Great Northern Minerals

ASX ANNOUNCEMENT

25 February 2021

Big Rush Gold Resource increased by over 220% to 154,000 ounces

HIGHLIGHTS:

- **Updated JORC 2012 resource of 3.53 million tonnes at 1.36 g/t Au for 154,000 ounces**
- **Mineral resource at Big Rush increased by over 220% and occurs within 170 metres of surface**
- **Further drilling scheduled for 2021 with a focus on drill testing underneath the northern pit, where a number of significant intersections remain to be tested at depth**
- **Combined GNM resources now total 184,000 ounces ahead of a maiden resource estimate at Camel Creek expected later in 2021, following the completion of a large drilling program planned for the first half of 2021**

Great Northern Minerals Limited (ASX: GNM) ("Great Northern Minerals" or the **"Company")** is pleased to announce an updated JORC-compliant mineral resource estimate for the Big Rush Gold Mine in Northern Queensland (Figure 1). The updated resource estimate follows an active drilling campaign completed in 2020 which comprised a total of 22 RC holes for 3634 metres and 4 HQ diamond holes for 1040 metres. A mineral resource of **3.53 million tonnes at 1.36 g/t Au for 154,000 ounces** of contained gold has been estimated above a 0.00 g/t Au cut-off grade.

At a cut-off of 1.0 g/t Au a mineral resource of **2.13 million tonnes at 1.75 g/t** au has been estimated highlighting the ability to reduce potential mined tonnes and increase the grade during any mining to be potentially conducted.

Approximately 75% of the resource is in the indicated category with the balance in the inferred category. Additional non-classified mineralised areas sit outside of the resource area and provide additional potential resource growth following future additional drilling activities.

The drilling activities completed by Great Northern Minerals are estimated to have cost approximately $700,000 and with an increase of 107,000 ounces from this work, the discovery cost is in the order of $6/ounce. A number of areas in the Big Rush mineralised system remain open at depth, specifically under the northern pit area and further drilling is likely to increase the resource, following future successful drilling campaigns.

This resource estimate follows on from a RC and diamond drilling program completed by Great Northern Minerals during September to November of 2020, when a total of 22 RC holes (BRRC1012 to BRRC1033) for 3,634 metres were drilled, spread over approximately 900 metres of strike underneath the southern, central and northern previously mined shallow open pits. Drill hole depths ranged from 110 to 250 metres depth and averaged 165 metres. An additional diamond drilling program was completed at Big Rush with 4 HQ diamond holes for 1039.8 metres spread over approximately 200 metres of strike underneath the previously mined Central open pit.

Big Rush

The Big Rush mineral resource estimate was independently estimated by resource geologist Lynn Widenbar of Widenbar and Associates.

Big Rush, along with Camel Creek and Golden Cup, is one of three gold mines acquired by Great Northern Minerals as announced to the ASX on 15th August 2019.

The previous resource estimate for Big Rush, was based on solely the central pit area with a resource of **558,322 tonnes at 2.62 g/t Au for 47,006 ounces (See ASX release 7 February 2019, AKB).**

The Big Rush Gold Mine has previous recorded production via heap leaching of 950,000 tonnes @ 1.90 g/t Au for 58,039 ounces and previous production by trial CIL Processing of 33,000 tonnes of sulphide ore @ 11 g/t Au for 10,000 ounces.

Table 1: Big Rush Resource Estimate 0.0 g/t Au Cut-off

Big Rush Resource Estimate						
Class	Cut-off	Volume	Tonnes	Density	AuCut	AuCut Oz
Indicated	0.00	899,000	2,314,000	2.57	1.35	100,000
Inferred	0.00	454,000	1,217,000	2.68	1.39	54,000
Total	0.00	1,352,000	3,531,000	2.61	1.36	154,000

Table 2: Big Rush Resource Estimate 0.5 g/t Au Cutoff

Big Rush Resource Estimate						
Class	Cut-off	Volume	Tonnes	Density	AuCut	AuCut Oz
Indicated	0.50	868,000	2,236,000	2.58	1.38	99,000
Inferred	0.50	448,000	1,203,000	2.68	1.40	54,000
Total	0.50	1,317,000	3,439,000	2.61	1.39	153,000

Table 3: Big Rush Resource Estimate 1.0 g/t Au Cutoff

Big Rush Resource Estimate						
Class	Cut-off	Volume	Tonnes	Density	AuCut	AuCut Oz
Indicated	1.00	544,000	1,411,000	2.59	1.72	78,000
Inferred	1.00	270,000	723,000	2.68	1.79	42,000
Total	1.00	814,000	2,134,000	2.62	1.75	120,000

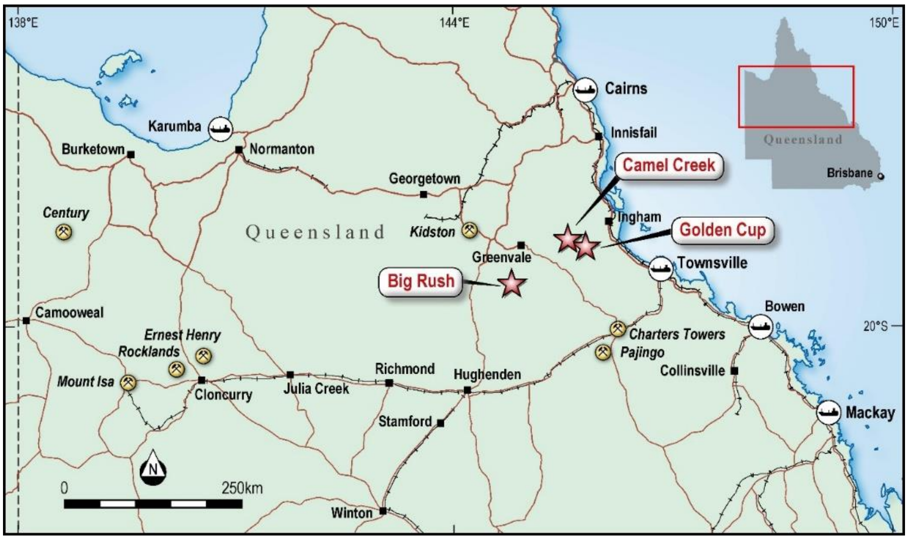

Figure 1: Location of the Big Rush, Golden Cup & Camel Creek Gold Projects in Qld

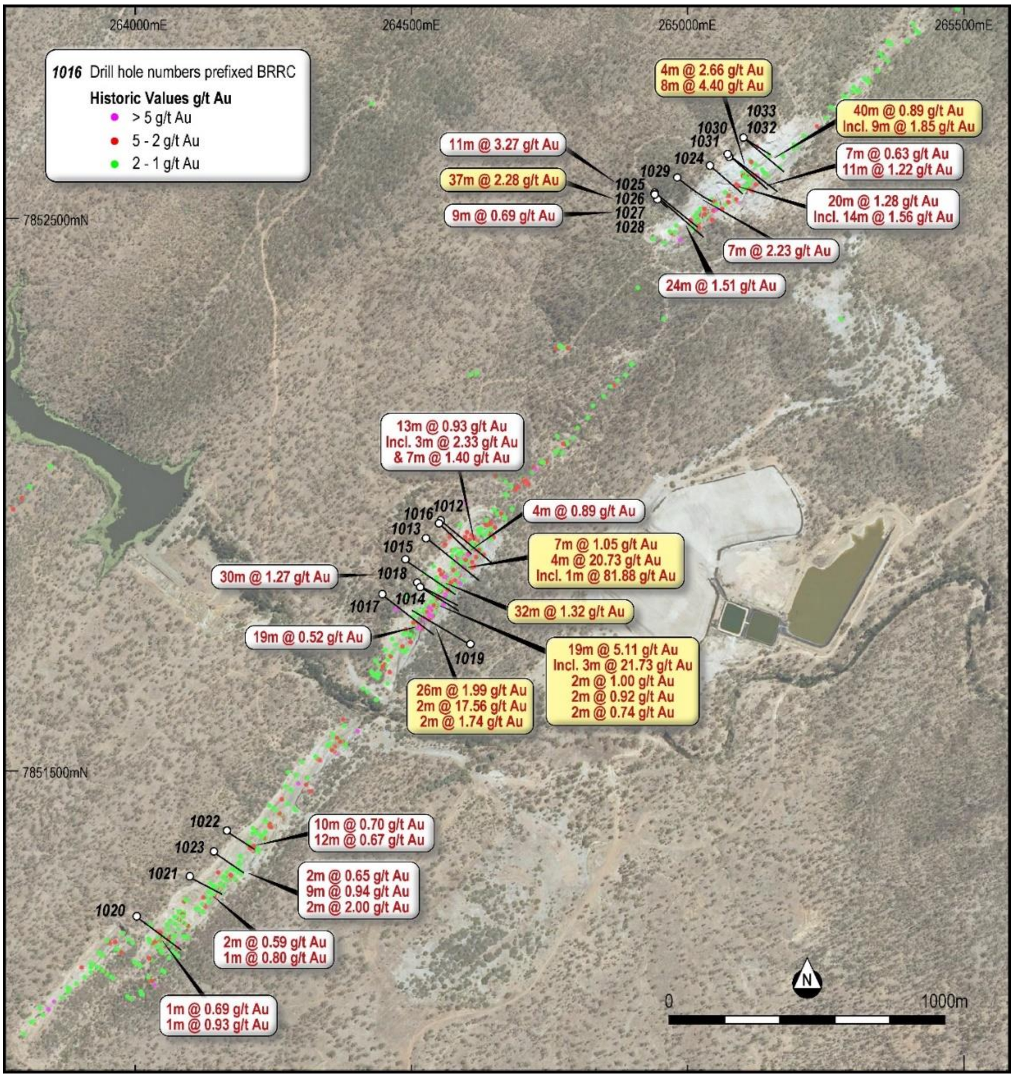

Figure 2: Plan view of the Big Rush Project with selected GNM drilling results

DRILLING, SAMPLING AND SUB-SAMPLING TECHNIQUES

A combination of Reverse Circulation (RC) and Diamond Core samples have informed the Mineral Resource estimate. Drilling data has been collected during numerous drilling campaigns, commencing in 1989. Sampling that was carried out during historical mining via trenching, open hole drilling with blast hole rigs and ditch witching has not been used in the Mineral Resource estimate.

The following series of drillholes have been drilled across the entire Big Rush project area and they include all the holes used in the Resource Estimate.

- BRRC001 – BRRC013 Billiton Australia (1989)
- BRS14 – BRS27 Peko Exploration Ltd (1991)
- BR028 – BR042 Golden Ant Mining Pty Ltd (1993)
- BR042 – BR292 Alphadale Pty Ltd (1993 - 1996)
- BRPD123, BRPD137 – BRPD140, BRPD164, BRPD170, BRPD170R, BRPD175, BRPD178, BRPD182, BRPD184 and BRPD216 Alphadale Pty Ltd (1993 – 1994)
- BRDH293 – BRDH295 Alphadale Pty Ltd (1996)
- BRRC296 – BRRC298 Alphadale Pty Ltd (1996)
- BRRC1001 – BRRC1003 Curtain Brothers Qld Pty Ltd (2010)
- BRRC1004 – BRRC1011 Great Northern Minerals Ltd (2019)
- BRRC1012-BRRC1033 Great Northern Minerals Ltd (2020)
- BRRCD001-BRRCD004 Great Northern Minerals (2020)

The Curtain Brothers drilling from 2010 and Great Northern Minerals' drilling in 2019 is considered to be "modern drilling" whilst the earlier drilling is by Billiton, Geopeko, Golden Ant and Alphadale considered "historic".

All programs have been well documented via annual reports and other historical records that describe data collection techniques which vary from company to company but are considered to reflect industry standards at the time. All drill logs and assay certificates are included in the historical annual reports and this has enabled construction of a comprehensive drill hole database. The Widenbar Resource Estimation Report, documents in significant additional detail the programs documented above.

ANALYTICAL METHODS AND QUALITY ASSURANCE

Samples from the Billiton drilling program in 1989 were sent to Tetchem Laboratories in Cairns where they were analysed for Au by a 50gm fire assay and for As by XRF. One sample in every twenty had a duplicate sample collected and assayed.

Samples from the Geopeko diamond drilling program in 1991 were sent to ALS Laboratories in Townsville where they were analysed for Au initially by low detection 50gm fire assay, method PM219, and then by higher detection method PM209 where the better grades were identified. Samples were also analysed for Cu, Pb, Zn, Ag, As, Sb, Mo and Hg by ICP method IC588. Original assay certificates are stored with the hard copy annual reports of the time.

Samples from the Geopeko RC drilling in 1991 were also sent to ALS laboratories in Townsville and assayed for Au by 50gm fire assay (PM209) and for Cu, Pb, Zn, Ag, As, Sb, Mo and Hg by ICP method IC586. One sample in every twenty had a duplicate sample collected and assayed. Original assay certificates are stored with the hard copy annual reports of the time.

For the Golden Ant and Alphadale drill programs all samples were sent to Analabs Laboratory in Townsville. Au was assayed by 30gm fire assay with AAS finish, method GG309, and As by XRF, method GX401. Arsenic was not routinely assayed during this period. Alphadale adopted a policy of Au analysis by Aqua Regia (GM329) for the oxide areas only. Under that policy all Au grades above 0.3g/t were re-assayed by 30gm fire assay and by XRF for As. The primary zone continued to be assayed by 30gm fire assay. Original assay certificates, or copies of originals, for these programs are stored with the hard copy annual reports. Samples from the Curtain Brother program in 2010 were sent to SGS Laboratories in Townsville and analysed for Au by 50gm fire assay.

Samples from Great Northern Minerals' programs during 2019 and 2020 were all sent to Intetek Laboratories in Townsville. Gold was assayed by 50gm fire assay and a suite of multi elements by four acid digest with ICP finish. The QAQC for this program included certified standards being inserted every 20 samples, duplicates being taken with every 20th sample and blanks being inserted randomly.

QAQC reports based on all the data collected during the Great Northern Drilling programs and prepared and compiled by CSA Global have been reviewed by Lynn Widenbar and found to be acceptable.

DEPOSIT GEOLOGY, GEOLOGICAL MODELLING AND INTERPRETATION

The Big Rush project area is situated within the mudstone, siltstones and fine to coarse grained sub-lithic arenites of the mid Devonian Mytton Formation, which is the upper most member of the Broken River Group. Big Rush is in an area of NE-SW trending structural anomalism, characterised by intense parasitic folding, strong axial planar cleavage development, variable fold plunges and fold related shearing/faulting in a zone traceable for almost 3km.

Mineralisation is hosted within quartz veins in interbedded siltstones, shales and sandstones of the Mytton formation. The deposit contains all the elements of a classic saddle reef environment with axial planar veins and hinge stockworks dominating. Higher grade laminated veins in the central zone are coincident with the presence of carbonaceous siltstones and shales, both as wall rock and laminae in the veins.

In the primary mineralised zone analysis shows a very strong correlation between gold and arsenopyrite and a moderate correlation between gold and quartz veining.

An Indicator modelling methodology was adopted to define mineralised domains; this used an intersection calculation algorithm which generated mineralised intersections with specific parameters, as specified below:

- Au Cut-off Threshold 0.3 g/t Au
- Minimum Thickness 2m
- Minimum Average Grade 0.7 g/t Au
- Maximum Internal Waste 6m

The intersections generated by this process were merged back into the 1m composite data, with mineralised intersections flagged as IND = 1 and waste intersections flagged as IND = 0. A block model was then generated of the IND field indicator using inverse distance squared interpolation. This results in a block model values between 0 (completely unmineralised) and 1 (completely mineralised). After review of the mineralisation boundaries, a lower value of 0.45 was chosen to differentiate mineralised blocks.

A single pass search strategy was used, with the following parameters.

Table 4: Indicator Model Parameters

Search Ellipses			No. of Composites		Minimum	Minimum	Maximum
Along Strike	Down Dip	Across Dip	Minimum	Maximum	No of Holes	Per Hole	Per Hole
75	75	10	6	20	2	2	4

Solid wireframes were constructed from the indicator block and used to flag the 1m composite data prior to statistical analysis and block model grade interpolation.

The grade estimation methodology used Ordinary Kriging interpolation, using Micromine 2018.1 software. Searches and other parameters are summarised below.

Table 5: Grade Estimation Parameters

Search	Search Ellipses			No. of Composites		Minimum	Minimum	Maximum
Pass	Along Strike	Down Dip	Across Dip	Minimum	Maximum	No of Holes	Per Hole	Per Hole
1	35	35	5	6	20	2	2	4
2	75	75	10	2	20	2	1	4

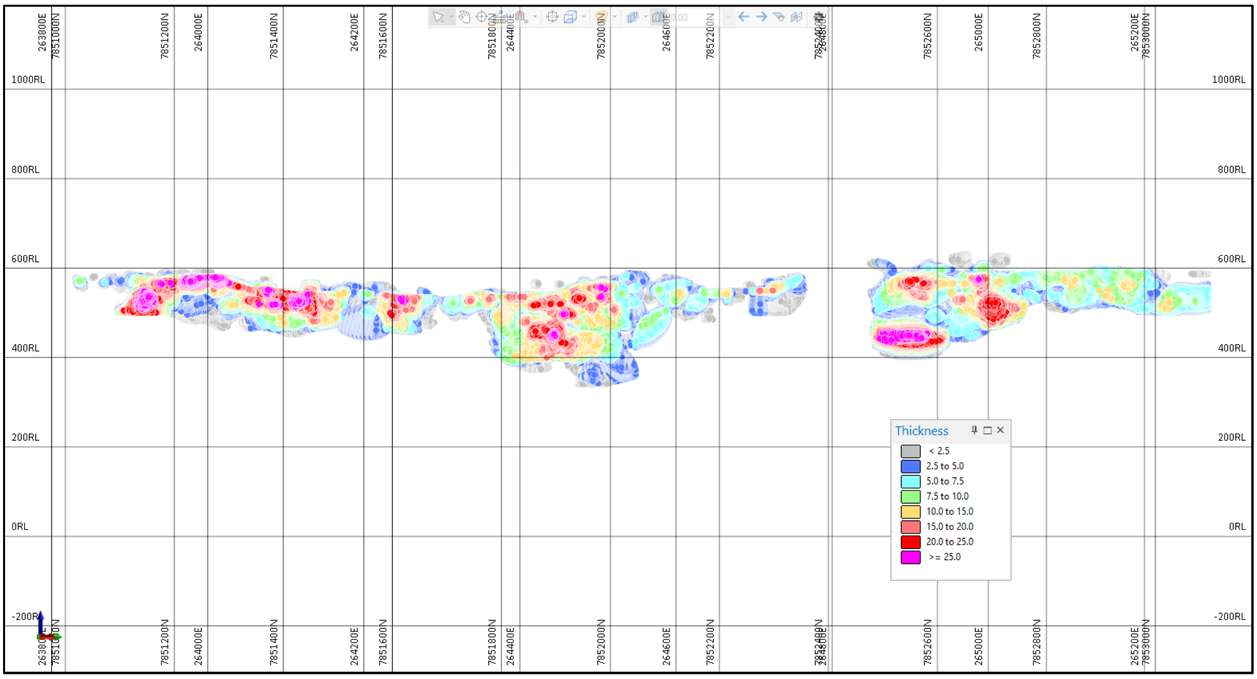

Figure 3: Big Rush Resource Area: Long Section Thickness Contours

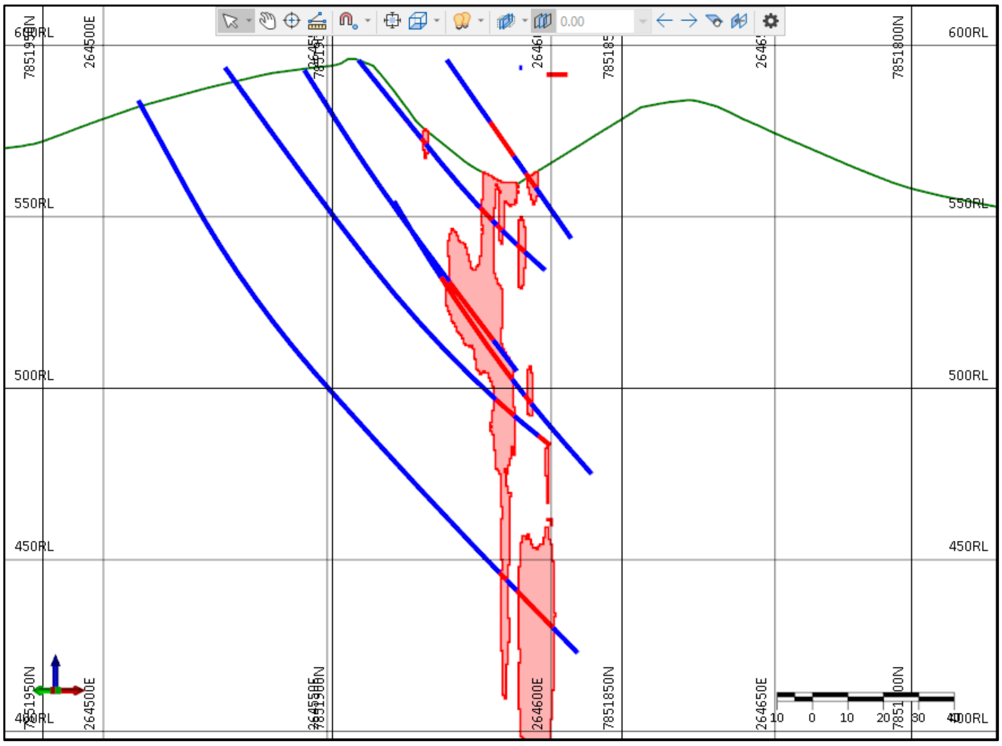

Figure 4: Example Indicator Wireframe Cross Section

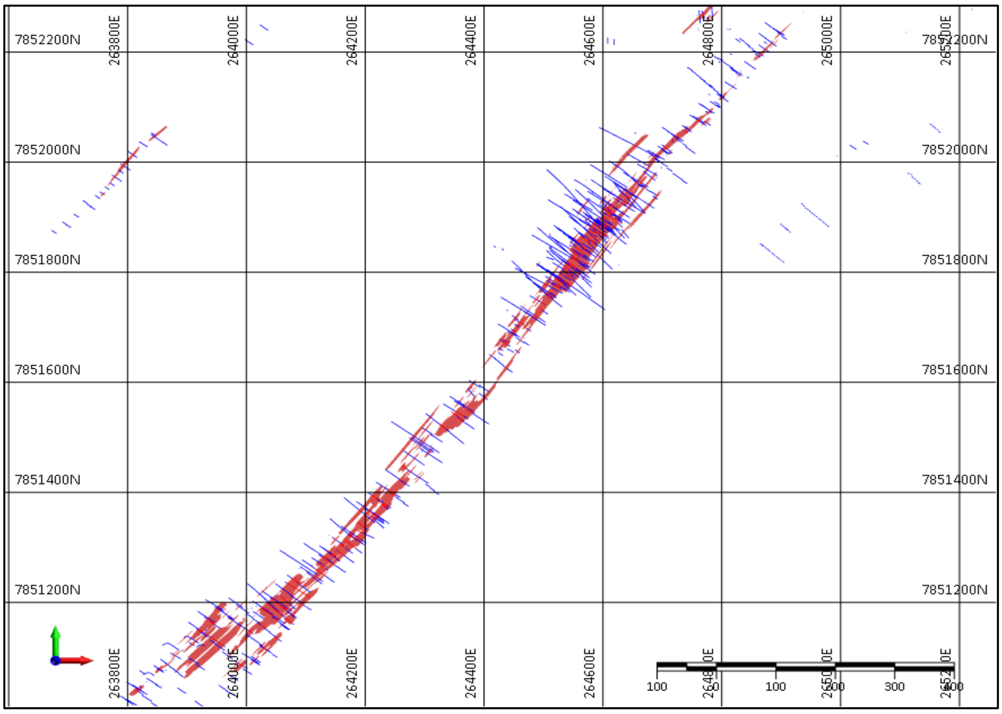

Figure 5: Plan View of Indicator Wireframes

ESTIMATION METHODOLOGY

Statistical analysis was completed using Micromine software. Sample data were composited to 1m lengths, which is consistent with the dominant sample length for the project.

An "empty" rock model was created using the current topographic surface as a constraint. Block model parameters are summarised below.

Table 6: Block Model Setup Parameters

BLOCK MODEL LIMITS					
EMIN	EMAX	NMIN	NMAX	RLMIN	RLMAX
263705	265545	7850901.25	7852948.75	301.25	698.75
BLOCK SIZES			MINIMUM SUBCELL SIZE		
ESIZE	NSIZE	RLSIZE	EAST	NORTH	RL
10	2.5	2.5	1	0.5	0.5

Model blocks are rotated through 35°.

Block Model Interpolation

The grade estimation methodology used Ordinary Kriging interpolation, using Micromine 2018.1 software. Searches and other parameters are summarised below.

Table 7: Grade Estimation Parameters

Search	Search Ellipses			No. of Composites		Minimum	Minimum	Maximum
Pass	Along Strike	Down Dip	Across Dip	Minimum	Maximum	No of Holes	Per Hole	Per Hole
1	35	35	5	6	20	2	2	4
2	75	75	10	2	20	2	1	4

Density

The Base of Oxide and Top of Fresh surfaces were used to assign density into the rock model, as follows

Table 8: In-situ Dry Density Values in Block Model

Material	Density
Oxide	2.2
Transition	2.6
Fresh	2.7

Block Model Validation

Visual review of drill hole data grades versus block model estimates shows generally good correlation. An example section is shown below, overall and in a detailed area.

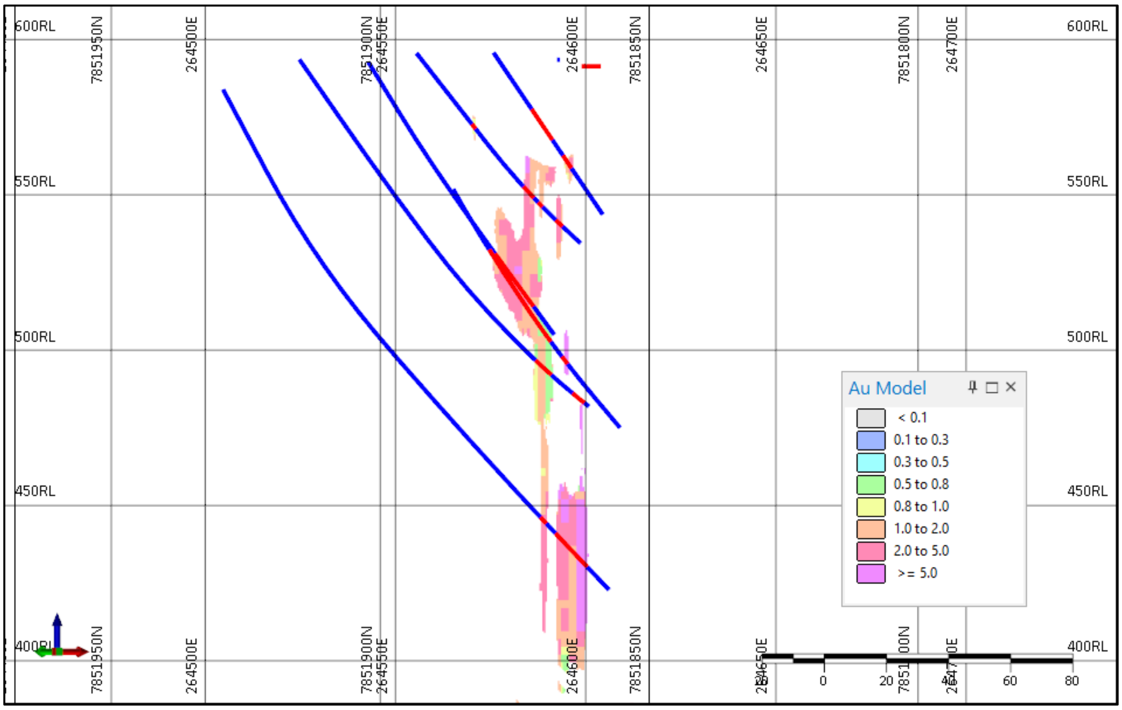

Figure 6: Typical Model vs Data Section

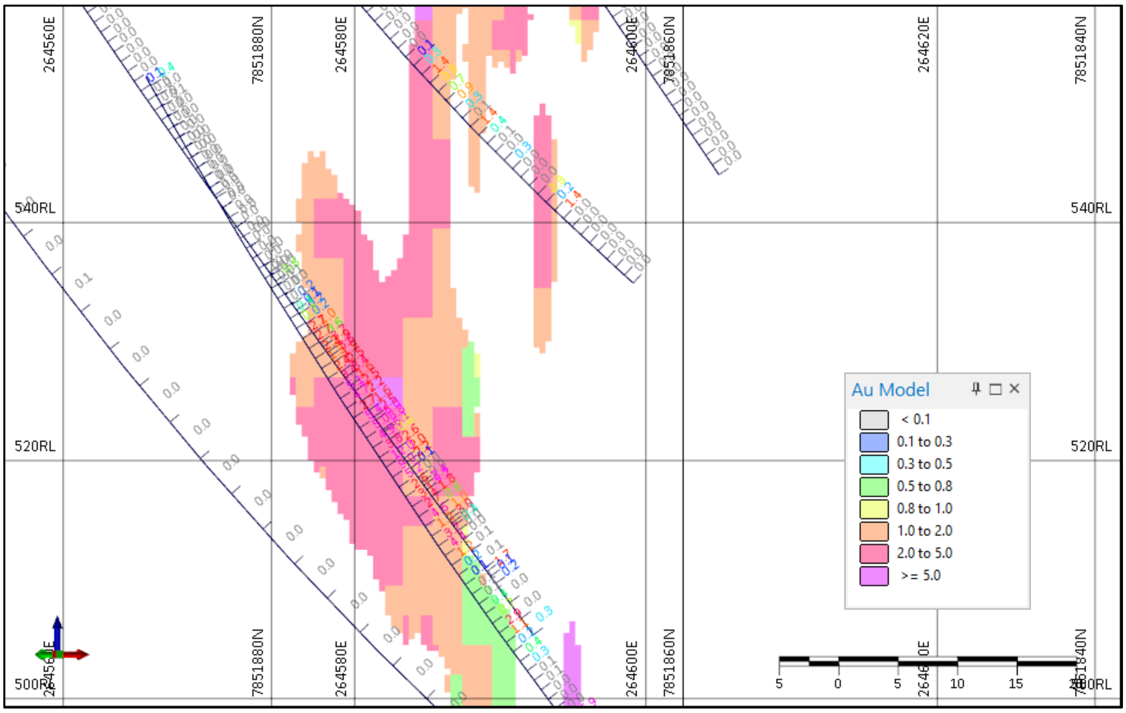

Figure 7: Typical Model vs Data Section (Detail)

Declustered average drill hole composite grade is 1.33, compared to an average grade of 1.31 for the equivalent model. In addition swathe plot validation shows good correlation between model and data.

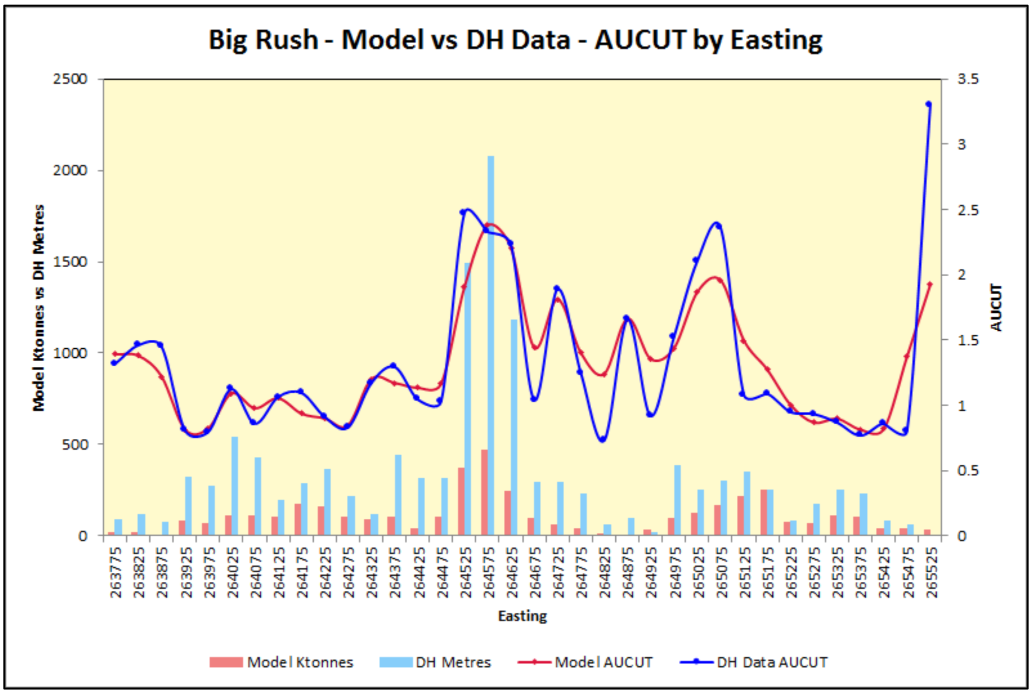

Figure 8: Swathe Plot by Easting

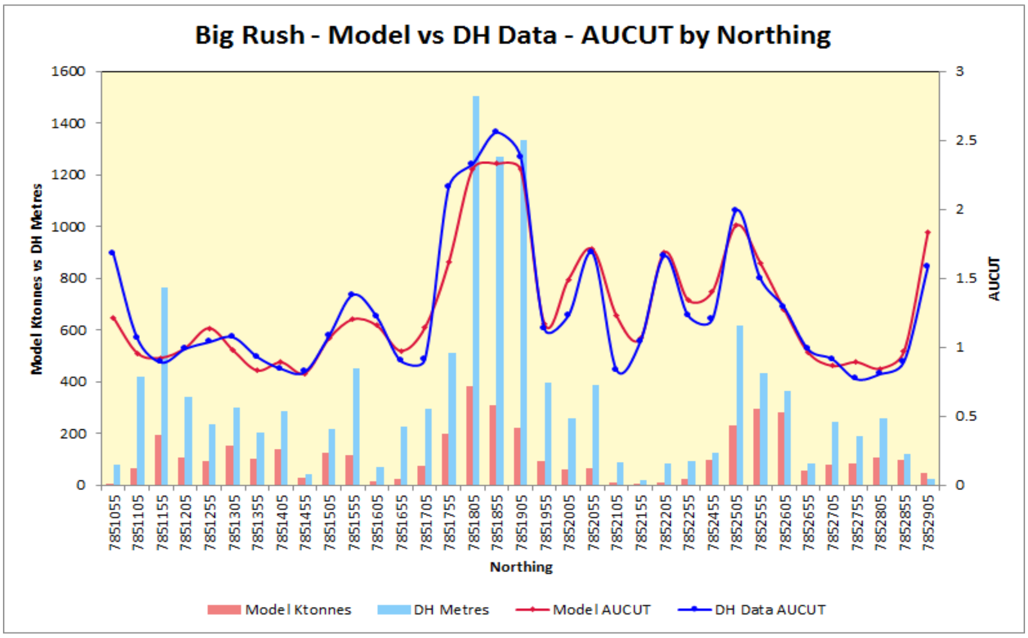

Figure 9: Swathe Plot by Northing

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The estimation process was validated by comparing global block grades with the average composite grades, visual checks comparing block grades with raw assay data and volume checks of the ore domain wireframes versus the block model volume.

CLASSIFICATION

The Mineral Resource has been classified in the Indicated and Inferred categories, in accordance with the 2012 Australasian Code for Reporting of Mineral Resources and Ore Reserves (JORC Code). A range of criteria has been considered in determining this classification including:

- Geological continuity;
- Data quality;
- Drill hole spacing;
- Modelling technique;
- Estimation properties including search strategy, number of informing data and average distance of data from blocks.

The resource classification methodology incorporated a number of parameters derived from the kriging algorithms in combination with drill hole spacing and continuity and size of mineralised domains.

Geological Continuity

Geological continuity is understood with reasonable confidence. The classification reflects this level of confidence.

Data Quality

Resource classification is based on information and data provided from the Great Northern Minerals' database. Descriptions of drilling techniques, survey, sampling/sample preparation, analytical techniques and database management/validation provided by indicate that data collection and management is well within industry standards. Widenbar considers that the database represents an accurate record of the drilling undertaken at the project.

Drilling Spacing

Drill hole location plots have been used to ensure that local drill spacing conforms to the minimum expected for the resource classification. Section lines are typically spaced at 25m, though there are significant areas where spacing is 10m to 15m. Indicated material is generally confined to areas where resource definition drill spacing is 25m. Inferred material is generally up to 50m drill spacing.

Modelling Technique

The resource model was generated using an Ordinary Kriging interpolation method, with a two-pass search approach.

The search pass used, the number of samples used, the kriging variance and the average distance of samples from each block, were all stored in the block model. In general the kriging variance, search pass and average distance are all broadly correlated with a combination of drill hole spacing and domain thickness.

The above parameters were used as a guide in combination with drill spacing to arrive at a final resource classification.

Final Classification

The final classification is encoded into a field in the block model called RESCAT where 2=Indicated, 3=Inferred and 4=Unclassified.

The first step is to code as unclassified blocks in areas of sparse drilling and where blocks are based on just one or two samples. This is done using strings digitised in plan, as illustrated below.

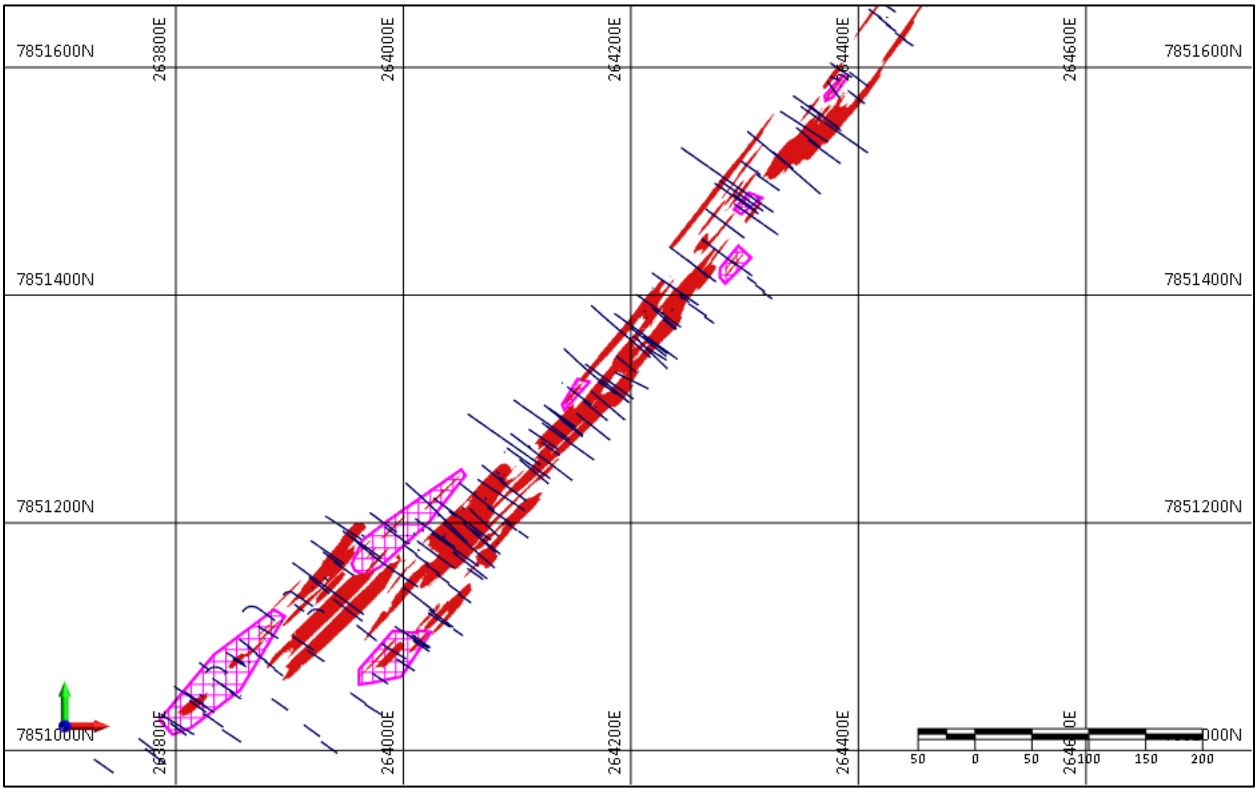

Figure 10: Southern and Sergei Pit Areas – Hatched Material Excluded from Classification

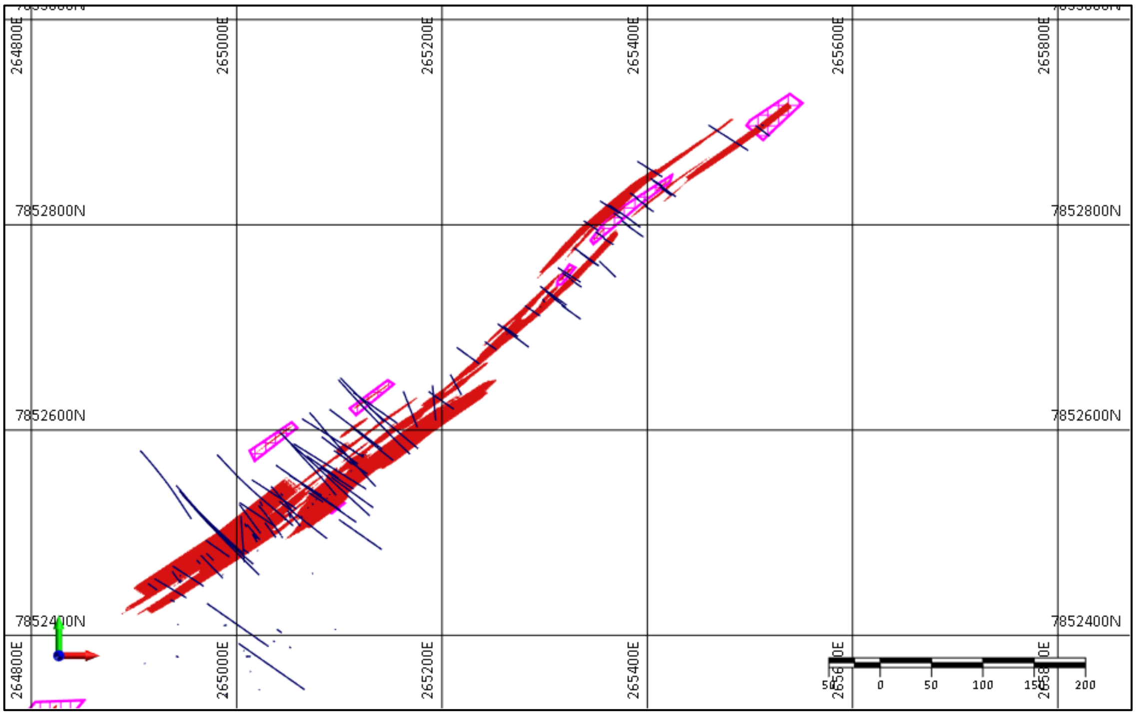

Figure 11: Central Pit Area– Hatched Material Excluded from Classification

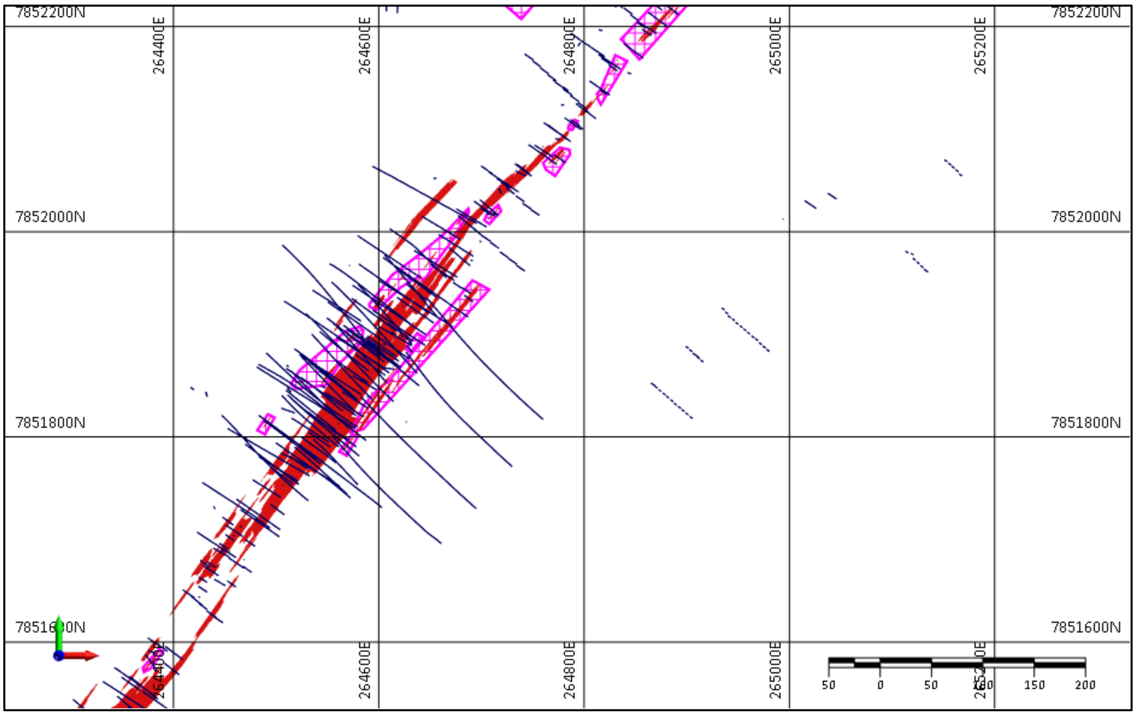

Figure 12: Northern Pit Area – Hatched Material Excluded from Classification

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The second stage of classification involves digitising control strings in long section to define the base of indicated and base of inferred; material below the base of inferred is coded as unclassified.

Final classification is shown below in long section.

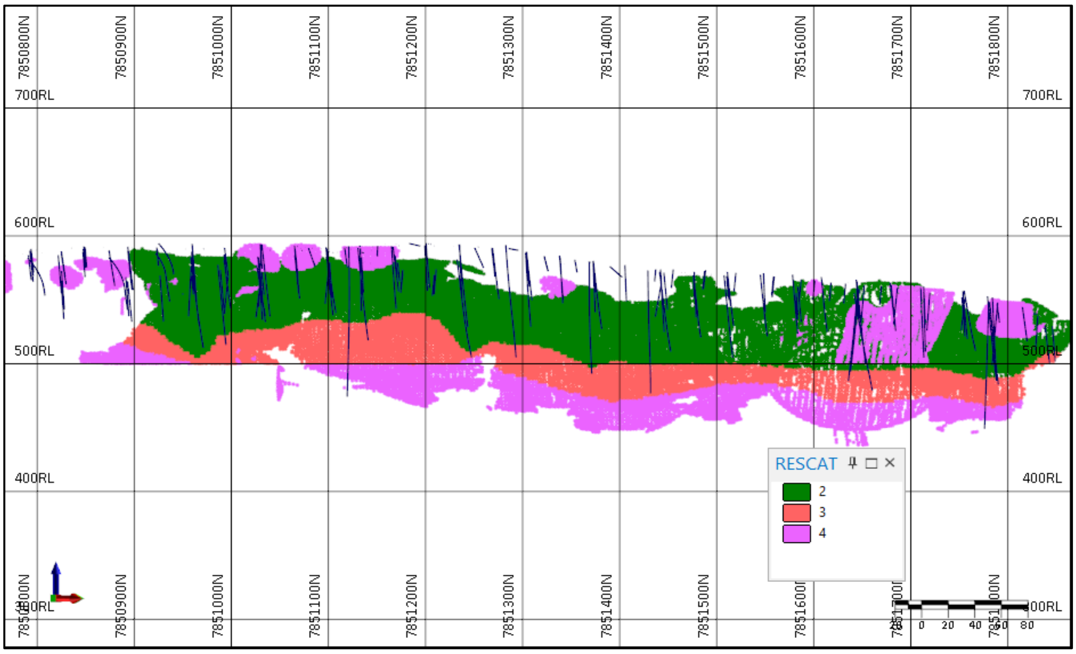

Figure 13: Southern and Sergei Pit Areas Resource Classification Long Section

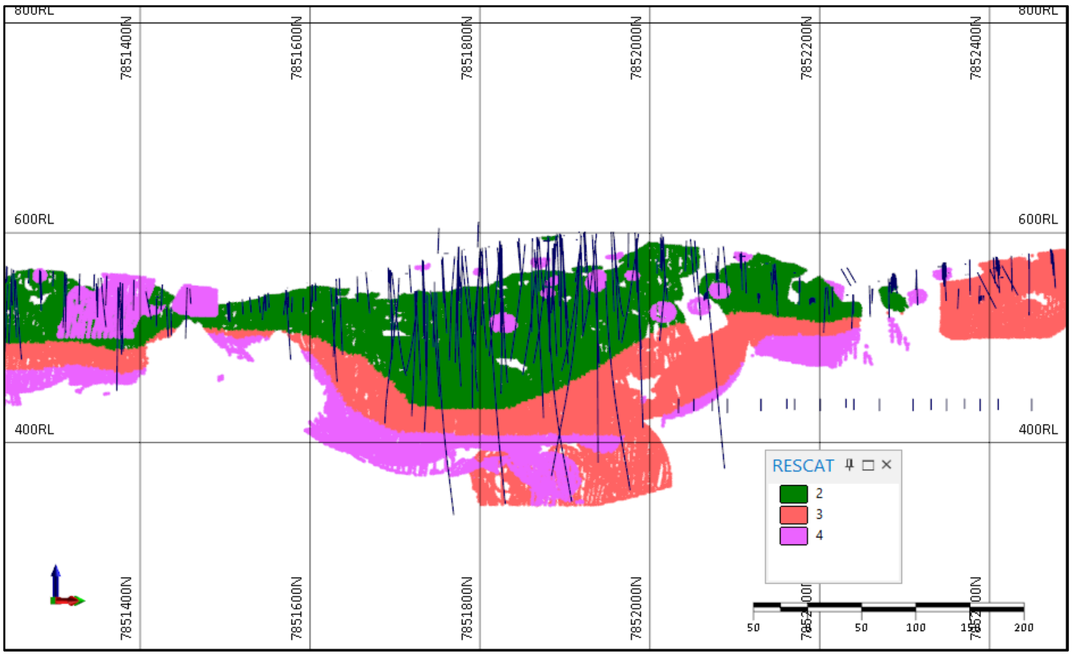

Figure 14: Central Pit Area Resource Classification Long Section

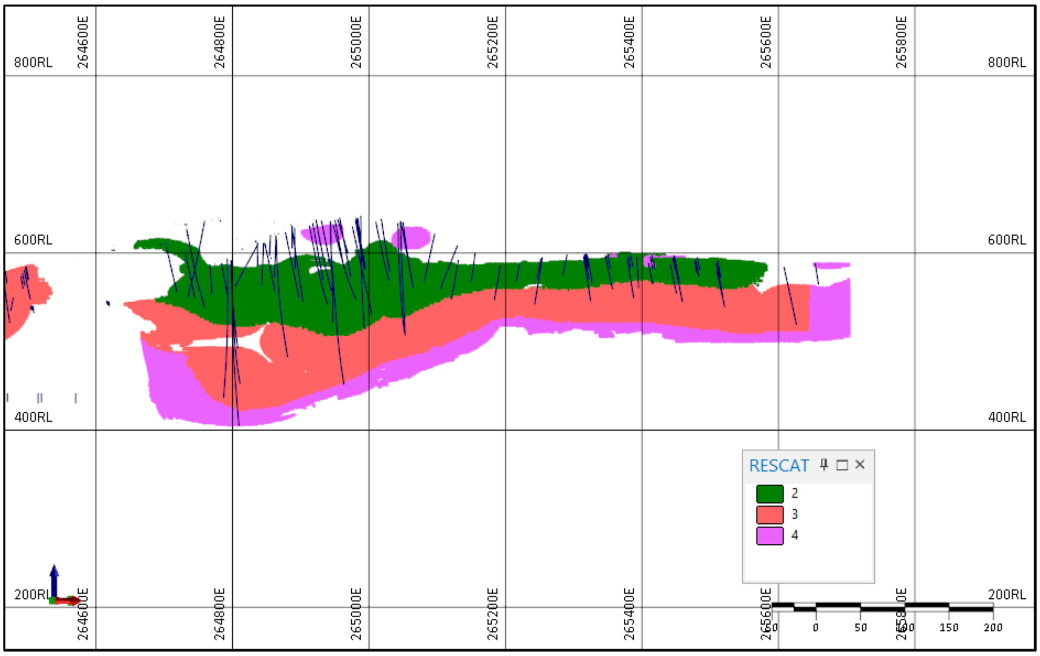

Figure 15: Northern Pit Area Resource Classification Long Section

MODIFYING FACTORS

The selected cut-off grade assumes an open pit mining method. This is considered reasonable given the relatively shallow nature of the mineralisation and the historical open pit mining that has occurred at the site previously. However, there is an option to pursue a smaller underground mining scenario sourcing higher grade gold zones which could be selected and extracted by underground mining. Further closer spaced drilling in the higher grade areas would be required prior to commencing this activity.

The table below shows the Mineral Resource reported at a range of cut-off grades.

Table 9: Global Big Rush Resource Estimate 0.0 g/t Au Cut-off

Big Rush Resource Estimate						
Class	Cut-off	Volume	Tonnes	Density	AuCut	AuCut Oz
Indicated	0.00	899,000	2,314,000	2.57	1.35	100,000
Inferred	0.00	454,000	1,217,000	2.68	1.39	54,000
Total	0.00	1,352,000	3,531,000	2.61	1.36	154,000

Table 10: Global Big Rush Resource Estimate 0.5 g/t Au Cut-off

Big Rush Resource Estimate						
Class	Cut-off	Volume	Tonnes	Density	AuCut	AuCut Oz
Indicated	0.50	868,000	2,236,000	2.58	1.38	99,000
Inferred	0.50	448,000	1,203,000	2.68	1.40	54,000
Total	0.50	1,317,000	3,439,000	2.61	1.39	153,000

Table 11: Global Big Rush Resource Estimate 1.0 g/t Au Cutoff

Big Rush Resource Estimate						
Class	Cut-off	Volume	Tonnes	Density	AuCut	AuCut Oz
Indicated	1.00	544,000	1,411,000	2.59	1.72	78,000
Inferred	1.00	270,000	723,000	2.68	1.79	42,000
Total	1.00	814,000	2,134,000	2.62	1.75	120,000

Big Rush Resource Estimate by Pit Area

Table 12: Big Rush Resource Estimate Central Pit

Big Rush Resource Estimate (Central Pit)								
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	0.00	319,000	837,000	2.62	1.70	46,000	1.79	48,000
Inferred	0.00	151,000	401,000	2.67	1.69	22,000	1.73	22,000
Total	0.00	470,000	1,239,000	2.64	1.69	68,000	3.51	70,000
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	0.50	312,000	819,000	2.62	1.73	45,000	1.82	48,000
Inferred	0.50	150,000	399,000	2.67	1.70	22,000	1.73	22,000
Total	0.50	462,000	1,218,000	2.64	1.72	67,000	3.54	70,000
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	1.00	241,000	634,000	2.63	2.00	41,000	2.12	43,000
Inferred	1.00	125,000	331,000	2.66	1.87	20,000	1.92	20,000
Total	1.00	366,000	966,000	2.64	1.96	61,000	4.00	64,000

Table 13: Big Rush Resource Estimate Northern Pit

Big Rush Resource Estimate (Northern Pit)								
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	0.00	236,000	613,000	2.60	1.31	26,000	1.32	48,000
Inferred	0.00	236,000	635,000	2.69	1.34	27,000	1.34	22,000
Total	0.00	472,000	1,248,000	2.64	1.33	53,000	2.66	70,000
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	0.50	227,000	590,000	2.60	1.35	26,000	1.35	48,000
Inferred	0.50	234,000	629,000	2.69	1.35	27,000	1.35	22,000
Total	0.50	461,000	1,219,000	2.65	1.35	53,000	2.70	70,000
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	1.00	152,000	401,000	2.64	1.61	21,000	1.62	43,000
Inferred	1.00	129,000	347,000	2.69	1.79	20,000	1.79	20,000
Total	1.00	281,000	748,000	2.66	1.70	41,000	3.43	64,000

Table 14: Big Rush Resource Estimate Northern Pit

Big Rush Resource Estimate Southern Pit)								
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	0.00	297,000	746,000	2.51	1.06	26,000	1.06	26,000
Inferred	0.00	62,000	168,000	2.70	0.89	5,000	0.89	5,000
Total	0.00	359,000	914,000	2.54	1.03	30,000	1.87	30,000
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	0.50	287,000	720,000	2.51	1.09	25,000	1.09	25,000
Inferred	0.50	60,000	162,000	2.70	0.91	5,000	0.91	5,000
Total	0.50	347,000	882,000	2.54	1.05	30,000	1.90	30,000
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	1.00	143,000	356,000	2.49	1.38	16,000	1.38	16,000
Inferred	1.00	17,000	45,000	2.70	1.21	2,000	1.21	2,000
Total	1.00	159,000	401,000	2.51	1.36	18,000	2.48	18,000

Table 15: Big Rush Resource Estimate Sergei Pit

Big Rush Resource Estimate (Sergei Pit)								
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	0.00	46,000	117,000	2.53	0.81	3,000	0.81	3,000
Inferred	0.00	5,000	13,000	2.70	0.78	0	0.78	0
Total	0.00	51,000	130,000	2.55	0.80	3,000	1.56	3,000
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	0.50	42,000	108,000	2.55	0.84	3,000	0.84	3,000
Inferred	0.50	5,000	13,000	2.70	0.78	0	0.78	0
Total	0.50	47,000	121,000	2.56	0.84	3,000	1.57	3,000
Class	Cutoff	Volume	Tonnes	Density	AuCut	AuCut Oz	Au UnCut	Au Uncut Oz
Indicated	1.00	8,000	20,000	2.41	1.26	1,000	1.26	1,000
Inferred	1.00	0	0	2.70	1.06	0	1.06	0
Total	1.00	8,000	20,000	2.42	1.26	1,000	2.15	1,000

COMPARISON WITH PREVIOUS ESTIMATES

A JORC 2012 compliant Resource Estimate was produced for the Big Rush Central Pit area in February 2020 by AKB Mining Geology Services. (Please refer to ASX announcement 7/2/2020: Big Rush Resource Estimate)

At a 0.75 g/t Au cut-off, the total resource was:

560,000 tonnes @ 2.6 g/t for 47,000 oz Au

For the same area and at the same cut-off the updated resource estimate is:

730,000 tonnes @ 1.8 g/t for 43,000 oz Au

The difference in tonnes and grade is a reflection of the different mineralisation domain methodology (the AKB model used a relatively high-grade envelope compared to the current model); however, contained ounces are similar. In addition subsequent to the February 2020 maiden resource estimate at Big Rush, an additional 22 RC holes for 3634 metres were drilled and 4 HQ diamond holes for 1040 metres were drilled prior to this latest 2021 resource estimate for Big Rush. This additional data has provided a greater density of sample points contained within the resource outline.

METALLURGICAL ASSUMPTIONS

Previous mining at Big Rush was principally a heap leach operation, focused on the near surface oxide material with approximately 950,000 t @ 1.9 g/t Au mined and processed. Recoveries in excess of 80% have been estimated. Metallurgical test work carried out on the primary ore by Amdel for Werrie Gold Ltd as part of the pre-mining feasibility study in 1994 showed that gravity could recover approximately 70% of gold in the three samples tested. Further metallurgical test work is recommended to assess gold recovery to concentrate via flotation when new material becomes available from future drilling programs. The presence of arsenic and minor stibnite (antimony) in association with the mineralised gold material, suggests that there is a refractory component of the mineralisation, which will require further test work to determine the ultimate optimum processing and treatment option/s.

This announcement has been authorised for release to the market by the Board of Great Northern Minerals Limited.

*****ENDS*****

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About Great Northern Minerals Limited

Great Northern Minerals Limited is an ASX-listed gold focused explorer. The Company's key North Queensland Gold Projects include the Golden Cup, Camel Creek and Big Rush Gold Mines in North Queensland. The historic mines ceased operation in the 1990's after production of over 150,000 oz at an average grade of 1.91g/t Au. Great Northern Minerals aims to extend known mineralisation and develop a new gold camp in North Queensland.

COMPETENT PERSONS STATEMENT

The information in this report that relates to Mineral Resources is based on information compiled by Mr Lynn Widenbar, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Widenbar is a full time employee of Widenbar and Associates Pty Ltd. Mr Widenbar has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that is being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves'. Mr Widenbar consents to the inclusion in the report of the matters based on his information in the form and context that the information appears.

Lynn Widenbar BSc(Hons), MSc, DIC, MAusIMM, MAIG
Principal Consultant, Widenbar and Associates Pty Ltd

JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* *Aspects of the determination of mineralisation that are Material to the Public Report.* *In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.*	• The deposit has been primarily sampled via Reverse Circulation (RC) drilling along with some and Open Hole Percussion (Percussion) and some diamond drilling. • For the drill programs completed in 2010 (4 RC holes), 2019 (7 RC holes) and 2020 (22 RC holes) RC chips were collected in 1m intervals from a rotary splitter on the side of the drill rig. A 2-3kg sample was collected in a calico bag for dispatch to the lab for pulverising to produce a 50g charge for fire assay, and the remainder of the sample was collected in plastic bags and stored adjacent to the drill rig. During the 2010 program a portable XRF unit was used to analyse for As which assisted in refining the intervals submitted to the laboratory for full analysis. • The historical RC and Percussion holes were drilled between 1989 and 1996 by Billiton (BRRC1 – 13), Geopeko (BRS16 – 27) and Golden Ant Mining/Alphadale Pty Ltd (BR28 – 292 and BRRC296 – 298). Samples were collected in 1m intervals for all of these programs and riffle split to produce either a 1m sample or occasionally 2m composites which were submitted for pulverising to produce a 30g or 50g charge for fire assay. Some of the BR series of holes were initially analysed by Acqua Regia with follow up fire assay. • Diamond drilling was completed using HQ3 diameter coring. The two holes drilled by Geopeko (BRS14 and 15) were cored from surface as were Alphadale holes BRDH293 – 295. Four RC with diamond tail holes were drilled by GNM in 2020. All other diamond holes had RC pre-collars (BRPD series). Drill core was sampled to geological boundaries or nominally to 1m. Sample widths ranged from 0.1m to 3m averaging 1.14m, with half core samples being submitted for pulverizing to produce a 50g charge for fire assay.
Drilling techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• Most holes drilled at Big Rush have been RC with a lessor amount of open hole Percussion and a smaller amount again of diamond drilling. Percussion drilling was done with a $4^1/_2$ inch hammer and some collars put in with a $5^1/_2$ inch hammer. RC drilling was done with face sampling hammers ranging from $5^1/_8$ inch to $5^1/_2$ inch with one hole that was extended utilizing a $4^1/_2$ inch cross over sub. • Diamond drilling has been by HQ triple tube. The BRPD series of holes were oriented using the "porcupine" orienting device.

Criteria	JORC Code explanation	Commentary
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• Core was drilled as HQ triple tube to maximise recovery. The logs refer to some crush zones where core was particularly broken, but there is no mention of core loss in any of the logs except where the holes were collared from surface. • Sample recovery across all RC programs was recorded as a qualitative measure rather than quantitative. The drill logs from all programs recorded recovery as a visual assessment, generally as a tick in the box on the handwritten log. Where recovery was low, such as in the first one or two meters whilst collaring, the geologist recorded poor recovery. Overall recovery from all RC drilling was excellent. • No cavities were encountered in RC drilling and no underground workings exist in the area. All care was taken by the drilling contractor in the modern drilling to maximise RC sample recovery. • No testing has been conducted to identify whether a relationship exists between sample recovery and grade.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• All RC and Percussion samples from both modern and historical drill programs were geologically logged for lithology, alteration, mineral occurrence, sulphide percentage, quartz veining and weathering by geologists. A small sub sample was collected for each meter in plastic chip trays for future reference. • All diamond core was geologically logged for lithology, alteration, mineral occurrence, quartz veining and weathering by geologists. All Alphadale diamond core was photographed. No photographs could be located for the two Geopeko diamond holes. The later BPDH series of Alphadale holes were structurally logged by a consultant geologist. • The logging of both core and chips in all programs is qualitative in nature
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.*	• Drill core where sampled was half cut. • RC samples from the modern drilling programs have been split by a rotary splitter attached to the drill rig. A 2 – 3Kg sample was collected for lab submission and the remainder of the 1m sample is stored on site in plastic bags. All samples were dry. • RC samples from the Billiton program in 1989 were riffle split through a 75:25 splitter. There is no record of how the RC samples were taken during the Geopeko program. For Golden Ant Mining/Alphadale programs the samples were riffle split initially through a 75:25 splitter before the 25% portion was re-split through a 50:50 riffle splitter. • Field duplicates were taken during the Billiton and

Criteria	JORC Code explanation	Commentary
	• *Whether sample sizes are appropriate to the grain size of the material being sampled.*	Geopeko programs and generally demonstrate good repeatability indicating that the sampling techniques were appropriate. Some coarse gold was noted in the primary zones by Alphadale, but there are no records of field duplicates with that data. Field duplicates in the recent GNM program produced exceptionally good repeatability for a gold deposit demonstrating the advantages of good rig mounted rotary splitters as opposed to the older manual riffle splitters. • The sample sizes were not recorded for any of the drilling programs but are industry standard sample sizes and are deemed appropriate to provide representative samples of the deposit. Historic mining suggests that the sampling carried out in the drilling prior to mining commencing was ultimately representative of the deposit.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	• The analytical work for the historical programs was completed by Tetchem Laboratories in Cairns, ALS Laboratories in Townsville and Analabs Laboratory in Townsville, all NATA accredited laboratories, using standard minerals industry sample preparation and analytical methods. Hard copy assay results for all of the historical drilling are still on hand. The analytical work for the modern drilling programs was completed by SGS and Intertek Laboratories in Townsville, also both NATA accredited facilities. • From both historical and modern drill programs samples were dried, crushed and pulverized to -75 microns prior to weighing out an assay split. Assay methods were 30g or 50g fire assays with an AAS finish. Fire assay is considered to be a total digestion technique for gold. Some of the Alphadale programs utilized Aqua Regia analysis for Au initially on samples in the oxide zone which were followed up by 30g fire assays for samples over 0.3g/t Au. • A handheld XRF instrument was utilized in the modern drill program to assist with identifying anomalous samples by their arsenic values. No XRF readings have been used the Mineral Resource Estimate. • Apart from the field duplicates mentioned above, no QAQC data was available from the historical drilling. • The modern drilling utilized certified reference standards, field duplicates and blanks. Three different standards were used, and they were inserted at a rate of 1 standard for every samples taken. Whilst the population only amounts to 45 standards, the results were good with all standards reporting within 3 standard deviations and 93% within 2 standard deviations of the reference

Criteria	JORC Code explanation	Commentary
		material. All bar one of the blanks reported below detection with one blank reporting 0.005g/t Au.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Multiple phases of drilling by different companies have resulted in similar results. The modern drilling programs featured holes within 5m of historical intersections that helped confirm the veracity of the historical data. • Historical mining at Big Rush between 1995 and 1998 demonstrated the structural continuity of the lodes and produced ore grades expected from the historical drilling. Hard copy records of pit reconciliations reveal that expected tonnes and grades were generally encountered. • Multiple holes on adjacent sections help confirm continuity of mineralisation. • The project data is held in both digital and hard copy formats. • There have been no adjustments to the assay data as received from the laboratories with the exception of high-grade cuts being applied to composites for the estimation.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• No records of how the Billiton or Geopeko drill collars were initially surveyed, however there are records of these collars being surveyed after the project was purchased by Golden Ant Mining Pty Ltd in 1993. The collars were surveyed by the mine surveyors from the Camel Creek mine which was also owned and operated by Golden Ant Mining Pty Ltd. All Alphadale holes were then surveyed by the Camel Creek Mine surveyors until such time as the Big Rush mining operation commenced, after which the Big Rush mine surveyors picked up all drill collars. • All of the modern drill hole collars were surveyed by Terra Search using a differential GPS unit. • There is no detail for downhole surveys in the historical drilling. Holes are quite shallow, so it is possible that no downhole surveys were used. • The modern drilling has been down hole surveyed with either a Camteq ProShot digital single shot camera or a Reflex multi shot digital camera. • Drill collar co-ordinates are recorded in GDA94 (MGA Zone 55) and then transformed to the Big Rush mine grid. • Aerometrex 2008 aerial imagery was used to create a DTM surface for the Big Rush area. The pit surface was adjusted down from the aerial survey level by using the historical grade control trenching and blast hole drilling data. This was necessary due to historic pit was failures that cover the floor.

Criteria	JORC Code explanation	Commentary
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• The spacing of drill hole collars and sample intervals down hole are appropriate for the nature of the mineralisation. Big Rush has typically been drilled out on average spacings of 25m x 20m with some central areas at 10 to 15m spacing, which provides evidence of geological continuity for the purposes of resource estimation. • Sample compositing to 1m down hole lengths has been used for the resource estimation. This reflects the most common sample interval for all drill programs.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• The majority of drill holes in both the historical and modern drilling programs have been oriented perpendicular to the target structures. • The relationship between the drilling orientation and the orientation of the mineralised structures is not considered to have introduced a sampling bias.
Sample security	• *The measures taken to ensure sample security.*	• Drill samples were dispatched to Tetchem laboratories in Cairns, ALS, Analabs and SGS laboratories in Townsville, all NATA accredited laboratories, by the project geologist. Hardcopy chain of custody forms from the modern drilling programs are available. Details of sample transportation from the historical programs are not available.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No audits or reviews of sampling techniques and data have been carried out.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• The Big Rush deposit lies wholly within Mining Leases MLs 10168, 10175 and 10192 which are held by Alphadale Pty Ltd. • Great Northern Minerals (GNM) has purchased a 100% interest of the Mining Leases listed above from Q-Generate Pty Ltd, the previous owner of Alphadale Pty Ltd. This company is now a 100% owned subsidiary of GNM. • The Mining Leases are granted. • There are no known impediments to Great Northern Minerals Ltd obtaining a license to operate on MLs 10168, 10175 and 10192. A new EA (environmental authority) is likely to be required to recommence mining operations at Big Rush.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The Big Rush Central area has been the subject of substantial previous exploration, resource definition drilling and mining operations. • Billiton Australia discovered the Big Rush deposit using a combination of Bulk Cyanide Leach stream

Criteria	JORC Code explanation	Commentary
		sediment samples, soil samples, rock chip samples and geological mapping in 1989. The first drillholes were put in by Billiton in November 1989 (BRRC001 – 013). • In late 1990 a joint venture agreement between The Shell Company of Australia (parent company of Billiton Australia) and Peko Exploration Ltd was executed with Geopeko being the manager of the project. Further RC (BRS16 – 27) and diamond (BRS14 and 15) drilling programs were carried out in 1991 before Peko Exploration Ltd withdrew from the joint venture in early 1992 citing a lack of size about the deposit. • Billiton subsequently offered the tenements for sale and they were purchased by Golden Ant Mining Ltd (GAML), a member of the privately owned Lynch Group of companies. Following the listing of Lynch's public company Werrie Gold Ltd on the ASX in November 1993, the tenements were transferred into Alphadale Pty Ltd, the exploration arm of Werrie Gold Ltd. The bulk of the RC, diamond and percussion drilling on the project was carried out by Alphadale Pty Ltd between 1993 and 1996. During the same period Werrie Gold Ltd developed and mined four open pits along the Big Rush mineralised system. • In 2008 Curtain Brothers, a private company based in Townsville, entered into a joint venture with Alphadale Pty Ltd to explore the tenements. Curtain Brothers drilled three RC holes beneath the central pit at Big Rush in 2010 (BRRC1001 – 1003).
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Big Rush project area is situated within the mudstone, siltstones and fine to coarse grained sub-lithic arenites of the mid Devonian Mytton Formation, which is the upper most member of the Broken River Group. Big Rush is in an area of NE-SW trending structural anomalism, characterised by intense parasitic folding, strong axial planar cleavage development, variable fold plunges and fold related shearing/faulting in a zone traceable for almost 3km. Mineralisation is hosted within quartz veins in interbedded siltstones, shales and sandstones of the Mytton formation. The deposit contains all the elements of a classic saddle reef environment with axial planar veins and hinge stockworks dominating. Higher grade laminated veins in the central zone are coincident with the presence of carbonaceous siltstones and shales, both as wall rock and laminae in the veins. In the primary mineralised zone analysis shows a very strong correlation between gold and

Criteria	JORC Code explanation	Commentary
		arsenopyrite and a moderate correlation between gold and quartz veining. Historical mining has removed the auriferous oxide ore that was amenable to extraction by cyanide leaching. The primary mineralisation that remains is refractory with gold associated with arsenopyrite and to a lesser extent pyrite. Metallurgical test work carried out on the primary ore by Amdel for Werrie Gold Ltd as part of the pre-mining feasibility study in 1994 showed that gravity could recover approximately 70% of gold in the three samples tested. Further testwork is required to determine the optimum treatment/processing option/s.

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  ◦ *easting and northing of the drill hole collar*
	  ◦ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ◦ *dip and azimuth of the hole*
	  ◦ *down hole length and interception depth*
	  ◦ *hole length.*
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		• All previous GNM drill hole details and results have previously been released to the market.

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• No intersection grades are reported as exploration results, • No metal equivalents are used or presented.
Relationship between mineralisati on widths and	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole*	• Drilling is generally perpendicular to the structure by angled holes at 45° to 68° into structures dipping between 70° and 90°. One vertical hole was drilled. Some of the reported intersections are very close to true width. The apparent width is accounted for with the three-dimensional wireframe models of the

Criteria	JORC Code explanation	Commentary
intercept lengths	*lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').*	mineralised structures.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Maps and sections are presented in the MRE report.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• No intersection grades are reported as exploration results.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Metallurgical test work carried out on the primary ore by Amdel for Werrie Gold Ltd as part of the pre-mining feasibility study in 1994 showed that gravity could recover approximately 70% of gold in the three samples tested. Further work is required to test gold recoveries by flotation to a concentrate. • No modern density data was available from the existing data set, so a density has been applied based on the weathering types, and typical of the style of mineralisation and rock types.

Further work	• *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).*
	• *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*
		• Further work will include;
		  • Drill testing for extensions to the known mineralisation, mostly down dip and along strike.
		  • Additional metallurgical test work to determine the most appropriate process route for gold recovery.
		  • Complete an initial Scoping Study on the economics of re-establishing a gold producing operation at Big Rush.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary

Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*
	• *Data validation procedures used.*
		• The GNM drill hole database is managed and validated by CSA Global. Drill hole data was provided to Widenbar in an Access database and also as files exported to Micromine format.
		• All drill hole data was validated, including:
		  • Checks for duplicate collars
		  • Checks for missing samples
		  • Checks for down hole from-to interval consistency
		  • Checks for overlapping samples

Criteria	JORC Code explanation	Commentary
		• Checks for samples beyond hole depth .
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• Due to Covd-19 and quarantine restrictions, the Competent Person has not yet made a site visit; however, communications with GNM Technical Director Simon Coxhell, who has made several site visits have provided confirmation of drilling activities, geology etc..
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• The confidence in the overall geological interpretation is moderate given the reliance on the historical drilling. This is offset somewhat by the successful historical mining and the more recent drilling that supports the historical data. • Mineralised domains have been generated using Indicator Modelling at a 0.3 g/t threshold. • The primary mineralized zones are characterized by quartz veining and the presence of sulphides, particularly arsenopyrite. The main lode in the Central Pit area is continuous, and the mineralisation domains include minor sub-grade or waste drill intercepts where necessary to maintain a continuous structures.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• The mineralisation extends over a strike length of 1.6 km in Sergei, Southern and Central Pits, while the Northern Pit area has a strike length of approximately 800m. • Mineralisation typically extends 100 to 120m below the original surface, with parts of Central Pit extending to a depth of 240m. • Mineralisation is typically 10 to 20m with thinner zones in places and thicknesses up to 30 in some parts of Central Pit
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).*	• A block model was constructed using Micromine software. A block size of 2.5m E x 10m N x 2.5m RL was chosen with a 35° rotation, with sub-blocking to x 1.0 x 0.5m. This reflects a practical single mining unit in a shallow open pit selective mining environment, or alternatively a small high grade underground environment. • Grades were interpolated into blocks using 1m composites by Ordinary Kriging methodology. • First pass search ellipse was 35x5x35m, with a second pass of 75x10x75m. • The minimum number of samples is 6 in pass 1 and 2 in pass 2. . Minimum number of holes is 2 in pass 1 and pass2. Minimum number of samples per hole is 2 in pass 1 and 1 in pass 2. Maximum number of samples per hole is 4 in pass 1 and pass2. • Significant levels of Arsenic are present in some areas, but the lack of assay data (less than 18% of

Criteria	JORC Code explanation	Commentary
	• *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	the Au assays) precluded a full estimation from being carried out. • The mineralised envelope is used as a hard boundary for estimation; no composite data from outside of the envelope is used to inform the grade of blocks within the mineralised envelope. • A high grade cut for Au was determined from review of log probability plots. It is 10 for most areas, but 50 in the Central Pit area. • The estimation process was validated by comparing global block grades with the average composite grades, visual checks comparing block grades with raw assay data and swathe plots. All methods showed good correlation between drill data and block model.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• All tonnages are estimated on a dry basis and moisture content is not considered in the resource estimate.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• When generating the Indicator Model mineralisation wireframes, a threshold cut-off of 0.3g/t was adopted. As no pit optimisation or economic analyses have been carried out at the time of reporting, the resource estimate has been reported cut-offs of 0.5g/t Au and 1.0 g/t Au. A zero cut-off report has also been generated to give a total mineralised volume estimate.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• It is assumed that mining at Big Rush will likely be by open pit methods. • Grade control in the historic pits included trenching, blast hole sampling and ditch witching. Quartz veining also provided good visual control.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• Metallurgical test work carried out on the primary ore by Amdel for Werrie Gold Ltd as part of the pre-mining feasibility study in 1994 showed that gravity could recover approximately 70% of gold in the three samples tested. • Previous mining at Big Rush was principally a heap leach operation, focused on the near surface oxide material with approximately 950,000 t @ 1.9 g/t Au mined and processed. Recoveries in excess of 80% have been estimated. • Further metallurgical test work is recommended to assess gold recovery to concentrate via flotation

Criteria	JORC Code explanation	Commentary
		when new material becomes available from future drilling programs. The presence of arsenic and minor stibnite (antimony) in association with the mineralised gold material, suggests that there is a refractory component of the mineralisation, which will require further test work to determine the ultimate optimum processing and treatment option/s. • Further metallurgy test work is recommended.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• Environmental considerations have not been factored into this mineral resource estimate. The assumption has been made that the waste material can be disposed of in a mine waste dump, as has historically happened on site. • The resource is located on granted mining leases, which have previously been mined by open pit mining methods.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• The bulk density for the mineral resource estimate is assumed. An in-situ dry bulk density of 2.7 t/m^3 was applied to fresh rock, 2.5 t/m^3 to transition material and 2.2 t/m^3 to oxide.

Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.*
	• *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).*
	• *Whether the result appropriately reflects the Competent Person's view of the deposit.*
		• The Mineral Resource has been classified in the Indicated and Inferred categories, in accordance with the 2012 Australasian Code for Reporting of Mineral Resources and Ore Reserves (JORC Code).
		• A range of criteria has been considered in determining this classification including:
		  ◦ Geological continuity;
		  ◦ Data quality;
		  ◦ Drill hole spacing;
		  ◦ Modelling technique;
		  ◦ Estimation properties including search strategy, number of informing data and average distance of data from blocks.
		• The resource classification methodology

Criteria	JORC Code explanation	Commentary
		incorporated a number of parameters derived from the kriging algorithms in combination with drill hole spacing and continuity and size of mineralised domains • The mineral resource estimate appropriately reflects the Competent Person's views of the deposit.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• The current model has not been audited by an independent third party.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• The resource estimate is deemed to be an accurate reflection of both the geological interpretation and tenor of mineralisation within the deposit. • The mineral resource statement relates to a global tonnage and grade estimate. Grade estimates have been made for each block in the block model. • There are no records of historic production data being compared against a block model when mining was carried out between 1995 and 1998. Reports do compare mined tonnes and grade to polygonal estimates on individual mining benches and show reasonable correlation.