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ENERGY AND CLIMATE CHANGE
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LAND AND PROPERTY
MINING AND MINERAL PROCESSING
MINERAL ESTATES
WASTE RESOURCE MANAGEMENT



PETROPAVLOVSK PLC

**INDEPENDENT TECHNICAL ENGINEER REVIEW OF THE ASSETS
HELD BY PETROPAVLOVSK IN THE RUSSIAN FEDERATION**

EXECUTIVE SUMMARY

April 2017

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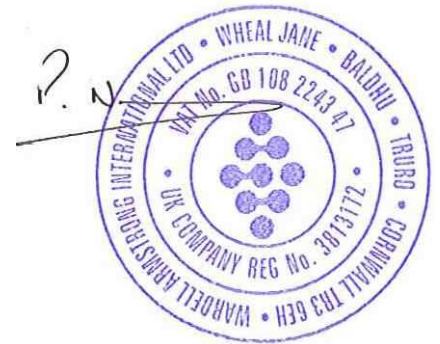
April 2017

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1 EXECUTIVE SUMMARY

1.1 Introduction

In February 2017, WAI was commissioned by Petropavlovsk PLC (Petropavlovsk, The Group, the Company) to undertake a review and sign off of Mineral Resources and Ore Reserves for the Group's assets in Amur Region, Far East Russia, where the Group has operated since 1994.

The Group's key mining assets are Pioneer, Pokrovka, Malomir and Albyn, all of which are operated by open pit; underground operations at NE Bakhmut (Pioneer) and the Quarzitovy (Malomir) are also in progress. At present, gold is extracted on-site using cyanide-based processing technologies. Resin-in-pulp (RIP) plants, which are operational throughout the year, are located at all four mines, along with seasonal heap-leaching facilities at two of the mines. The combined estimated plant throughput of all-four mines for 2016 was 17Mtpa.

1.2 Geology

Mineral resource models were supplied by the Group and audited by WAI. The audit included a review of drill hole databases, QAQC, geological and structural interpretation, geostatistics, grade estimation and resource classification. Adjustments were made to the mineral resource models by WAI where it was considered to be warranted. Reconciliation was undertaken by WAI for all operational pits from 2010 onwards. The results of the reconciliation indicate that the mineral resource models adequately reflect the recorded production data. WAI considers that the mineral resource models upon which the mineral resource estimates are based to be robust.

Exploration drilling by the Group continued during 2016 and included further targeting of the underground resources at Pioneer and Malomir (Quarzitivoye). Drilling at these areas continues to target the high grade pay shoots located beneath the open pits with the aim of further expanding and upgrading the currently estimated JORC Mineral Resources ahead of the underground development which commenced in 2016.

The summary of the Petropavlovsk Mineral Resources (in accordance to the JORC Code (2012)) are reported in the Tables below.

Table 1.1: Petropavlovsk Open Pit Mineral Resource Estimate
 In accordance to the JORC Code (2012) as of 31 December 2016, WAI

		Non-Refractory				Refractory				Total			
		Tonnage (kt)	Au (g/t)	Au (kg)	Au (Koz)	Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)	Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)
Albyn	Measured	5,049	0.52	2,629	85	-	-	-	-	5,049	0.52	2,629	85
	Indicated	74,025	1.13	83,764	2,693	-	-	-	-	74,025	1.13	83,764	2,693
	Measured and Indicated	79,075	1.09	86,394	2,779	-	-	-	-	79,075	1.09	86,394	2,779
	Inferred	60,442	1.02	61,794	1,987	-	-	-	-	60,442	1.02	61,794	1,987
Pokrovka and Burinda	Measured	6,780	1.01	6,844	221	-	-	-	-	6,780	1.01	6,844	221
	Indicated	31,511	0.83	26,045	838	-	-	-	-	31,511	0.83	26,045	838
	Measured and Indicated	38,290	0.86	32,889	1,058	-	-	-	-	38,290	0.86	32,889	1,058
	Inferred	10,259	0.99	10,181	328	-	-	-	-	10,259	0.99	10,181	328
Malomir	Measured	31	1.19	37	1	8,527	1.21	10,332	332	8,558	1.21	10,369	333
	Indicated	18,191	0.68	12,429	399	116,824	0.90	104,750	3,368	135,015	0.87	117,179	3,767
	Measured and Indicated	18,223	0.68	12,465	400	125,351	0.92	115,081	3,700	143,574	0.89	127,546	4,100
	Inferred	10,784	0.68	7,291	235	107,671	0.70	75,876	2,440	118,455	0.70	83,167	2,675
Pioneer	Measured	9,842	0.58	5,689	182	9,678	0.79	7,659	247	19,520	0.68	13,348	429
	Indicated	64,520	0.63	40,360	1,297	94,226	0.74	69,287	2,229	158,746	0.69	109,647	3,526
	Measured and Indicated	74,363	0.62	46,050	1,479	103,904	0.74	76,949	2,474	178,267	0.69	122,999	3,953
	Inferred	21,883	0.66	14,427	464	34,410	0.58	19,903	640	56,293	0.61	34,330	1,104
Total	Measured	21,702	0.70	15,199	489	18,205	0.99	17,991	579	39,907	0.83	33,190	1,068
	Indicated	188,247	0.86	162,598	5,227	211,050	0.82	174,037	5,597	399,297	0.84	336,635	10,824
	Measured and Indicated	209,951	0.85	177,798	5,717	229,255	0.84	192,030	6,174	439,206	0.84	369,828	11,891
	Inferred	103,368	0.91	93,693	3,014	142,081	0.67	95,779	3,080	245,449	0.77	189,472	6,094

Mineral Resource Estimate Notes:

1. Mineral resources limited by an optimised pit shell using a gold price of \$1500/oz;
2. Cut-off grades between 0.30 and 0.40 g/t Au have been applied
3. Minimum mining widths dependant on reconciliation have been applied;
4. Mineral resources are not reserves until they have demonstrated economic viability based on a feasibility study or pre-feasibility study;
5. Grade represents estimated contained metal in the ground and has not been adjusted for metallurgical recovery and;
6. Numbers may not add due to rounding.

Table 1.2: Petropavlovsk Underground Mineral Resource Estimate

In accordance to the JORC Code (2012) as of 31 December 2016, WAI

		Non-Refractory				Refractory				Total			
		Tonnage (kt)	Au (g/t)	Au (kg)	Au (Koz)	Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)	Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)
Pioneer	Measured	-	-	-	-	-	-	-	-	-	-	-	-
	Indicated	1,924	5.82	11,199	361	-	-	-	-	1,924	5.82	11,199	361
	Measured and Indicated	1,924	5.82	11,199	361	-	-	-	-	1,924	5.82	11,199	361
	Inferred	765	4.05	3,097	100	-	-	-	-	765	4.05	3,097	100
Malomir	Measured	-	-	-	-	-	-	-	-	-	-	-	-
	Indicated	850	8.23	6,995	225	-	-	-	-	850	8.23	6,995	225
	Measured and Indicated	850	8.23	6,995	225	-	-	-	-	850	8.23	6,995	225
	Inferred	489	3.72	1,819	58	-	-	-	-	489	3.72	1,819	58
Total	Measured	-	-	-	-	-	-	-	-	-	-	-	-
	Indicated	2,774	6.56	18,194	586	-	-	-	-	2,774	6.56	18,194	586
	Measured and Indicated	2,774	6.56	18,194	586	-	-	-	-	2,774	6.56	18,194	586
	Inferred	1,254	3.92	4,916	158	-	-	-	-	1,254	3.92	4,916	158

Mineral Resource Estimate Notes:

1. Cut-off grades of 1.50 g/t Au have been applied;
2. Mineral resources are not reserves until they have demonstrated economic viability based on a feasibility study or pre-feasibility study;
3. Grade represents estimated contained metal in the ground and has not been adjusted for metallurgical recovery and;
4. Numbers may not add due to rounding.

1.3 Mining

The open pit mining operations within the Petropavlovsk group are undertaken with owner operated machinery. All operations utilise traditional drill, blast, load and haul hard rock mining machinery. From 2017 refractory ore will be mined and stockpiled at Malomir, and from 2018 refractory concentrate will be processed at the Pokrovka POX hub that is due to be commissioned by the end of 2018. Overall rock movement within the open pits is projected to decrease significantly as the older pits are depleted and the newer refractory pits come on stream.

Underground mining is currently taking place at Quarzitovy (Malomir) and NE Bakhmut (Pioneer). Both of these mines are decline access with twin portals towards the base of the respective open pits, both of these open pits are exhausted. As of WAI's March 2017 site visit, the Quarzitovy declines had advanced approximately 50 metres, whereas the NE Bakhmut underground development extends in excess of 2,000m and has reached the initial ore blocks. Underground mining is being developed on a contractor basis, and will be based on variants of open stoping with predominately uncemented backfill.

Each of the four mining hubs draws ore from a selection of open pits which currently have the following life of mines: 2031 at Pioneer, 2017 at Pokrovka, 2030 at Malomir and 2027 at Albyn. The underground mines both have life of mines until 2022. These dates are based on current WAI Ore Reserve estimations and exclude potential additions of known *Inferred* resources. WAI notes that there is a total of 20Mt of *Inferred* mineralised material within the current mine designs which has not been included in the WAI schedules, but is likely to be mined by Petropavlovsk as part of their operations.

Petropavlovsk report that no major capital expenditure is planned for the open pits as the mining volumes decline, and the old mining equipment can be used for spares once it comes to the end of its life. Petropavlovsk report the smaller/cheaper items will be replaced (such as Belaz haul trucks) however the more expensive items (such as Caterpillar and Liebherr) will not be replaced. Petropavlovsk acknowledge that careful maintenance programmes will need to be followed to allow for this strategy to be maintained successfully.

Under the JORC Code (2012) technical and financial information must be reported to a Pre-Feasibility Study level as a minimum; WAI has reviewed the provided technical and financial information and understands that the information complies with the JORC Code (2012) requirement.

WAI has reviewed the mine designs provided by Petropavlovsk and undertaken an optimisation and evaluation exercise to verify that mining the *Proven* and *Probable* Ore Reserve estimation results in a positive financial analysis. WAI notes that the Petropavlovsk mine schedule which has been reported as the basis for the Company's annual gold sales contains a portion of *Inferred* Mineral Resource as this material is within the Ore Reserve mine design envelope and therefore will be mined as part of the operations. WAI is of the opinion that the *Inferred* material can be upgraded to an *Indicated* Mineral Resource following geological drilling, and that the mineralogy, and therefore mineral

processing recovery, is consistent with the orebody that it is associated with and therefore presents little technical risk.

1.4 Mineral Processing

The process plant at Albyn was constructed in 2011 and consists of two process lines, each designed to treat 230tph. The plant throughput has increased significantly over the period, reaching 4.68Mt in 2016. The head grades have remained fairly constant, ranging from 1.1 to 1.4g/t Au. The Albyn ores give high leach recoveries and the plant recovery has exceeded 90% since 2012. The plant gold recovery in 2016 was 94.0%.

The Malomir Plant No. 1 is no longer in operation as all Malomir ore is now treated through Plant No. 2. Plant No. 2, utilises SAG and ball milling followed by Resin in Pulp (RIP) processing. In 2016 the plant treated 3.00Mt of ore at a head grade of 0.90g/t Au and achieved 69.0% recovery. The Primary and Mixed mineralised material is highly refractory due to the significant levels of gold associated with sulphide minerals. POX has been selected as the most suitable process method and a flotation plant has been constructed on site and was near completion when the POX project was deferred. Overall gold recovery is predicted as being 80% with a flotation recovery of 88%.

The Pioneer RIP plant and combined heap leach throughput was 7.40Mt in 2016 with a head grade of 0.70g/t Au. Recoveries have fallen slightly in recent years, reflecting the lower head grades and slightly more refractory ore. The plant recovery was 83% in 2016 which included gold recovered from retreating the water from the tailings dam through a carbon adsorption circuit.

When the oxide ores are depleted in 2023, Lines 2, 3, and 4 will each be used to grind 2.0Mtpa of refractory ore which will be processed using flotation. It is envisaged that Line 1 will continue to be used to treat Pioneer non-refractory ore. The flotation concentrates will be transported 40km to the Pokrovka POX Hub.

The Pokrovka RIP plant and heap leach combined throughput has been stable in recent years, with 2.23Mt being treated in 2016. The head grades have fallen significantly, down to 0.60g/t Au in 2016. Gold recovery has also been stable and was 86.0% in 2016, despite the lower grade being treated.

The refractory sulphide gold concentrates that will be produced at both Malomir and Pioneer will be treated in a pressure oxidation (POX) hub at Pokrovka. Construction of the hub is partially completed and is planned to be commissioned in 2018. Completion of the project is budgeted to cost US\$120m and take 31 months to complete from a commencement date of 01 June 2016. The four autoclaves plan to be commissioned by the end of 2018 and production ramp-up though 2019.

1.5 Environmental

Environmental and social performance at the Petropavlovsk assets is managed well and to a high standard. All four projects are fully permitted and each aspect has been reviewed and approved by State expertise.

Social and community management is well established and it is understood there is almost universal support for the operations within the local community.

WAI understands that there have been no material changes to the projects, design or procedures that have an impact on Mineral Resources or Ore Reserves since the detailed audit undertaken by WAI in 2015.

1.6 Operating and Capital Costs Review

Petropavlovsk budget for the forthcoming year is prepared by taking the actual unit operating costs for the previous year and applying them forward; therefore for this report the future budgets have been based on the 2016 actual unit costs.

Petropavlovsk has produced a capital expenditure programme for 2017 to 2023 of \$249m; of this a total amount of \$81m will be spent on the commissioning of the POX hub by the end of 2018. WAI notes that an exchange rate of 60Rub/US\$ has been used.

WAI notes that this expenditure has been provided by the Company as part of the corporate cashflow model.

WAI has not verified the costings in detail, but considers that they are of the right order of magnitude.

1.7 Ore Reserve Estimation

WAI has reviewed the open pit mine designs provided by Petropavlovsk, based upon the relevant geological Mineral Resource block models. WAI has undertaken pit optimisations using Datamine NPV Scheduler software and has estimated Ore Reserves classified as *Proven* and *Probable* for each deposit. WAI notes that 7% of the mineralised tonnes within the designed pit shells is currently classified as *Inferred*.

WAI has also reviewed the two underground mine designs provided by Petropavlovsk, at Malomir and Pioneer, based on the relevant geological Mineral Resource block models. WAI has evaluated these designs using Datamine Studio 5D Planner and EPS Scheduler software, and has estimated Ore Reserves classified as *Proven* and *Probable* for each deposit. WAI notes that 11% of the underground mineralised tonnes within the mine design is currently classified as *Inferred*.

Ore Reserve estimations in accordance with the guidelines of the JORC Code (2012) for the open pit and underground operations are provided in the tables below.

Table 1.3: Petropavlovsk Open Pit Ore Reserve Estimation (WAI, as of 31 December 2016)

		Non-Refractory				Refractory				Total			
		Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)	Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)	Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)
Albyn	<i>Proven</i>	4,952	0.51	2,511	81	-	-	-	-	4,952	0.51	2,511	81
	<i>Probable</i>	52,302	1.18	61,689	1,983	-	-	-	-	52,302	1.18	61,689	1,983
	<i>Proven & Probable</i>	57,254	1.12	64,200	2,064	-	-	-	-	57,254	1.12	64,200	2,064
Pokrovka	<i>Proven</i>	1,051	0.55	575	19	-	-	-	-	1,051	0.55	575	19
	<i>Probable</i>	1,540	0.93	1,146	37	-	-	-	-	1,540	0.93	1,146	37
	<i>Proven & Probable</i>	2,590	0.77	1,721	55	-	-	-	-	2,590	0.77	1,721	55
Malomir	<i>Proven</i>	24	1.16	28	1	8,392	1.15	9,662	311	8,416	1.15	9,690	312
	<i>Probable</i>	7,100	0.83	5,906	190	78,557	0.91	71,527	2,300	85,657	0.90	77,433	2,490
	<i>Proven & Probable</i>	7,124	0.83	5,934	191	86,949	0.93	81,189	2,610	94,073	0.93	87,123	2,801
Pioneer	<i>Proven</i>	14,122	0.65	9,247	297	1,462	0.87	1,276	41	15,585	0.68	10,523	338
	<i>Probable</i>	30,243	0.73	21,960	706	55,478	0.80	44,171	1,420	85,721	0.77	66,130	2,126
	<i>Proven & Probable</i>	44,366	0.70	31,207	1,003	56,940	0.80	45,447	1,461	101,306	0.76	76,653	2,464
Total	<i>Proven</i>	20,149	0.61	12,361	397	9,854	1.11	10,938	352	30,004	0.78	23,299	749
	<i>Probable</i>	91,184	0.99	90,701	2,916	134,036	0.86	115,697	3,720	225,220	0.92	206,399	6,636
	<i>Proven & Probable</i>	111,334	0.93	103,062	3,314	143,890	0.88	126,636	4,071	255,223	0.90	229,698	7,385

Notes:

- In addition to the *Proven* and *Probable* Ore Reserves it will also be necessary to mine some *Inferred* material in the quantities outlined below within the mine designs. This has not been considered within the Ore Reserve estimation but should not be considered as waste.
 Albyn 5,696kt @ 1.03g/t Au (non-refractory), Pokrovka 39kt @ 0.88g/t Au (non-refractory), Malomir 551kt @ 1.10g/t Au (non-refractory) and 2,961kt @ 0.73g/t Au (refractory), Pioneer 5,837kt @ 0.54g/t Au (non-refractory) and 4,926kt @ 0.64g/t Au (refractory).
- Gold price US\$1,200/oz. Mining dilution included within block model regularised to a minimum mining block width, additional mining dilution of 3-15% and mining losses of 3% based on reconciliation with past production data.
- A baseline cut-off grade of 0.30g/t Au has been applied to the pit optimisations, with pit specific variations depending on individual transport and processing parameters.
- Numbers may not add due to rounding.

Table 1.4: Petropavlovsk Underground Ore Reserve Estimation (WAI, as of 31 December 2016)

		Non-Refractory				Refractory				Total			
		Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)	Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)	Ore (kt)	Au (g/t)	Au (kg)	Au (Koz)
Malomir	<i>Proven</i>	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Probable</i>	1,098	5.85	6,425	207	-	-	-	-	1,098	5.85	6,425	207
	<i>Proven & Probable</i>	1,098	5.85	6,425	207	-	-	-	-	1,098	5.85	6,425	207
Pioneer	<i>Proven</i>	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Probable</i>	1,154	4.46	5,146	165	-	-	-	-	1,154	4.46	5,146	165
	<i>Proven & Probable</i>	1,154	4.46	5,146	165	-	-	-	-	1,154	4.46	5,146	165
Total	<i>Proven</i>	-	-	-	-	-	-	-	-	-	-	-	-
	<i>Probable</i>	2,253	5.14	11,571	372	-	-	-	-	2,253	5.14	11,571	372
	<i>Proven & Probable</i>	2,253	5.14	11,571	372	-	-	-	-	2,253	5.14	11,571	372

Notes:

- In addition to the *Proven* and *Probable* Ore Reserves it will also be necessary to mine some *Inferred* material in the quantities outlined below within the mine designs. This has not been considered within the Ore Reserve estimation but should not be considered as waste.
 Malomir 261kt @ 4.31g/t Au (non-refractory), Pioneer 25kt @ 5.14g/t Au (non-refractory).
- Gold price US\$1,200/oz. Mining dilution included within block model regularised to a minimum mining block width, additional mining dilution of 1.0m on both the hangingwall and footwall within the stope blocks.
- A mining cut-off grade of 1.70g/t Au at Malomir and 1.50g/t Au at Pioneer has been applied to the stope blocks.
- Numbers may not add due to rounding.

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