the accessibility of the science communication has been an ongoing focus of the GBA Program since the initial meetings were undertaken. Over time, this has improved, and scientists have adapted presentation styles and formats to support more interactive meetings for a diverse audience. The tension between communicating complexity and diverse user needs is acknowledged as an ongoing priority.

However, in making complex scientific and technical information understandable, relevant and useful, interviewees suggested it would be beneficial to package the critical information from meetings in formats that could be readily communicated beyond the meeting. There was a call for more specific highlights beyond the post-meeting communique, which was considered mainly relevant and understandable to those who had attended the meeting in person. This has also been reflected in requests for a newsletter or regular updates between meetings. Understanding how this information would be used by panel members and in what ways would ensure any such products are fit-for-purpose.

The second opportunity for adapting user panel processes related to increasing the opportunity for engagement and discussion. Specifically, to both allow more room for interaction in the meetings and opportunity for networking. Interviewees frequently acknowledged they were pleased with the amount of information they received at meetings, but its delivery often left little room for discussion of that information, or exploration of the range of responses or views in the room. The opportunity for networking (often in breaks or over a meal) and exposure to divergent perspectives was mentioned as a benefit of attending user panel meetings. Findings ways to allow this to be supported in future meetings would likely be beneficial. This opportunity might be better enabled with more active facilitation of discussion of science presentations in the room. This can be a useful way of initiating a discussion until the conversations and exchange starts to flow more naturally[3].

For Beetaloo User Panel interviewees, in particular, there was discussion of increasing pre- and post-meeting participation through more active engagement with developing the meeting

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[3] This more active facilitation of the in-room discussion was effective at third Cooper User Panel meeting held in Brisbane.

agendas to more specifically focus on and highlight local concerns. It is noted that this style of active engagement and call for suggestions from user panel members has been tried with the DAWE and initially there has been little direct response to these requests to date (i.e. in identifying key questions from communities to support local engagement and information sharing), so there may be a need to explore this via one-on-one follow up.

Appendix 1: Interview Questions for Panel Members

Interview Questions for GBA Panel Members

1. Can you tell me a little about yourself, your current organisation, role, background?

2. Can you please confirm which User Panel meetings you have attended to date?

Operation of the Panel

3. What initially motivated you to become involved in the User Panel?

4. What were your expectations in terms of attending the Panel meetings? What were the main benefits you hoped to realise for you and/or your community from attending the Panel meetings?

5. How have you found the experience of attending the User Panel meetings so far?

6. Is there anything you would change to make the Panel meetings more beneficial for you/and the community you represent? If yes, what?

7. Has it been useful to meet other User Panellists in these forums? Have you met anyone knew/learned anything new?

8. Do you have any contact with other User Panellists or the Department in between the Panel meetings? Would you like more/less communication from these sources?

Closing Questions

9. Are you still motivated to be involved the User Panel? Are the Panels meeting your needs?

10. In your opinion, what has been the main benefit so far?

11. Is there anything you'd change about the User Panels or the meetings? If yes, what?

12. Any final thoughts or comments

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