New South Wales Government
Independent Planning Commission

TRANSCRIPT OF PROCEEDINGS

RE: GLENDELL CONTINUED OPERATIONS PROJECT (SSD-9349) AND MOUNT OWEN CONTINUED OPERATIONS MOD 4 PROJECT (SSD-5850-MOD-4)

VIRTUAL SITE INSPECTION

PANEL:	DIANNE LEESON (Chair)
	PROFESSOR SNOW BARLOW
	ADRIAN PILTON
OFFICE OF THE IPC:	STEPHEN BARRY
	CASEY JOSHUA
	JANE ANDERSON
APPLICANT	CHRIS GERARD
REPRESENTATIVES:	JASON DESMOND
	DAVID HOLMES
	BRADLY SNEDDEN
	TIM WALLS
	SHANE SCOTT
COMMUNITY	KYLIE PASCOE
OBSERVERS:	LAURIE PERRY

LOCATION: VIA VIDEO CONFERENCE

DATE: 9.00AM, FRIDAY, 4 MARCH 2022

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MS LEESON: Before we begin I would like to acknowledge the traditional custodians of the land on which we variously meet today, as well as the traditional custodians of the land on which this project site is located, the Wonnarua people. I would like to also pay my respects to their Elders past, present and emerging.

Welcome to the virtual site inspection for the Glendell Continued Operations (SSD-9349) and Mount Owen Continued Operations Project Mod 4 (SSD-5850), projects which are currently before the Commission for determination. The Glendell mine forms part of the Mount Owen Complex located in the Hunter coalfields in the Singleton local government area. The application for the Glendell Continued Operations Project could extend the life of the existing operations by establishing a new mining area to the north of the current Glendell pit to enable the extraction of additional 135 million tonnes of run-of-mine coal over 21 years, at an increased production rate of up to 10 million tonnes per annum. Coal extracted over the life of the project would continue to be processed at the existing Mount Owen coal handling and preparation plant facilities before being transported via rail in accordance with the Mount Owen consent (SSD-5850).

The project involves an associated modification to Mount Owen consent to integrate with the proposed extension. While the project would continue to rely on existing infrastructure, including the Mount Owen coal handling and preparation plant, rail loop and existing Glendell mining fleet, it would require the development of a new mine infrastructure area, including associated infrastructure and services, along with construction of new heavy and light vehicle access roads. In addition, the project would involve the realignment of a section of Hebden Road, diversion of Yorks Creek and relocation of the historic Ravensworth Homestead.

My name is Dianne Leeson. I'm the Chair of this Independent Planning Commission Panel. Joining me are my fellow Commissioners, Professor Snow Barlow and Adrian Pilton. We form the Commission Panel appointed to this application. We are also being assisted today by Casey Joshua and Jane Anderson from the Office of the Independent Planning Commission.

In addition to representatives of the applicant, I also welcome our community observers, Ms Kylie Pascoe from the Hunter Valley Aboriginal Corporation and Mr Laurie Perry representing the Wonnarua People National Aboriginal Corporation. Community observers have been an important part of maintaining the Commission's transparency in the conduct of site inspections. I remind all participants, the applicant included, that site inspections, whether in person or virtual, are not a forum for making submissions to the panel. Of course, anything that is observed or heard today maybe

the subject of submissions made at the public hearing or in writing at the appropriate time.

The purpose of the site inspections to the Commission is to have the opportunity to view the site, including its location, layout and its physical attributes. I reiterate that this virtual site inspection is not an opportunity to make comments or submissions to the panel. Commissioners may ask questions of the representatives of the applicant to clarify various issues whenever it is considered appropriate. If you're asked a question and not in a position to answer, please feel free to take the question on notice and provide any additional information in writing which we will then put up on our website.

In the interests of openness and transparency and to ensure the full capture of information, today's virtual site inspection is being recorded and a complete transcript will be produced and made available on the Commission's website along with the applicant's presentation material. I request that all representatives of the applicant here today introduce themselves before speaking for the first time, and for all attendees to ensure that they do not speak over the top of each other to ensure accuracy of the transcript. We will now begin.

So good morning and welcome to this. We are looking forward to the visual and the virtual site presentation today. A couple of us as Commissioners have done these in the past and have found them enormously helpful in understanding a site and its context before we physically get there. And we'll probably talk about the physical visit a little later on given the current weather patterns and systems prevailing.

What we will do this morning, if it's fine with you, we'll ask you to introduce yourselves and we will then hand across to you to take us through the presentation. We've got, I think, two hours set aside. So hopefully that's sufficient time to go through both your presentation and to take questions from Adrian, Snow and myself. And I think without much more on that – sorry, and so in that sense, we need also to be guided because with two hours, although it sounds a long time, there is a lot of material in this that we really do need to understand. So it will be partly my role to, I think, stop us getting too bogged down in a particular issue if it's something that we can either take up onsite or we can explore later through other questions. So as fulsome and open as we can, but if needs be I'll just have to move us along. So on that note, if I can hand across to you, we'll get the inspection underway. So thank you.

MR SCOTT: Thank you, Commissioners, and thank you for the opportunity to take you on this virtual site tour this morning. Look, just before we go through introductions, we'd also like to acknowledge the traditional custodians for the land on

which we're currently sitting today, and that's the Awabakal people. And we'd also like to particularly acknowledge the Wonnarua people, which is the land within which the project is situated up there in the Hunter Valley, and recognise the Elders past, present and emerging. So thank you. I'll start off introducing myself. So my name is Shane Scott. I'm Glencore's Project Manager for the project. To the left of screen, off-camera at the moment, you have Chris Gerard, who's the Mount Owen Complex Operations Manager. Next to Chris, you have Tim Walls, who's the New South Wales Approvals Manager for Glencore. Immediately beside me on my left is Jason Desmond, who is the Environment and Community Manager for Mount Owen Complex. On my right is David Holmes, who's a Principal Consultant with Umwelt. And just off-camera to the right of your screen is Bradly Snedden, who's Approvals Manager for the project, also with Glencore. So we've prepared a pretty comprehensive presentation that we'd like to take you through this morning. So with your permission, are you okay if I just share the presentation with the audience?

MS LEESON: Yes. Yeah, thanks, Shane. And as I said earlier, we as Commissioners will probably interrupt a couple of times along the way for any clarifications. So if there's some technical issue that you can't pause for questions, just let us know at the outset.

MR SCOTT: Okay. Sounds good. Okay, so can everyone see that? I've now gone into presentation mode.

MS LEESON: Thank you, Shane. Yes.

MR SCOTT: Fantastic. All right, well, we'll get started. So I'll move on beyond this slide. So we've already obviously been through acknowledgement of country and introduction of attendees. So I'll just quickly just provide an overview of the agenda. So the intention this morning is to provide you with some regional context. Just to, I guess, to paint a picture of where the project lies in space and how it sits in relation to other mining operations. We then intend on drilling down further into the project and providing an overview of the project and honing in on the key aspects in relation to the project. And then following that we also wanted to touch specifically on a number of other elements associated with the project, in particular, heritage. Both historical and cultural heritage. So I'll be taking you through those items and then Jason, who is on your left, he will then talk to you about environmental management, so what systems we currently implement onsite to manage our impacts. And then we'll close the site tour with an overview of our rehabilitation practices onsite.

MS LEESON: Thank you.

MR SCOTT: Okay. So just in terms of regional context, so the intention is to, we'll start off at a macro level and then we'll look to drill down and then talk more specifically about the project. So, the project's situated in the greater Ravensworth area, which is located midway between Singleton and Muswellbrook in the Hunter Valley in New South Wales. Now, this area has a very long history of mining, with mining commencing back in the 1880s, so quite an extensive time ago. If I just draw your attention to this particular figure, and I'll move into a laser pointer, so these shaded brown areas on this particular figure show, I guess, past and current mining operations within that Ravensworth area. So as you can see it's quite intensively mined. Some other keys points to note on the plan, you have Lake Liddell situated up here in the north-west corner and you have the Bayswater and Liddell Power Stations obviously immediately adjacent to Lake Liddell, and then further to the north there's also a number of existing quarry operations as well that are currently in operation up in the Hebden area.

In terms of the operations, Glencore owns and operates a number of the existing operations that are in the Ravensworth area. So we have the Ravensworth Service Operations, which is located to the west of the New England Highway. So it currently has approval to operate until 2039. We're in a joint venture partnership with Yancoal at the Hunter Valley Operations, with the Hunter Valley Operations North having approval until 2025, and then the southern portion of that operation having an approval until 2030. We also own and operate the Liddell open-cut mine, situated to the north and it has approval to operate until 2028. However, its resource will be depleted at the end of next year. We also own and operate the Mount Owen Complex, which comprises a number of coal mines, and I'll touch on the detail around those shortly, but it's obviously one of the key subject matters of the project and, you know, an integral part of the project that we'll be discussing today. And then we also own and operate the Integra Underground Mine located to the south-west of the Mount Owen Complex.

In 2020 these mines employed over 3,400 people and they spent in excess of $2 billion on wages, goods and services, and they paid over $270 million in royalties to the state. One key thing to note, and this is quite unique and I guess it puts us in quite a good position, given that we do own and operate a number of mining operations that are in close proximity to each other, is that all of these mining operations in the greater Ravensworth area that we own are controlled by – sorry – are connected by a series of pipelines that allow us to transfer water and tailings between the operations. And what that does is, that minimises our reliance on water take from the rivers and creeks that surround the operations. It allows us to maximise the re-use of that dirty water that's captured onsite and it also allows us to transfer tailings from the various coal-handling and preparation plants and deposit those tailings in to dedicated voids across the area.

Okay. So we'll now just drill down into the Mount Owen Complex. So the Mount Owen Complex, you'll often hear it referred to as the Mount Owen-Glendell Operations, or MGO, I guess, throughout this presentation but they're one and the same. Now, the Mount Owen Complex comprises three mining operations. We have the Mount Owen Mine situated in the north-eastern portion of the complex. It has approval to operate until 2037. We have the Ravensworth East operation situated pretty much in the centre of the complex. It also has approval to operate until 2037. So both the Mount Owen and the Ravensworth East fall under the same consent. However, it is noted, or it should be noted, that the resource within the Ravensworth East mine will be completed and depleted by next year. And then finally you have the Glendell Mine, which is obviously an integral part of this proposal and this project, just situated down in the southern portion of the Mount Owen Complex. So it currently has approval to operate until 2024. However, the approved resource will be depleted there at the end of this year.

As I mentioned earlier, the Mount Owen Complex is connected to the GRAWTS system, and particularly of note, the existing west pit, which is situated within the centre of the Mount Owen Complex. It's currently receiving tailings from our Mount Owen coal-handling and prep plant and also the Liddell and Ravensworth prep plants.

Coal that's mined from each of these three pits at the Mount Owen are processed at our coal-handling and preparation plant, situated here in the Mount Owen complex. Clean coal that's produced by the prep plant is then loaded via our existing train loadout facility and then it's railed to the Port of Newcastle for export. In terms of the coal that's produced onsite, so the coal is considered of high quality and is used in steelmaking and in coal-fired power stations and all of our coal is sold into the export market, and it is highly sought after just due to its high energy and low ash content. Just while we're on this slide too, it's probably worth pointing out a couple of other key landmarks as well. So to the west of the Mount Owen Complex we have the New England Highway and then also skirting around the perimeter of the complex is the Main Northern Rail Line.

Okay, we'll now just turn the focus to the Glendell Mine. Okay, so as I mentioned before, the Glendell Mine is part of Mount Owen Complex. Mining at Glendell commenced in 2008 and it's due to finish at the end of this year. At the moment the current operation is approved to produce 4.5 million tonnes per annum of coal. The Glendell Mine currently employs around 300 people and last year – sorry – in 2020, we spent $120 million on goods and services with 380 suppliers and around $39 million on wages. And this operation also paid $17 million in royalties to the state. And similar to the other operations at the complex, so coal that's mined out of

Glendell Mine is hauled via an existing haul road up to a stockpile area where it is then fed into the Mount Owen prep plant for processing. In terms of other natural features, just to point out while we're on this figure, that surround the existing Glendell mining operation, we have Bowmans Creek situated to the west. It's a tributary of the Hunter River, so it flows directly into the Hunter River, and there's also a number of other ephemeral creeks across the area.

Just on this figure too, and we'll drill down in a bit more detail on subsequent slides, but this orange polygon represents the proposed mining area that's associated with the Glendell Continued Operations Project and this yellow boundary represents the current consent boundary for the Glendell Mine.

Okay, I'll just step you through just a couple of aerial photographs just to show you, I guess, a bit of the evolution of the landscape over time there. On this figure here, the orange polygon, again, it represents our proposed mining footprint that's associated with the project, with the blue line representing the proposed project area. So the aerial photograph on the left is from 1958, with the one on the right from 1967. Probably the key thing to note is that the landscape, particularly in these earlier aerial photographs, is devoid of any established vegetation, particularly when you compare that to the Ravensworth State Forest, which is situated in the top right-hand corner of each of the aerial photographs, and that's certainly a reflection of the past clearing associated with a settlement in the area, but certainly the landscape is dominated by grassland and that will be particularly evident when you see the site next week. Other than that there's obviously very little change between the 1985 aerial photograph and the 1967 photo.

This next slide now just shows you, on the left, an aerial photograph from 1983 and then one from 2002. If you just focus on the 1983 photograph first, this photograph shows the commencement or the emergement of open-cut mining in the area, in particular the Swamp Creek Mine situated in the centre of the aerial photograph. So mining at Swap Creek commenced in the late 1960s. Again, the landscape is largely devoid of established vegetation, particularly again when you compare it to the Ravensworth State Forest, with, yeah, the landscape being dominated by grassland. If we then move over to the 2002 aerial photograph probably the key change here is there has been a slight progression in the Swamp Creek Mine. However you can also see the development of the Mount Owen Mine, which commenced in 1993. Probably just another point to note, too, is that Glenda, sorry, Glencore took ownership of the Swamp Creek Mine in around 2002.

This next slide here just shows a couple of figures, sorry, a couple of photos of the, of the project area. Now, these were taken during the recent drought there in 2019.

Again it's quite evident there that there isn't a lot of established vegetation across the landscape. There is some regrowth but, but, yeah, it's largely dominated by grasslands. Also, too, there's evidence in the landscape of extensive contouring which was a result of past agricultural practices across the area, and there's reasonable topsoil as well across the area.

MS LEESON: Shane, you said in the vicinity of the homestead, that terracing and that agricultural section.

MR SCOTT: It's, it's more predominantly, Commissioner, to the south. There is a little bit of it where, where there was a, I guess a garden area that, that, it's referred to as the eight acre garden but, but there is more terracing to the south where it's a little bit steeper terrain.

MS LEESON: Thank you.

MR SCOTT: Okay. So just to round out then the regional context, we just want to touch on the sensitive receivers in the area. So there's three I guess key areas where we have sensitive receptors, the first being in the Falbrook and Middle Falbrook area, which is located around four and a half kilometres to the south east of our Mount Owen Mine. Now, the red squares represent private residences so really the receptors down here are dominated by private residences, with the purple squares representing private residences that have acquisition rights under existing consents and the blue squares are the properties that we own as part of our buffer land down in that area.

The next sensitive area is Camberwell. Camberwell is situated around two and a half kilometres south of the Glendell Mine. Now, the majority of residences within Camberwell are owned by mining companies, and that's represented by these brown squares on this inset within the figure, with the remaining private residences also having acquisition rights under various existing mining approvals, and that's the purple squares down there on the inset. And then finally there's, there's the I guess the locality of Hebden located to the north of the Glendell Mine, around about 10 kilometres to the north and it consists primarily of private residences as denoted by these red squares on the map.

MS LEESON: And, Shane, if I can just ask a quick question on that. The properties that you own as a buffer, are they typically occupied or unoccupied?

MR DESMOND: Yes. So Jason Desmond, Environment and Community Manager. The majority of those properties are occupied, so a very high occupancy rate. On average greater than 95 per cent.

MS LEESON: Thank you. Thanks.

MR SCOTT: So that's the end of the regional context. Are there any questions or any further questions in relation to that aspect?

MR PILTON: Not from me.

MS LEESON: No, I don't think so. We can keep going. Thank you.

MR SCOTT: Okay. All right.

MS LEESON: Sorry, there's one question.

PROF. BARLOW: I have a question. Snow Barlow here. What is that village sort of north of Hebden? Is that Falbrook or where is that? You know, the red, go up, further up now. No, no, to the east. There.

MR SCOTT: Yeah. So this is, Commissioner Barlow, this is moving up into the Goorangoola area. So this is, it's effectively an extension of Falbrook up in here but I guess the locality is probably referred to as Goorangoola.

PROF. BARLOW: Yeah. Okay. And the second question I have, the Integra Underground Mine, which is I think sort of east of Liddell, is that still functional?

MR WALLS: Yes.

MR SCOTT: Yes, it is. Yes.

PROF. BARLOW: And what is its life

MR WALLS: We can pull that together, put that through.

MR SCOTT: Yeah. I need, we need to take that on notice to confirm the exact, exact date of the mining consent there for that one.

PROF. BARLOW: Thank you. That's it.

MS LEESON: Thanks, Snow. Thank you, Shane.

MR SCOTT: Okay. So we'll now provide a detailed overview of the, of the project. Okay. So the project involves continued open-cut mining north of our existing Glendell Mine so if I just spend a little bit of time on this figure to begin with. So again just recapping. The area down here to the south where I'm moving the cursor is our existing Glendell Mine. The proposed mining area is represented by this orange polygon and the intention is to continue mining Glendell northwards up into this, this mining area here. So we've undertaken a lot of work, considered a whole range of different considerations and constraints in developing this proposed mining footprint and I do have a couple of subsequent slides that will just touch on some of those key considerations and constraints that have driven the shape of that which I'll touch on shortly.

But in terms of the project, so it will provide access to 135 million tonnes of coal and extend the life of Glendell Mine by around 20 years. As part of the project we're seeking to, we're seeking approval to increase production, up to 10 million tonnes per annum from, from the mine. Now, that would occur at a time at which the production rate at our existing Mount Owen Mine is decreasing such that we don't exceed the existing throughput capacity of the existing coal handling and preparation plant there at Mount Owen. So it's currently capped at 17 million tonnes per annum so there's no intention of us to exceed that approved limited out of the Mount Owen Complex. The project will also provide employment opportunities for up to 690 people.

Situated within the mining footprint is the Ravensworth Homestead, which is denoted by this yellow square on the figure. The project proposes to relocate the homestead and we've put forward two alternate relocation options for the homestead. Further, the mining footprint will also mine through a section of Hebden Road which, which runs north-south through the mining footprint and it's proposed to relocate it to the west, with this pink dash line representing its proposed alignment. We also mine through a section of Yorks Creek, which also runs north-south through the mining footprint, and it's proposed to relocate it to the north of the, of the mining area as denoted by this blue dash line.

The other key of the infrastructure associated with the project is the need for us to construct a new mine infrastructure area. So our existing Glendell Mine infrastructure area where we have our administration facilities and where we maintain our mining equipment is located here and it will subsequently be mined through as part of the continuation of mining at Glendell. So it's proposed to construct a new facility up here to the north-west of the proposed mining footprint where we will have our administration facilities and, and maintain our mining equipment.

So the project will, similar to Glendell the project will continue to make use of facilities offered by the shared infrastructure located at the Mount Owen Complex. Again coal that's mined out of the pit will be processed at the Mount Owen, Mount Owen coal handling and preparation plant and it will also be railed, some coal will be railed from there to the Port of Newcastle for export and also, too, the project will continue to be connected to the GRAWTS system by the Mount Owen Complex water management system.

The project will mine the same coal seams as we presently mine at the Mount Owen Complex and the project doesn't propose any changes to the mining methods and the equipment that we use onsite, so we'll continue to use excavators for the removal of waste rock and coal and trucks for the haulage of material, and there will be no change to the product transport, so again continuing to rail product coal, and the operating hours will stay the same, 24 hours, seven days a week.

Okay. I just, I just wanted to touch on quickly just I guess what's driven the shape of the proposed mining footprint. So as, as I've indicated before, there are a lot of past and current mining operations that exist in the Ravensworth area, and, and certainly that's been a major driver that's driven the shape of this proposed mining area. So certainly to the east of our proposed mining area we have the existing Ravensworth East open cut, and then obviously to the south we have our existing Glendell mining operation. To the north-west of our, I guess, northern pit limit is the old Liddell underground, so it's not proposed or intended to mine into that underground operation or that former underground operation. Further north we also have the existing Liddell coal operation, and then on the western side of the main northern rail line in Bowmans Creek, we have the existing Ravensworth service operations and, and associated underground mines.

If I just turn your attention then to this section as well, which runs from west to east across that area, it just gives you a bit of an idea of the complexity of the geology through there, and it also gives you an idea of some of the, I guess, the, the depths of the open cuts and the various underground operations. So if I just start on the western side here, so in the Ravensworth area we had a former shallow open-cut operation. However, underlying that there was the Ravensworth underground mine. Then if we move across Bowmans Creek, the yellow shaded area here represents our proposed mining area, and within that mining area we're targeting to mine in excess of 150 coal plies and that's down to a depth of around about 250 metres. Those coal plies vary in thickness from 0.2 metres up to around about 1.8 metres in thickness. And there's a number of geological features in this area that have also informed the shape of, of the, of the mining footprint. There's a, there's a dome that runs north-south through the proposed mining area, which is referred to as the Camberwell Anticline, and then at

the northern limit there's what's referred to as a block fault zone, which also defines the northern extent of the mining area. As we move further to the east, this shaded area here represents our Ravensworth East mining area, and the target seams in that locality, and then moving further over to the east, we then clip the Mount Owen Mine up in this part here. So obviously this plan's vertically exaggerated, but, but not all, the coal seams certainly aren't flat through this area, and there's quite a lot of geological structure and features that need to be considered as part of the design of any, any mining operation through there. We note that this was an agenda item for next week's discussion as well, so happy to elaborate further on that.

Probably another thing to note too is that, as part of the project, we've undertaken gas drilling across, across the project area and across other areas of the Mount Owen Complex, and this is considered to be a low-gas environment, with, with gas coming from, from these seams, typically less than one metre cubed per tonne.

MS LEESON: Shane, it might be helpful for our stakeholder meeting next week if you have a larger version of that diagram you just talked us through and a little clearer. I'm not sure if it's in the documentation at the moment, but if you can provide that next week, I think that would probably assist.

MR SCOTT: Yep, sure, Commissioner.

MS LEESON: Thank you.

MR SCOTT: Okay, and then just finally, in terms of other key considerations regarding the shape of the proposed mining footprint, certainly Bowmans Creek, which is situated to the west, was a key consideration, so we've intentionally designed and located the western pit crest to be a minimum of 200 metres from the high bank of Bowmans Creek. We've also intentionally looked to minimise any impact of that mining footprint on the existing alluvium associated with Bowmans Creek. There's also other fixed infrastructure in that area. There's high voltage transmission lines. And then, obviously, other infrastructure, such as Hebden Road, Yorks Creek, the homestead, have all been key considerations that we've taken into account as part of the project.

MS LEESON: Shane, sorry, can you just go back on that one. Just while you're there, can you run your laser over where the new mine infrastructure area is likely to be, is planned to be?

MR SCOTT: Sure. Yeah, sure, Commissioner. So it's up in this area here.

MS LEESON: So does that impact some of the BSAL area?

MR SCOTT: Yes, it will, it will impact some of that area. Approximately 20 hectares.

MS LEESON: Okay. And it's about 32 hectares all up?

MR HOLMES: Yeah, it's the Hebden Road realignment, the heavy vehicle access road and the MIA are the, the features which sort of impacted over that, that area that's mapped as, or that meets the criteria of being BSAL.

MS LEESON: Okay, thank you.

MR SCOTT: Okay, so these next slides, we'll just step you through the proposed pit progression and give you an idea of the staging of the operation. So just in terms of existing features. So again, this area here is our area of current mining at Glendell Mine. Now, this is just orientated, we're sort of off to the south-east, sorry, south-west looking north-east. This is our existing overburden emplacement area with quite extensive rehabilitation already having occurred. The current maximum elevation of this emplacement area is at 160 metres AHD. As I mentioned before, we have the existing Glendell Mine infrastructure area. There's Swamp Creek as well that's situated immediately to the north and the west of the existing Glendell Mine. Further to the west we have Bowmans Creek. This yellow line represents Hebden Road, and then we also have Yorks Creek coming down through this area here, and then the homestead situated within the centre of the proposed mining area.

Okay, so this is just a snapshot of year one of the project. So in year one we've commenced mining in the new area, as denoted by this disturbance happening within the proposed mining footprint. At this point we've commenced hauling overburden and waste rock and then placing it to the south over our existing Glendell overburden area. The key driver, and this is a common theme throughout, is that all waste rock that is uncovered from the mining area is emplaced in behind the void (not transcribable) and over the existing Glendell overburden area. So we've intentionally kept it all in pit. We haven't gone outside to look at other out-of-pit emplacement areas, in order to avoid, obviously, the clearing impacts associated with that and potential air and noise impacts. So we've intentionally looked to go back in and dump over existing rehabilitated areas that are currently associated with the Glendell Mine. As part of year one works also, we've commenced construction of our infrastructure. So we've started constructing our heavy vehicle access road, which will provide access to the new mine infrastructure area. So that heavy vehicle access road will provide connectivity between the admin facilities and maintenance facilities and the

pit. We've also commenced construction of Hebden Road as well, and those construction works will be largely offline in order to minimise disruption to existing road users along Hebden Road. In year one, we've also commenced early works associated with Yorks Creek realignment.

By year six, mining within the proposed mining area is occurring within a kilometre of Ravensworth Homestead, so by this point in time the homestead would have been relocated. So we've shown it here on this figure, the Ravensworth farm site, and also all the other infrastructure works would have been completed. So the heavy vehicle access road is in operation. Similarly the mine infrastructure area and Hebden Road is in operation. We're also nearing the completion of the Yorks Creek realignment works as well by this stage. During year six, so we're obviously continuing, well, continuing to progress the mine northwards, so we're getting close to reaching its maximum width by this point. Probably a key point to note is that with this pit progression is we are moving away from those sensitive receptors in the Camberwell area. We're continuing also to haul waste rock and then place it in behind the progressing void. And as we move along as well, we're progressively rehabilitating landfill, as evidenced here or as shown here down in this southern portion. Coal that's mined from the pit is hauled via an existing haul route, which is down around this area here, where we would then dump the coal on these stockpiles for processing in the Mount Owen prep plant.

This is a snapshot of year 13. So, again, we're continuing to progress the pit northwards, again away from the locality of Camberwell. By this stage, too, we've also commenced mining through section of Hebden Road and Yorks Creek. We're also continuing to do and place waste rock or overburden in behind the void as we, as we progress northwards. And we're also continuing to progressively rehabilitate the final landform. So by this stage, parts of the landform will be at around about 200 metres AHD. So we are seeking as part of the project to, to obtain approval for a higher final landform than what's currently approved.

MS LEESON: Shane, I think what we'd like to explore next week, not necessarily right now, is that application to increase the height of the landform, given this application you're assuming would start I think about now and the depletion of the other mines or the other pits, and whether there's opportunity for material from this one to go into those others rather than increase the height of the emplacement area, if that makes sense. So that's something I would like to tease out a little next week, just in terms of the implications of that approach.

MR SCOTT: Sure. Sure, Commissioner. But by year 13, too, we're continuing to haul coal along the, the existing coal haulage route with coal being emplaced at the

stockpile area up in here. By year 18, we've, we've just about reached the northern pit extent of the proposed mining area. Again, the pit's moving away from Camberwell locality. We're continuing, continuing to haul waste rock and overburden and emplace it in behind a progressing void. We're also continuing to rehabilitate the landform as we, as we process.

By this stage, coal is being hauled over the Ravensworth East emplacement area which provides a more direct access and pathway to the coal stockpile area that feeds the, the coal handling and preparation plant. Okay. And then this final slide here is the, the, the conceptual final landform. So at this point here, mining's reached its full northern extent of the proposed mining area. Within the final landform, only one final void is proposed, so there's no additional voids beyond that which is currently approved there at Glendell Mine. The final void highwalls would be stable and the final landform as, as it's, as it's currently been designed, has been designed to minimise the final void catchment area. So we've, we've really looked at, to maximise deflecting water away from that final void area. There's some further discussion on, on the final landform, as well, in subsequent slides that are coming up.

PROF. BARLOW: Shane, it's Snow Barlow here. The, sort of, highwall faces on that final void, will they just remain rock faces in perpetuity?

MR SCOTT: Generally, they will, Commissioner Barlow. There will be some establishment of vegetation on benches and the like over time. However, otherwise generally those or, I guess, parts of the wall would remain as rock faces.

PROF. BARLOW: And your engineering works maintain they'll be stable?

MR SCOTT: That's right. So there's detailed stability analysis that we would undertake to ensure that they're stable for the long term.

MR PILTON: Adrian Pilton here. What happens to water in the bottom of that final void? What's the water quality and so on in there?

MR SCOTT: Yeah, Commission Pilton, so that's, that's a good question. So the void itself, so it's, it'll be a hydraulic sink, so there won't be any discharges from the void. And it will just gradually fill over time. However, it will reach an equilibrium at some point in the future.

MR HOLMES: So by being a hydraulic sink, the evaporative losses are designed to manage the inflows so it, it prevents that spill. So there'll be a, like, an increase in trend in salinity within the water. On a mutual land use, so where it's not repurposed

post-mining, it, it will trend towards a more saline water body. The EIS, there's a section in the EIS which looks at the trends and how that, that occurs. That's all been modelled. It, it's very similar sort of water quality to what's the currently approved void back at the, the current pit, the Barrett Pit void would, would result in and very similar to what's at other, at other pits in the valley.

MR PILTON: Okay. Thank you.

MR SCOTT: Just before we move off this slide, another, another key point to note is while this part of the final landform and mine closure, the mine infrastructure area would be decommissioned and removed and the, the area rehabilitated. And then all that would remain then in the area would be the relocated homestead, Ravensworth farm site, along with the relocated Hebden Road and Yorks Creek realignment. Okay. So we've just got a bit of a drone flyover of the existing pit which I will play which will give you a bit of an appreciation of the existing mining operation and what it looks as we progress northwards into the project area. So I'll hit play on that. And apologies if it's a little bit stuttery. So over here, up in the top right corner, we have our existing West Pit which is part of Ravensworth East where we're currently emplacing tailings.

As we're flying over the existing Glendell mining area, we're coming up on Swamp Creek and we have an existing diversion of Swamp Creek which we intend on showing you next week on the site tour. Over here on the left, we have our Glendell Mine infrastructure area where we maintain our existing mining fleet. Hebden Road's situated off here to the left and Bowmans Creek, as well. The, the diversion or the realignment of Hebden Road occurs in this area here and then heads off to the north-west. We have Yorks Creek appearing into view here and then we have the homestead just up here in the distance. Again, I mean, key points to note, too, heavily cleared area, dominated by grassland with, you know, some pockets of, of established regrowth.

Okay. So I just wanted to touch on, on the topography, but, firstly, if I can just talk about some of the drainage characteristics of the site. So the Mount Owen Complex spans over two catchment areas. The majority of the, of the complex is located in the Bowmans Creek catchment and then there's a small portion of the Mount Owen mining area which is situated within the Glennies Creek catchment area. So we just focused on the eastern side first. So we have on the eastern side of Mount Owen Mine, there's Main Creek which runs into Glennies Creek and then Glennies Creek runs into the Hunter River. To the north of the Mount Owen Mine, we have an existing diversion that's in place, referred to as the Upper Bettys Creek diversion and it takes the headwaters of Bettys Creek and, and drops it into Main Creek.

Below the Mount Owen Mine, we have Bettys Creek and there's a number of existing diversions on Bettys Creek and we have some drone footage of those diversions which we'll show shortly. But it essentially runs to the east of Glendell Mine and then around the southern edge of Glendell Mine before flowing into Bowmans Creek near the Main Northern Rail Line. There's Swamp Creek, which is situated onsite. The headwaters of Swamp Creek have been diverted around the mining operation and flow into Yorks Creek. However, the majority of the Swamp Creek catchment is actually part of the Mount Owen Complex water management system. And then we have this lower section of Swamp Creek which is adjacent to the existing Liddell Mine, which we will mine through as part of the continuation of mining to the north. We then have Yorks Creek situated in the northern portion or the north-western portion of the Mount Owen Complex and it flows into Bowmans Creek and then again we have Bowmans Creek which is situated to the west.

In terms of topography, so our existing Glendell Mine has its approved emplacement limit of 160 metres AHD. Ravensworth East is at 185 metres AHD and then at Mount Owen, we have a couple of high points. We have the western out-of-pit emplacement area which is at 190 metres AHD, and then Mount Owen emplacement area has a maximum elevation of 230 metres AHD. And then in comparison the ridge line to the north is up around about 400 metres AHD. In terms of how that compares to our proposed conceptual landform, really the key change is really the emplacement height there at the Glendell mine. So we're seeking approval to in place up to 200 metres AHD. And again, the key driver for that is being able to keep all of the waste material over previously mined areas so that we don't need to go at looking at opening up an out-of-pit emplacement area as part of the project.

PROF. BARLOW: Shane, Snow Barlow here. Just talking about that. But part of the other reason is that you have elevated the southern part but also, you know, you've got a big void, and presumably that's the other reason for, you know, that elevation in order to keep all the material onsite.

MR SCOTT: Yeah, there's some, there's some intricacies between managing the mining operation and the working room that's needed to actually mine the coal and then, I guess, how we then emplace that waste rock material over the dumping area. So there'd be, yeah, I guess, some complexities in terms of how that's managed. And, I guess, the heights at which emplacement is needed.

PROF. BARLOW: Thank you.

MR SCOTT: Okay, we'll just touch on the final landform. So on the left-hand side we have the current approved conceptual final landform. And then on the right we have the proposed conceptual final landform. Again, the key points to note here is that as part of the project we're not proposing any additional final void in the landform. We're simply looking to move the current void further north. As I mentioned before the proposed void, so with the final landform we'll have a similar catchment area to the current approved final void. Also, as I mentioned before, the void will be a long-term sink, so it won't actually discharge. The other, probably the other key distinguishing point between the two final landforms as well is that the proposed final landform incorporates contemporary natural landform design elements. So if you refer to this figure here it incorporates features such as micro relief, and that's evidenced by the dendritic nature of these drainage lines across the landform and other things like dry-land attenuation basins, whereas the current approved final landform at Glendell is based on conventional rehabilitation design objectives and is dominated by a flat top. Whereas the landform that we're proposing will actually have variability across its top to – so it won't be just a flat 200 metres AHD. There will be variability across that landform.

So these next couple of slides are just sections through this final landform. And apologies, and it maybe a little bit hard to see on the screen in front of you. So this is just for the current approved conceptual final landform. So this is a figure, at the top section AA, runs north-south through that landform. And you can see the current approved final void. So the floor of that void's at minus, it's around about minus 90 metres AHD. And the adjacent natural ground level's at around about 70 metres AHD. So roughly, the final void's around about 160 metres deep as part of the proposed, sorry, as part of the currently approved final landform. And again, the maximum emplacement height is at RL 160 or 160 metres AHD.

These next few sections then are through the proposed conceptual final landform. Now, on this figure here the red-dash line represents the current approval final landform. The yellow line represents the floor of the proposed mining area or the open-cut pit. And then the green represents the proposed final landform. So key points to note here are, so, I guess, the pit depth is roughly around about minus 140 metres AHD. With the natural surface adjacent around about 180 metres AHD. So the pit overall's around about 250 metres deep. Certainly, from a geological perspective the seams are dipping away to the north, which is why the mining void is getting deeper. And that's evidenced by the floor of the pit. As you can see here, it is dipping away and plunging to the north. So we're having to chase those seams down deeper. As part of the final landform as I mentioned before, emplacement would be up to 200 metres AHD. However, that elevation would be variable in order to, I guess, break up that visual eye line of the final landform.

And then finally, this is just a larger section running north-west, south-east from Liddell through to Mount Owen. So this just shows the other voids in that area or immediately adjacent to our proposed void. So we have the Liddell void on the left-hand side of the screen with our proposed void, with the pit lake water level shown. And then we have the final void that's currently approved down in Mount Owen on the right-hand side.

Okay, so just wanted to now take you through some of the other infrastructure works that are proposed for the project. So if we just start with the Hebden Road realignment. So, as I mentioned before, there is a section of Hebden Road that requires realignment as part of the project. And Singleton Council is the asset owner. So the section of road that we're looking to realign is 3.7 kilometres in length. And it will need to be closed and there will be a process that we will need to work through with Singleton Council in order to close that section of road. And the intention is to relocate that road to the west of the proposed mining area which is shown by this pink line here on the figure. Now, the new section of road is 1.2 kilometres longer than the section that we're seeking to close. And it adds roughly less than one minute in travel time that additional length. However, I guess, the key distinguishing feature of this new section of road is that it will be designed and constructed to modern standards. So there will be a significant improvement in safety along Hebden Road as a result of these new works. And as I mentioned before too the intention is to construct these works largely offline in order to minimise impact on road users along Hebden Road. The other thing these works will also do is they'll also leverage off the traffic-flow improvements from other road upgrades that we've undertaken on Hebden Road as well which was the removal of a rail-level crossing over the main northern rail line. And there was also a previously a single-lane bridge over Bowmans Creek that we've replaced.

So this next slide here just shows those previous roadworks that we undertook as part of the Mount Owen Consent. So photo 1 shows the new rail overbridge that we built. And that's the main northern rail line there. And then photo 2 shows the new length of road with a new dual-lane bridge over Bowmans Creek. And these works cost in excess of $10 million.

Okay, so I just wanted to quickly touch on the creek diversions. And, I guess, I did address these largely when I spoke about the drainage lines that exist on the site. So we do have some drone footage of the Upper Bettys Creek diversion, the middle Bettys Creek diversion and the lower Bettys Creek diversion. And the intention is during next week's site tour is to take you to Swamp Creek, existing site creek diversion which is located adjacent to the Glendell MIA. So if you're okay, I'll just

play this drone footage. So this first shot is of the Upper Bettys Creek diversion. And this is flying in a south-easterly direction. Now, this diversion is approximately 15 years old. And it has offset areas located on either side of it. It does have, it was constructed through a cutting. So there is quite a, I guess, a hard rock cutting associated with it. But it does have quite extensively established vegetation associated with it. Another thing to note too, is that all the diversions that currently exist onsite were designed and constructed to conventional standards. So they're generally trapezoidal in shape and relatively straight in alignment.

Okay. So this is the Middle Bettys Creek. Just on the left there, that was our rail spur into our coal-handling and prep plant. So in the distance here we have the western rail dam, which we've used for tailings emplacement, and then we're starting to come into the diverted section of Bettys Creek. So again, this is a similar age to the Upper Bettys Creek diversion in that it's approximately 15 years old. You can see that there's quite an extensive riparian zone that has started to establish along its alignment, certainly being dominated by swamp oak and other native species. And again, similar to the Upper Bettys Creek diversion, it's been designed to conventional standards, it's structured to conventional standards.

MS LEESON: Shane, when you mention conventional standards, are they contemporary standards or are they standards of say 15 years ago? I guess my question is around whether you think these are best-practice examples or whether they're a little dated.

MR SCOTT: Yeah, Commissioner Leeson, they would have been best-practice at the time but we have moved on since then, and certainly the proposed Yorks Creek realignment that we're proposing for the project does look to use contemporary design standards. So, yeah, there are some distinguishing features that are different to the current diversions that are in place.

MS LEESON: Thanks. I was just trying to get that sense of contemporary or aged so we get a feel for what you're going to propose on Yorks Creek.

MR HOLMES: Yeah. These probably aren't good examples of what is proposed for Yorks Creek but they are a good example at revegetation of the riparian zone in a very short period of time is actually very feasible. But the geomorphic characters of the creeks will be quite different for the Yorks Creek realignment, and there's a lot of work gone into trying to mimic more natural systems than what would have gone into the original design of these and what was required at the time that these were, you know, the existing diversions were in place.

MS LEESON: Okay. That's helpful. Thank you.

MR SCOTT: And this is just footage of the Lower Bettys Creek diversion. So this is situated to the south of Glendell Mine. It's approximately eight years of age. So on the right-hand side you've got Glendell Mine rehabilitation for the Main Northern Rail Line and then just coming up into view is the Ashton Coal infrastructure area. So again, you can see the emergence of the riparian zone staring to come through there.

Okay, so just a bit on the Yorks Creek realignment that we're proposing. So as I mentioned before, Yorks Creek is an ephemeral tributary of Bowmans Creek. So the section of Yorks Creek that we're proposing to realign already includes a one and a half kilometre section of Yorks Creek that was previously diverted as part of the Swamp Creek open-cut mine. Now, the realigned section will re-join Bowmans Creek, approximately 3.8 kilometres upstream of the confluence of there Bowmans Creek currently connects to Yorks Creek. Now, in terms of realignment, so the realignment that we're proposing incorporates contemporary design elements in order to be geomorphically stable. So for example, the low flow channel incorporates sinuosity and we're also looking to install things like woody debris along its length and also an alluvial fan at the commencement, or the start, of the diversion. These next photos here are just of the existing Yorks Creek. So I guess a couple of key points to note here, so the existing low flow channel is quite deeply incised and there's obviously quite a fair but of woody debris and the like that exists along its length. So the intention is to replicate that as far as possible.

MR HOLMES: David Holmes here. The middle side is actually from the Yorks Creek diversion, the existing diversion which is located just to the east of the existing Ravensworth East MIA, and you can see how it's got that sort of historically conventional trapezoidal sort of shape in the way its constructed. It's got a wide bed, whereas the two side figures are downstream of that and you can, which are part of the natural environment and you can see they're very much a sort of deeper, smaller channel which opens out into, sort of, some flood channels. So there's a lot more woody vegetation in the natural system around the actual channel than there is in the constructed diversion that's there.

PROF. BARLOW: Snow Barlow here. Would you expect the diversion to ultimately reach some sort of shape that might look like the existing shape?

MR HOLMES: That's the intention, yeah. It seems very feasible to do that, to construct it in that manner. It's not a lot of additional work, it's just making sure you do that work upfront. That wasn't required back in – so the Yorks Creek diversion was constructed probably 30-odd years ago. You know, that was just what was easy

and convenient at the time. That's constructed through spoil as well, so it's a similar sort of, you know, some of the design learnings from these existing diversions are being brought into what will be constructed but it's, it's very feasible to build this sort of system back into the, at least the alluvial section, the shallow sections (not transcribable)

PROF. BARLOW: What's the sort of profile down there? You obviously have some sort of sand or soil on the top but what's underneath?

MR HOLMES: Yeah. So part of the diversion or the realigned section will go through some existing spoil associated with the original Swamp Creek diversion. So that northern section of that goes through some existing spoil. There will need to be some work done in around constructing it through that area but it should hold, the existing diversion holds going through similar sort of material. Downstream it'll be reusing some of the alluvial material associated with the constriction. It'll form a similar sort of development within that alluvial system running through there. There's quite a lot of work done on the geomorphic design, particle movement, making sure it doesn't – so there's a balance between making sure it doesn't, it moves slow enough to work but not silt up through erosion and taking into account, you know, the additional disturbance that would have been in the upstream catchment relative to existing structures. There's, you know, speed of movement, different floods and processes like that. So there's some extensive work in that and I think that's in one of the appendices in the EIS, sort of that background research and material.

MR SCOTT: Okay. And then just finally, in regard to the project overview, there's also some linear infrastructure that requires relocation. So, there's some low-voltage power lines that currently follow the existing alignment of Hebden Road that will be relocated and follow the relocated alignment of Hebden Road and there's also some telecommunications infrastructure as well that will be relocated with each of those different assets, following the realigned, they will follow the realignment of Hebden Road as proposed. Any questions in regard to the project?

MS LEESON: I think you've been comprehensive so far. But Snow or Adrian, do you have any more questions on what we've had so far?

MR PILTON: I've only got one question. With the rehabilitation of the southern section of the line, where will you collect the seed for that? There doesn't seem to be extensive woodlands around there.

MR DESMOND: Yes. So for the current operation, we actually have a life-of-mine seed collection strategy but there is seed harvested within the rehabilitation areas,

because there is quite a few areas of age, so dating back to the early 2000s. There's also biodiverse (not transcribable) areas adjoining those rehabilitation areas where you can collect from, and then there's also some stands of buffer land which we can collect seed from.

MR PILTON: Okay. Thank you.

MR DESMOND: It's collected in close proximity to the operation.

MR PILTON: Thank you.

PROF. BARLOW: And is that the original vegetation in the area before clearing for land settlement? Are there remnant parts of that vegetation left there somewhere?

MR HOLMES: Probably not. The, the Hunter's got an extensive history of land clearing, and even the vegetation that does exist in most areas is, you know, first or second generation regen. So probably the oldest remnant vegetation is actually in Ravensworth State Forest, which is being, it's part of a seed collection process for the Mount Owen project, but it's not, it doesn't, it's not quite the same community as here. There's slightly sort of a line that runs sort of along through the middle of the project area which defines sort of a different, slightly different vegetation boundary, so that the vegetation to the north of that is the same as Ravensworth State Forest, which is slightly different, whereas Glendell is slightly to the south. So, but the vegetation, the regrowth vegetation that is present on the, in the project area, and that will be impacted, a lot of that is sort of very, very much regrowth (not transcribable) dominated. There is some, there's the odd older, older tree, and particularly along the creek lines there's some retained older forest gum sort of species there that are quite, you know, they're probably close to remnant or from pre, sort of pre-European clearing. But the, what was actually present is a bit of a debate, and it's probably not what is regrowing in, in a lot of the area at the moment.

PROF. BARLOW: Yep, just another question in that. So in your, you know, plan of the mine and the reveg, so you're basically not going to recreate – well, it's a sort of an established grassland at present as a result of agriculture, but it will be a more forested environment or treed environment rather than a grassland environment.

MR HOLMES: Yeah, that's, that's correct. The, the current vegetation that is on the site, and even the, the grassland vegetation where the, pretty much where the pit runs, with the exception of the alluvial sort of flats, is very much a recovering type mixed native introduced grassland species. This area was heavily stocked with sheep and cattle back in that sort of 1830s period onwards, and as a result there's almost no A

horizon left over most of the, most of the hill country. So the ability for that to actually regenerate back as a decent grassland for farming purposes is, is very hard at the moment, and the woodland we can re-establish back into that system with the soil resources that are there, you know, that's demonstrated that it can be done. And it also helps supplement some of that lost habitat, biodiversity corridor loss that has occurred due to historical clearing, say by reinstating the vegetation and woodland communities, you can create these corridors through the, the landscape, which, you know, has positive ecological benefits.

PROF. BARLOW: Yeah, thank you for that. A different question really for Shane. Your, you know, your new Glendell base for your facilities is – well, is based on there's a lot of BSAL land there, apparently about two-thirds of what is on the site. What is the process of establishing that encasement area? Will you remove the top soil before you will obviously probably make tarmac or at least gravel, if that's your operations centre. So what's going to happen there? And at the end of your mine, how will that be rehabilitated?

MR SCOTT: Commissioner Barlow, so part of the process there is that we will go in and we'll strip the topsoil in that area and it will be used to construct visual (not transcribable) that will be in place for the duration of mining, and then once we've completed mining in the area, we will then remove that infrastructure facility and then rehabilitate the site, and then respread that material from those visual buffers and (not transcribable) back over the area.

PROF. BARLOW: Okay, thank you.

MR SCOTT: Okay, so if there are no further questions, then we might just dive into some of the, a couple of the key aspects, if that's okay. So we'll start with, we'll start with heritage. So we're going to touch on historic and Aboriginal cultural heritage as part of these next group of slides. Okay, so just starting with the Ravensworth Homestead, so just to give you a bit of background on the homestead. So we've owned the homestead since 1997. We purchased the property from the Marshall family, and then since that time, we've invested money in repairing and restoring the homestead, and we've also kept the building secure and watertight. Now, the homestead itself, it's a complex of buildings that were constructed around 1832, consisting of six buildings, five of which are sandstone and there's one timber cottage, and they're arranged around the farmyard. Now, the homestead has links to the Macarthur family, so James Bowman, the original homestead owner, he was married to Mary Macarthur, who was the daughter of John and Elizabeth Macarthur. There's only, there's one known gravesite onsite, and that's the resting place of a Miss White, who's buried within the grounds of the homestead. So Miss White was the daughter

of James White, who was the overseer for James Bowman in the 1830s. The homestead's listed as an item of local significance on the Singleton Local Environmental Plan. Now, the buildings are currently inaccessible to the public. They're not being used and they haven't, and they have remained vacant since we purchased them in 1997, and to date there's been little public interest in accessing the buildings.

This next slide here, I just wanted to – one of the agenda questions was, I guess, getting a better understanding of Ravensworth Estate and where it sits in the landscape. These blue rectangles here represent the original land grant, which was effectively around 10,000 acres that Bowman was granted in 1824. We've then overlaid that boundary onto an aerial photograph, and this shows the extent of that original 10,000-acre land grant. So the southern portion part of it overlies and overlaps with our existing Glendell mining operation. It also extends over our Ravensworth East operation, and then it also clips part of the Liddell Mine situated on the other side of Bowmans Creek. The red square on this map here represents the location of the existing Ravensworth Homestead, and then the yellow square represents the location of the original hut, which would have been built when they were first settling the land. Now, that original hut is, is shown on a survey map that Dangar prepared in 1828, which is shown here, so this is Yorks Creek here. Foy Brook is also known as Bowmans Creek here, so this was the original hut that was picked up by survey in 1828. So on this plan there's no, nothing's shown of the existing homestead in its current location.

These are just a couple of photos of the various buildings there that make up the complex. Obviously you'll see more in person next week. So photo 5 is a shot of the main house. Photo 4 is of the kitchen wing looking to the north-west. Photo 3 is of the men's quarters, the timber cottage. And then photo 2 is of the barn, looking to the north-east. And then finally we have the stone stables, which is photo 1. This is just a drone photo just showing the current outlook and setting of the homestead. So we have the homestead here in the centre of the picture. We have Hebden Road and Yorks Creek off to the right. Bowmans Creek down a little bit further, and then there's distant views of our existing Ravensworth surface operations, and then beyond that, views of the Wollemi National Park.

So just have a little bit of drone footage again just with a very brief fly around of the homestead and again just a pan around just to show you the, the current outlook. So this is coming in flying from the south-west. You've got the main house here, kitchen wing, stone privy over in this area here, the, the timber cottage men's quarters, the barn and the stables up in this area. So probably the other thing to note, too, is that

there is a garden as well associated with the front of the, of the, of the homestead as well.

Now, this is just panning from, so this is looking towards the south panning from east to west so it's similar to the, the drone picture that was just shown earlier. Again you've got views of, of the Ravensworth operations. Wollemi National Park in the distance. This is Yorks Creek here off to the right and as we continue to pan around we have the Bayswater Power Station coming into view and then you can just see the tops of the Liddell Power Station and this is our Liddell mining operation over here.

This is just another 360 pan around. So in the distance this is our Glendell Mine. So the mining, proposed mining operation will come up and mine through this area here. We have our Ravensworth East operation sitting over in the back here. Our Glendell Mine sits further up over the back here. Yorks Creek. That's our Liddell operations over, over in this part of the world. That's Hebden Road in the foreground. Again Bayswater Power Station at the back and Ravensworth operations and Wollemi National Park.

Okay. I just wanted to quickly take, take you through the process that we've, I guess that we've implemented as part of looking at the homestead and arriving at the two relocation options that have been put forward in the EIS. I mean certainly, hopefully as you can appreciate it's, there's been a lot of work has gone into, to the homestead and looking at, and looking at the various options. If we just start off with the geology, mining and the economics component.

So obviously there's a, there's a body of work that we need to do to understand the resource and so we've obviously undertaken extensive exploration drilling across the mining area. We've considered a whole range of various mine plan options some of which looked at keeping the homestead in situ. Ultimately the option that we've put forward is the option which is considered reasonable and feasible, with those other options that leave the homestead in situ being uneconomic as a result.

In addition to that we've also undertaken extensive heritage study so we, we made a real effort to engage the best heritage consultants in their respective fields to ensure that the, the proposal meets the, the highest possible professional standards. So as part of that work we've undertaken detailed historic and cultural heritage studies. We've also assessed the significance of the homestead and as part of that work we've identified the key heritage values that are attached to it and that's then subsequently informed the approach that we've taken to looking at the various relocation options.

Another key input as part of the relocation process was getting input from the community. So back in 2017 we, we formed the Ravensworth Homestead Advisory Committee. Now, it's a committee that was made up of and included the former owner so it had, the Marshall family were part of that committee. It also included a number of local residences and also representatives from the Singleton business and heritage communities and that was facilitated by an independent chair.

We also engaged with, with the broader community and other key heritage stakeholders in regard to the homestead and as part of that work a whole range of different community values have been identified and certainly as part of the workings of, of the advisory committee there was a whole range of key considerations that were identified. Things like as part of the relocation options it was preferable that the homestead be kept in the Singleton LGA. Also, too, there was a focus on trying to retain as much of the heritage fabric of the buildings as possible as part of any relocation option. There was a, a preference for the buildings to be publicly available. As part of any option to relocate them that they also be commercially viable.

As part of looking at the relocation we, we put out a public call in 2018 in The Singleton Argus seeking ideas and submissions from the community in regard to possible relocation options, and overall we've, we've assessed 11 options, and certainly within that 11 options there have been a number of sub-options at different sites within different localities. So for example there were three sites in Singleton township that we investigated. There were a number of sites around Ravensworth that we investigated and similarly in Broke there were a number of separate sites we considered.

And then finally there was a lot of engineering input that we sought as part of forming these relocation options. So we, we spent a lot of time engaging specialist heritage contractors and they provided input and assessed a range of alternative move methodologies and we obviously undertook extensive investigations to make sure that the buildings could be moved in the manner that we're proposing, and that work has also included a detailed route assessment as well. So for example as part of the intact relocation option we undertook survey of the existing transport corridors to understand how far we could actually move the buildings before the road just became too constrained and, and didn't allow us to, to move the buildings any further.

So with all of those various inputs we certainly arrived early on that demolition of the homestead wasn't considered a good community or heritage outcome so it's not proposed as part of the proposal. And then we've subsequently put forward two alternate relocation options in the environmental impact statement.

MS LEESON: Shane, just while you're on that is it fair to say your preference is to relocate it within the Glendell area rather than Broke?

MR SCOTT: Yeah, Commissioner Leeson, we're, we're committed to either option. I mean each option that we've put forward has, has its own merits. Certainly the local move option has a pure heritage focus in that it retains a lot of the heritage fabric and it tries to put it in a setting with an outlook similar to its current setting and outlook, even to the point where we're looking to reshape the land similar to the profile that it currently sits on.

Whereas the Broke option provides a much greater community benefit and outcome. Obviously siting it in Broke where it could, you know, fulfil the function of a village square. So there's certainly a much greater community outcome. So we're committed to either option but we do recognise that certainly the Broke option that there is a raft of other things that need to be worked through there particularly in regard to secondary approvals and the like.

MS LEESON: Thank you. Now, it certainly does seem to be presented as both options have advantages and disadvantages if you like, so it'll be a balancing act at the end of the day as to which alternative is approved and followed through.

PROF. BARLOW: Shane, Snow Barlow here. With regard to the relocation of the homestead on what is now Glendell land, clearly it wouldn't be available to the public before the end of the mine, which would be 2044. What is likely to happen to the land and the homestead after the end of mining in that area? Presumably Glendell will dispose of the land at some point.

MR SCOTT: Yeah, Commissioner Barlow. So I guess a couple of points on that. So the homestead during, during mining would be available to the public so we certainly wouldn't be looking to lock it up and keep people away from it. It would be publicly available albeit through via appointment or request. And the intention is, as part of that particular option, the men's cottage or the men's quarters would be refurbished and, you know, used to house some of the historical information and the archaeology and things like that, we capture as part of the relocation work. So, it would, you know, it would be a facility that the community could come and view during mining.

In regard to your question post-mining. So one of the options that we have identified or put forward is that it could return to use as a farmstead and sold with an attached land holding as part of, you know, the cessation of mining onsite, or it could also be used for some other purpose, depending on what's happening at the time and how it fits with other strategic plans in place at the time. Certainly as part of the project,

we're proposing to look at that post-mining use as part the mine closure planning process for the project.

PROF. BARLOW: Thank you.

MR SCOTT: Okay. So this next slide is just a snapshot of all the different studies and the consultants that we've engaged along this journey. I won't labour on this slide too much but I'm sure, as you can see from the materials that have been submitted, that there's quite a lot of documentation and work that's been undertaken in this regard. Probably, I guess, the keys points of note is we were fortunate enough to engage Dr Mark Dunn, who's an expert in early-settler conflict and he undertook a lot of research and work for us in regard to that particular aspect. We were also able to secure Ian Stapleton from Lucas Stapleton Johnson to do a lot of the heritage and the architecture aspects of the project, along with Geoffrey Britton and Colleen Morris, in terms of landscape and setting analysis.

Okay. So I just wanted to touch on the two options that we've put forward. So, the first option is the Ravensworth Farm option and we do note and acknowledge that this is the option that the Department of Planning are recommending for the homestead, and as I mentioned before, this option has a real emphasis on salvaging the significant heritage features associated with the homestead and this is achieved through moving the buildings intact to a site that's situated outside the mining footprint. I guess the key thing with this option is it keeps the building design, the original Ravensworth 10,000 acre land grant, so it doesn't move them outside of that area, and there's a real focus with this particular option to replicate the existing site features to the point where the approach direction to the homestead would be replicated from the relocated Hebden Road. Also the landform within which the buildings sit will be replicated to align with the existing landform, and also the visual catchment would be very similar. Another key point to note with this option is that it requires no additional approval, so it's all part of the SSD application for the project.

The second option that is also proposed is the Broke Village option, which involved relocation of the homesteads to McNamara Park, and this is a community proposal by members of the Broke Fordwich community. This particular option emphasises resighting the buildings in a publicly-accessible location, then providing an ongoing community benefit. In order to get the buildings to Broke, however, we need to dismantle them and rebuild them. As I said before, we did undertake a lot of analysis and assessment of the road network to Broke to see if we could move the buildings intact to Broke, but due to the physical constraints of the road network, it's just not possible or feasible to do that. Once the buildings are rebuilt in Broke, they would be used to form the village square, so they would have mixed usage down there. A key

point to note with Broke is that the Broke option does require a range of secondary approvals and there's land tenure and access considerations associated with that option.

For either option we would undertake full archaeological investigation and recording would occur before we relocate the buildings, and we're also proposing to take select plants, trees and other garden features, they would be salvaged as well and worked into the new landscape proposal. So in regard to the plants and trees, the intention is to establish a temporary nursery to house those during the relocation works. I'm not intending to play the various move methodology animations. I did send them through the other day to the Commissioners. Did you have any questions on those methodologies or - - -

MS LEESON: Shane, I'll let the others speak for themselves. I think from my perspective the methodologies were quite reasonably well explained. A couple of us had a little difficulty in accessing some of these animations. So we will look at those, we will sort that out. It's probably a technical problem with the Commissioners rather than from your end. So, it's just one of those things but, yeah, I'm quite comfortable with the explanation of the move methodologies. Snow or Adrian, have you got any concerns or comments?

MR PILTON: No. I watched through the animations and I'm quite happy with all the (not transcribable) provided.

MR SCOTT: Okay. Are you - - -

PROF. BARLOW: Shane, sorry, Snow Barlow. I was just going on, I'm off mute. Question not so much about the movement methodologies, you know, I watched the animations and they're fine. It's really about, what would be the ownership of those historic building if it were relocated to Broke?

MR SCOTT: So, Commissioner Barlow, we've established down there a new entity which would be a not-for-profit entity referred to, and they're known as the Broke Village Square Limited. So it would go into their ownership with any profits that are generated from the facility would then be reinvested back into the local community for use in other initiatives, whether they be infrastructure or I guess whatever the need is at the time. So it would be a not-for-profit, there would be a board of directors associated with that that would oversee and govern the management of that particular facility.

PROF. BARLOW: Okay. Thank you. That's (not transcribable)

MR SCOTT: Okay. So just a little bit more detail on the Ravensworth Farm option and, look, apologies, I've probably already mentioned a lot of this. If I just focus your attention there first of all on this top figure. So, this brown square shows the proposed location of the homestead at the Ravensworth Farm site. So it'll be around about 650 metres from the final pit crest associated with the mining footprint. So again with this option the focus is on moving the buildings intact and they'll be hauled along a purpose-built haul road to this proposed location and then once they're relocated they'll be adapted for office use by ourselves. So during mining, we will retain ownership of the buildings and again they will used, it will be used as an administration facility and the public will be permitted access to come and view the relocated homestead. And then post-mining, as I mentioned before, possible options include return of the homestead to use as a private homestead with an attached land holding or could be used to fulfil come other function in the area, depending on what's happening in a strategic planning sense.

In terms of ownership, we would retain ownership for the period of mining and then post-mining that would depend on future use and interest in the area. Again, as I mentioned before, key features with this option is that it keeps the homestead on the original 10,000 acre land grant and subsequently closer to the Pacific Highway. The recipient site would be adjusted to match the current landform that the buildings reside on. Also the building orientation and arrangement will be kept identical to their current and the approach to the homestead would be similar off the relocated Hebden Road and the visual catchment and outlook would very similar as well to the current outlook.

So this is just a drone photo looking to the south-west of the proposed Ravensworth Farm site. So it's overlooking, I guess, the alluvial flats of Bowmans Creek. You have Bowmans Creek over here to the right. This white-dashed line shows the approximate alignment of the relocated Hebden Road. There is an existing dam situated below the homestead but the intention is to actually build a new house dam so it's in a similar location to the existing house dam over at the current homestead site. In this location the buildings would have views of Ravensworth surface operations and the Wollemi National Park which is similar to the distant views from the current homestead location.

MS LEESON: Shane, you touched on earlier the issue of the BSAL lands and the stripping of those to become the visual barriers and then reinstatement for potential future farming use. Would they be in the vicinity of the homestead itself, that sort of reinstatement. I'm not quite sure of the area of both the homestead precinct and then what might be the long-term available agricultural land that could be associated with

it. And actually thinking of the end use, and you want it as viable opportunity for homestead and farming. Have you got thoughts around where that BSAL land would be reinstated and its proximity to the homestead?

MR SCOTT: We have, yes, as part of the EIS, we have made a commitment to reinstate that land. Is it class 4?

MR HOLMES: It's class 4, so most of it's class 4 at the moment and it would stay as class 4.

MS LEESON: Yeah, no, I think that was clear enough. I guess it's the relationship of where that will be to the homestead at the end of the day is what I'm interested in.

MR SCOTT: Yeah, sorry, Commissioner Leeson. So, yeah, it is in close proximity, so it is in this area here, so there's some visualisations coming up which show the outlook from the homestead. It will be over the mine infrastructure area, and this is where the BSAL area is, is sort of to the south-west of this location. So it's in the general vicinity.

MS LEESON: Okay. Thanks. Sorry if I stole your thunder for an upcoming slide.

MR SCOTT: No, that's okay.

MR HOLMES: So the road will remove permanently some of the BSAL, so that's actually on part of the land, the relocation, that's why it's not a full reinstatement of the total area. But effectively, yeah, where the MIA is would be reinstated to at least a class 4.

MS LEESON: That's nice and clear, thank you.

MR SCOTT: Okay, now this is just some drone footage of the Ravensworth Farm location, and the intention is to take you to this site as part of the site tour next week. Okay, so now this is looking towards the west towards Liddell open cut, and then we're panning around to the south. So there's views now coming into play from Ravensworth operations down in this area here. You've got Bowmans Creek, you've got the, it's the floodplain, alluvial area of Bowmans Creek over here. Then you've got the Wollemi National Park in the distance, a little bit hazy, apologies.

MS LEESON: Shane, I'm mindful of time. I've just looked at my watch. I've been absorbed in the presentation so far. It's almost quarter to 11.00. We're scheduled through to 11.00 and I guess we've still got – unless you're moving through them

now, they all blend together in a way that heritage, the environmental management and rehab. How far are you through your presentation, just so we can get a sense of need to speed up.

MR SCOTT: Yeah, two-thirds of the way through but we can certainly speed up, Commissioner Leeson, yeah.

MS LEESON: Okay. No, no, that's fine. And we'll be quite targeted in our questions. Thank you.

MR SCOTT: Okay, no worries. Apologies.

MR WALLS: Some of these areas are under heritage as part of the tour plan for next week as well.

MR SCOTT: So these next few slides here are just snapshots from the visualisation that I also sent you a couple of days ago. So this is, just provides a walkthrough of the Ravensworth farm site, with the homestead relocated, and it also gives you an idea of what the views and the setting are like as part of that visualisation. So this is just a view towards the, the proposed void from the relocated homestead, and then this is just the outlook from the front of the homestead, looking towards Ravensworth operations with the new house dam in the foreground. So again, you can, if you have any questions in regard to that, we can maybe, yeah, discuss that on the site tour. Probably the key thing, though, I just wanted to point out as part of the relocation to the Ravensworth farm site as well is that at this location there won't be direct views in towards the final void, in that there's an existing ridge line that provides a visual barrier between the void and the Ravensworth farm site, so there won't be any direct views from the homestead into the final void as part of that location.

Just quickly then on the Broke Village option. So again it's an option by members of the community. It will be dismantled and rebuilt in Broke and as part of that we've already established a new entity referred to as the Broke Village Square Limited, which is a not-for-profit. So the site, the buildings down there would be repurposed for mixed usage, and as I mentioned before, the key, I guess one of the key considerations with the Broke option is that it does require a number of secondary approvals that include rezoning and also a new development application with Singleton Council. McNamara Park is Crown land as well, so there's land tenure considerations there. And also there's native title considerations in that native title hasn't been extinguished there at McNamara Park.

These couple of slides just show whereabouts in the Broke locality it's proposed. To give you an idea, so Ravensworth Homestead to Broke is around about 50 kilometres in distance, it's the travel distance. And this is just a prospective view looking to the, the north, showing the proposed recipient site, so it's bound by Milbrodale Road and Wollombi Road. And then to the west you have Wollombi Brook.

Okay, finally just wanted to touch on cultural heritage as well. So it's obviously another key aspect of the project. So as part of the development of the heritage assessment report, we've undertaken extensive consultation with 32 Registered Aboriginal Parties as part of that body of work. The archaeological assessment that we undertook was exhaustive and extensive, so this figure just shows the transects that were walked by the archaeologists and RAPs as part of that archaeological assessment. As part of the project, 91 Aboriginal sites will be impacted, and they're made up of 36 isolated fines and 55 artefact scatters. Now, none of those sites are assessed as having a high scientific significance.

As part of the cultural heritage assessment report, we've considered and assessed all the cultural heritage values of the project area and the surrounds, and it is noted that some, some stakeholders suggest that the Ravensworth Homestead or Ravensworth Estate is significant due to its reported association with early conflict between European settlers and the Aboriginal people. So as part of the work that we've undertaken, we've undertaken comprehensive research with the likes of Mark Dunn, and other investigations have been completed, and they've indicated that those conflict incidents that occurred within and around Ravensworth Estate were not unique, and as horrific as they were, they were, you know, occurring elsewhere throughout the Hunter Valley and elsewhere throughout the state. And subsequently the estate wasn't the centre of that conflict. Also too the massacre event that occurred in separate 1826 occurred well beyond the project area, with its origins starting at Alcorn's Hut, which is over in the Glennies Creek catchment. And then finally the other point to note is that Ravensworth Homestead was constructed in around 1832, which was after that main period of conflict which occurred in 1825-1826.

And then finally, as part of the heritage assessment, cultural heritage assessment work that we've undertaken, we've developed a range of onsite and offsite management measures that have been developed in consultation with the Registered Aboriginal Parties and projects.

All right, I'll hand you over to Jason, who'll take you through the environmental management aspects.

MR DESMOND: Thank you, Shane, and also thank you to the Commissioners for allowing us the opportunity to present on the current operation. I will move through these quite quick, being conscious of time. However, we'll have an opportunity to ask questions at the end of each of the environmental management plus the rehabilitation sections. To give a snapshot of the existing operation, I have a comprehensive environmental management system. This is guided by an environmental management strategy, and that's also been reviewed and approved by the Department of Planning. As part of this strategy, it includes details around all the subsequent management plans we have in alignment with our approvals, and we'll touch on a few of these management plans as we go through coming slides. A snapshot around our extensive environmental monitoring network. This is really guided on the approvals for the site. So we've got the current Mount Owen approval, the northern portion of the operation, and then we've also got the current approval for Glendell and the southern portion of the operation. So a lot of the monitors are based around compliance. However, we do have additional monitoring for management purposes, and they may be in close proximity to the operation, and that's to guide day-to-day operations.

In terms of air quality greenhouse gas management as well as noise management, we do have management plans for these aspects. And they again do guide the day-to-day operations of the site. Proactively, we've got models in place such as weather, air quality, noise as well as blasting. In terms of the management of greenhouse gas emissions the main aspect managed onsite is scope 1 emissions and that correlates to diesel usage. So for ourselves, an example of how we manage this is make sure we have the site set up as efficient as possible. For example, in dig locations, in dumping locations, a shorter-haul route as possible. In terms of our emissions, they are placed in our annual review available on our website year on year.

So I touched on earlier the proactive models we have onsite which one is around noise. We also have reactive. The use of technology really is a benefit for our complex. So we've got a comprehensive dust and noise analysis tool. What is that? So for ourselves, all of our monitors for noise and air quality are integrated into this system. So they're gathering real-time data from each of our monitors. The key note is a lot of these monitors are placed within the community. Example on the screen is showing Camberwell, it's a nearby community receiver. It's in current operation. We receive alerts if we are encroaching our compliance limits as per our approvals and we act accordingly. The key thing there is we also record any changes to the operation in line with those alarm responses.

Touching on water. It is quite an extensive water management system. I will explain this further in the site inspection next week. But for site, again we have a comprehensive suite of management plans for all aspects of water onsite. And that

also includes the creek diversions and how we manage those, the ones that are existing.

One thing around the diversions for site, it's about transporting clean water around the operation. So we're trying to prevent as much surface-water inflow as possible. For water that falls within the managed catchment, so the pink shaded area in this figure, a lot of that water is managed by the existing site storages. And that's where, I guess, Shane touched on earlier, the key benefit of having the GRAWTS system. So it allows water to transfer across multiple sites. It minimises ourselves having the need for a discharge point and it also minimises the need of a local take from Glennies Creek.

Another aspect we do mange onsite is historic heritage. To demonstrate our commitment of what we have done, there is a site the Ravensworth Public School. So this is located on the corner of the New England Highway and Hebden Road, near the overpass mentioned earlier where we done the upgrade several years ago. The school was opened in 1876 and it is of local heritage significance and it is on mine-owned land. So unfortunately, this building was the subject of an arson attack in 2019. For ourselves, we went out and done various consultation with several stakeholders and pretty much within 12 months we transferred the site into a managed ruin. The key benefit out of that we did maintain heritage aspects. And there was also some information or storyboards placed out on the adjacent public Hebden Road. So it allows the public to come and access the site.

In terms of Aboriginal cultural heritage management. So we do have a plan for the complex. This plan is very much consulted with the Registered Aboriginal Parties. We incorporate their feedback into the plan and then the plan's subsequently approved by the Department of Planning. The key things to note with the plan is there is ongoing consultation beyond the plan actually being developed. So that may be in the form of consultation meetings, workshops and open days. And then we also complete ongoing management, so site preservation or security of the current sites and then ongoing monitoring. So we'll inspect and consult with the RAPs if there's any additional fencing, signage, anything needed to maintain those sites.

In order of continuous improvement, ourselves plus two other Glencore sites recently constructed a Minimbah Teaching and Keeping Place. This facility is a great opportunity for ourselves and the other two Glencore sites to store, salvage artefacts form the operation. And it also allows access to the Aboriginal community.

For community and stakeholder engagement we've got a stakeholder engagement strategy. That document really directs ourselves to support the local area in which we

operate. In terms of ongoing communication there is a lot of information via our website, newsletters and also surveys we do complete to seek feedback from the community. But, I guess, in the order of transparency with the community, we do have a community consultative committee. We do all our site tours. And that's not only for community members but also schools, interested groups. We provide support to the University of Newcastle as well. We do have students that do come out and do certain projects onsite and have done so for several years. A couple of examples where we have worked out in the community is via our Apprentice Payback Program. So if apprentices for the site have gone and created a chicken caravan at a local school. And other examples via our working bees. So we've gone out and done work via the workforce at a local hall.

MS LEESON: Can I just quickly check before we move on? Snow and Adrian, you've still got a few more, you've got a little bit more availability have you to keep going through this? You don't need to hard stop at 11.00?

MR PILTON: No.

MS LEESON: You're muted, Snow.

PROF. BARLOW: Yeah, it's okay with me.

MS LEESON: Okay, terrific. Thank you. We just wanted to check.

MR DESMOND: Yeah, we're hoping for additional 10 minutes. Thank you, Commissioners. I am going quite quick through this with the interest of time. We are happy to elaborate further via the site inspection or the meeting next week.

MS LEESON: Thank you.

MR DESMOND: To give everyone a snapshot of rehabilitation on site, it very much is integrated into the mining process. What do we mean by that? Is we do strive to do progressive rehabilitation while we're in the mining and operational phase. For ourselves, there is some key examples across Glencore so not only for the site. In terms of the record of rehabilitation success within the business, an example, is Glendell commenced mining in 2008, we complete our first rehabilitation in 2009. So quite close to the commencement of mining. Mount Owen, so that's transition from the conventional rehabilitation design to a natural landform design. We've had two sites in New South Wales, the first of a coalmine for New South Wales to be signed off or certified. And then we've also had a site really pioneer the natural landform design, which has been discussed throughout the presentation earlier.

Rehabilitation onsite. So this is guided via our mining operations plan. And, I guess, that plan is approved by the Resources Regulator. And it very much aligns to the conceptual landform designs within the Mount Owen development and consent of the Glendell existing development consent. The three categories across the complex as it is constructed strategically. Our grassland areas suitable for grazing, woodland and then also some forest areas which is quite a unique ecological community being re-established in that area.

One thing to point out, for site we've rehabilitated nearly 3,000 hectares to date. In terms of the process, it's very much based on the plan-do-check-act principle. There's a lot of planning done prior to mining and also throughout the operational phase. In terms of the doing, we try and develop our dump system as efficient as possible to minimise shaping and obviously beneficial re-use of top soils. So direct placing where you can. We check the areas. So any issues throughout the establishment phase. And then we monitor for success. And then the ultimate outcome is to try and achieve certification throughout your mining operational phase. Not wait to the end of the mine life. The bottom there, I know it is quite difficult to see on the screen, but it does provide a schematic rehabilitation process.

So we've now got a bit of a drone flyover. So the first half of this drone flyover provides an overview of the current Glendell operation and then the second part provides an overview of the Mount Owen rehabilitation. So looking at in this area, existing mining, our dumping sequence following closely behind and then you can see the rehabilitation process following quite close behind. And then we've also got topsoil availability quite, quite close to the new rehab. This rehab you're looking at here, this is less than 12 months old, seeded with woodland seed. Woodland seed does sometimes lay dormant for several years. And we do have ongoing monitoring to monitor for success and see if we need to do any further improvements based on the monitoring. Some of the rehabilitation, the tree rehabilitation here leads into areas that are getting to four to seven to 10 years of age. This flyover, well, this just shows the distinct difference between the pasture on the left and the woodland areas on the right. We've got an extensive track network built throughout our rehabilitation, so it can continue monitoring for success. So these areas you see here are approximately 14 years old.

So going to Mount Owen, this is moving into the natural landform design from 2019. And we've got the inclusion of habitat structures and then the transition into your conventional rehab from Mount Owen. The key thing to point out here is on the right-hand side, we have got the Ravensworth State Forest and it is quite hard to determine with the adjacent rehabilitation and those areas are again approximately 10 to 14 years

of age, so quite, quite young. And we're seeing great success in those areas. This flyover shows some of our more recent natural landform design that we incorporated from conventional. You can see again we've got stuff such as stag trees and rock structures throughout. And you can really see the actual undulation in the landscape. On the right-hand side, we are quite close to the existing Mount Owen operation. Strategic topsoil location quite close for upcoming rehab. And then we've got our juvenile areas we're looking at here, transitioning into our older rehabilitation of Mount Owen to the north again having quite a comprehensive track network throughout.

During the operational phase, there still is very much a focus on older areas. So we do go back in and at times do additional seeding and planting in light of the final land use, the planned final land use. There's also continual improvement, so creation of habitat, things like the development of a seed production nursery at Mount Owen. So there was a question earlier around seed, which we ideally collect within local provenance for the site but trying to establish a forest EEC community, as mixed results on some species, some hard to germinate shrub species or middle storey species. So for ourselves, we going in creating the EEC production areas to harvest from the future rehabilitation works.

In terms of the end land use, very much the overall design is strategically placed and that's to allow habitat connectivity. In terms of the connectivity, there's allowances with the adjacent Ravensworth State Forest, riparian zones, so Bowmans Creek, Glennies Creek, adjacent buffer land, which a lot of that is owned and currently grazed by the operation. Adjacent mining land, so we have work in alignment with other subsequent approvals in the area. And then there is direct linkages into our biodiversity offset areas, which you can see quite a few of those, the dark green hatching to the north of, north of the Mount Owen site.

Touching on our biodiversity offset areas, so a majority of these at the moment are under the Mount Owen approval but we have got quite a few adjoining site and we have got quite a few that are also within the Hunter Valley, so the likes of Muswellbrook, Bulga, et cetera, so still quite close to the operation. Within these areas, they are governed via conservation agreements or an existing stewardship agreement going through the application phase. These detail extensive work to be completed within the areas and they are done quite similarly to the rehabilitation works onsite.

We have provided a bit of a drone flyover here, just, just in case we can't access or view, sorry, some of the offset areas of the site tour. But if you have a look on the figure on the left-hand side, we'll commence in these yellow areas, so commencing

from one of our offset areas, then an Aboriginal conservation area and then another offset area for site. So this here is looking at the Ravensworth State Forest, north of Mount Owen and then the linkage to the existing offsets that adjoin the State Forest. So a lot of this land isn't mine, hasn't been mine disturbed, so natural remnant land. You can see how close it is in proximity to the site. The Yorks Creek Voluntary Conservation Area, so this is for Aboriginal cultural heritage and educational purposes, so this falls under an agreement that was signed off in 1994. This area is very much guided by the existing Aboriginal Cultural Heritage Management Plan we have for site.

Bettys Creek Habitat Management Area, so that's the southern portion in the figure. This is the closest offset area to the community. This area, as you can see, we have done some recent revegetation works, so you can see some distinct lines throughout. That's where we have done direct seeding to try and increase the revegetation aspects within those areas. The key thing to point out is also the linkage in the background, the existing Glendell Barrett Pit rehabilitation areas.

MS LEESON: Thank you. I have a quick question, it might not be quick, I'm not sure. You've talked a lot about the rehabilitation and largely around tree species and seed and what have you. And it appears from the plan that you're looking to create corridor habitats over time. I'm interested in some of your, because there are, according to the assessment report, the EIS, a lot of fauna impacted by the proposed mine extension. With your existing longer term rehabilitated areas, do you do any monitoring in those to see how fauna is coming back and how some of these corridors are starting to work from a fauna perspective? A lot of the focus seems to have been on the vegetation at the moment and I'm interested in the fauna impacts or the recovery.

MR DESMOND: Yes, Commissioner Leeson. Apologies. I did go through it quite quick. And on the tour, we will touch on, I guess, the finer details of the rehabilitation process. But in terms of monitoring, yes, we do. So we do extensive monitoring in our rehabilitation areas, plus our biodiversity areas for fauna. There is over 600 nest boxes installed across site and they are a man-made style. We also have chainsaw hollows in areas, as well. So that mimics natural habitat, so habitat hollows (not transcribable) quite some time to develop. We have the beneficial re-use of habitat structures from our disturbance areas. And how those are identified is via the ecological inspections prior to any disturbance occurring. With, with monitoring success, we have seen species come back in to nest boxes or ground structures as early as one to two years. And some of those species include the echidna, which was in the presentation, the threatened species, spotted-tail quoll. So we've had camera footage

within the rehabilitation areas, plus our offset areas that they are present. Then we have constructed specific habitat for those species.

MS LEESON: Okay. Thank you.

MR SCOTT: So that, that concludes our presentation, Commissioners.

MS LEESON: Okay. Thank you. That's been a very comprehensive presentation, as well, so thank you very much for all the time and effort that has gone into putting in to that. Are there any last questions from the Commissioners before we conclude today's meeting and closing statement?

PROF. BARLOW: Go ahead, Adrian.

MR PILTON: So no more questions from me. Thank you.

PROF. BARLOW: No more questions from me, but thank you. It was very informative and helped me a lot to get a spatial orientation within the site and what you're doing, so thank you.

MS LEESON: Okay. So it's been very worthwhile, so, as I said, thanks for all the effort you've put into it. So that bring us to the end of the virtual inspection for the Glendell Continued Operations SSD-9349 and Mount Owen Continued Operations Project Mod-4, SSD-5850. On behalf of the panel, I'd like to thank everyone who participated in today's meeting, including the community observers. I encourage our community observers to make submissions on what they've seen today if they so wish at the public hearing on Friday, the 18th of March, or electronically or in writing to the Commission before 5.00pm on Monday, the 29th of March, 2022.

As I said earlier, in the interests of openness and transparency, we'll be making the recording and transcript of today's inspection and the presentation material available on our website in the next few days. So from all of us here at the Commission, enjoy the rest of your day. Thank you again and good morning.

MR SCOTT: Thank you, Commissioners. Thank you.

MS LEESON: Thank you. And we'll see you next week.

MR SCOTT: Thank you.

MR DESMOND: Bye.

RECORDING CONCLUDED **[11.11am]**