

JURUENA GOLD

Brazil

# Spectacular Juruena Results Continue with 3.6m @ 554 g/t Au from Querosene Drilling

# **Highlights**

- Spectacular high-grade gold intercept from hole QD-44 at Juruena's Querosene prospect:
  - O 3.6m<sup>1</sup> @ 554 g/t Au from 147m in QD-44 including:
    - 1m @ 1,992 g/t Au from 148m
- → Other high-grade results from Juruena drilling (Dona Maria prospect) include;
  - 4.8m @ 11.89 g/t Au from 101m in hole MD-10; and
  - 4.0m @ 27.10 g/t Au from 84m in hole MD-14
- Re-assaying (using screen fire method) of the previously announced result of 10m @ 101 g/t Au intercept (see ASX release of 5 September 2016) in hole MD-09 enhanced to 10m @ 112 g/t Au
- Scoping Study on track for completion in 2016
- Drilling campaign confirms the high-grade nature of the Juruena deposits, including 460Kt @ 12.1 g/t Au for 178,800oz Au
- Recent high-grade results (in-fill and expansion) demonstrate ability to grow current resource base and increase confidence level to an Indicated Resource.

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Brazil-focused, resource development company Crusader Resources Ltd (ASX: CAS) ("Crusader" or "the Company") is pleased to announce additional high-grade gold results from the resource-infill and expansion drilling program at the Querosene and Dona Maria prospects at its 100% owned high-grade Juruena Gold Project. Crusader is currently completing a Scoping Study on the Juruena Project due to be completed prior to the end of 2016.

The Juruena Project is considered to be the initial development project in a recognised mining district with the potential to host multiple projects of a significantly larger scale.

<sup>&</sup>lt;sup>1</sup> Note, this is not true width as hole was drilled sub-parallel to the ore zone. Estimated true width is 1.55m see further comments below



The Juruena Project (~400 km² of contiguous tenements) is located in Central Brazil on the southern fringe of the Amazon Basin. Situated on the western end of the prospective Juruena-Alta Floresta gold belt (estimated to have produced ~7Moz Au), Juruena has been explored extensively by artisanal miners since the 1980's, producing an estimated 500koz of gold.

Crusader's immediate focus at Juruena is on a cluster of workings all located within a high-grade soil anomaly approximately 8km long by 4km wide.

Crusader's geological team have successfully targeted highgrade resources on four prospects. 7,800m of diamond drilling has now been competed in 2016, with results expected to continue to flow over the coming weeks as drill core is prepared and transported for assaying in Belo Horizonte, Brazil.

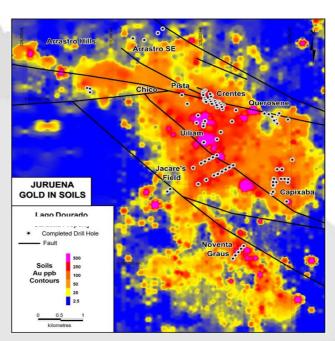


Figure 1: Juruena Project Gold in Soils

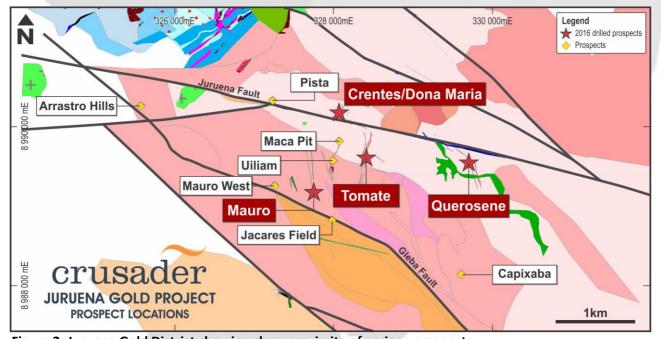


Figure 2: Juruena Gold District showing close proximity of various prospects

Juruena currently contains six confirmed zones of mineralisation in a district scale gold system, linked by a structural corridor hosting multiple gold prospects.

The current JORC compliant mineral resource estimates are anticipated to increase with the addition of recent drilling to be re-estimated in November 2016.



| Prospect<br>Name | Resource<br>Category | Lower Cut-<br>off | Metric Tonnes | Au (g/t) | Ounces  |
|------------------|----------------------|-------------------|---------------|----------|---------|
| Dona Maria       | Inferred             | 2.5 g/t           | 196,300       | 11.8     | 74,700  |
| Querosene        | Inferred             | 2.5 g/t           | 263,500       | 12.3     | 104,100 |
| Sub Total – High | h Grade Ounces       |                   | 459,800       | 12.1     | 178,800 |
| Crentes          | Inferred             | 1.0 g/t           | 846,450       | 2.0      | 55,100  |
| Total Inferred R | Resources            |                   | 1,306,250     | 5.6      | 233,900 |

Table 1: Current Juruena Gold Project JORC Mineral Resources, to be updated - November 2016

Commenting on the latest results, Crusader Resources' Managing Director Rob Smakman said:

"We are very pleased to again receive extraordinary results- this time from the Querosene prospect. This high-grade zone reflects the gold we logged in the core and its location in the central zone should extend and confirm the original resource estimate.

"Our second prospect, Dona Maria, has also returned some excellent results, significantly from both north and south of the exciting central zone- potentially extending it. We are now almost complete on the results from both Dona Maria and Querosene and these will be used to update the respective resource estimates in the coming quarter.

"Samples from both the new prospects- Tomate and Mauro, will soon be dispatched to the lab and we are really eager to see what these may reveal."

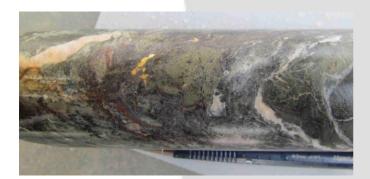


Figure 3: Gold in core from hole QD-44, Querosene prospect. This interval from ~148m depth, yielded ~1,992 g/t gold and is logged as hydrothermalite.



Figure 4: Gold in core from hole MD-09, Dona Maria Prospect. This interval from ~133.3m depth, yielded >2,000 g/t gold. (ASX release 5 September 2016)

## **Querosene Prospect**

The Querosene prospect is located on the eastern end of the Juruena Project area and was the first prospect targeted in the Crusader 2015 and 2016 drilling campaigns, due to consistent high-grade drilling results from previous explorers.

The high-grade result from QD-44 reported today was targeted to intercept mineralisation in the northern part of the main zone, close to where the main zone 'kinks' to the NW. QD-44 (along with holes QD-45 and QD-46- results still pending) were collared on the eastern side of the mineralisation and drilled shallowly toward the west, due to accessissues. As mineralisation also dips steeply to the west, the drillhole intercepts the mineralisation at a shallow angle and therefore the downhole intercept length is not 'true width'. True width is estimated at 1.55m. The full intercept is presented below;

| Hole ID    | Easting | Northing  | RL  | Azimuth | Dip | From<br>(m) | To<br>(m) | Interval<br>(m) | Au g/t |
|------------|---------|-----------|-----|---------|-----|-------------|-----------|-----------------|--------|
| QD-44/2016 | 329,748 | 8,989,574 | 236 | 270     | -45 | 147         | 148       | 1               | 1.27   |
|            |         |           |     |         |     | 148         | 149       | 1               | 1992   |
|            |         |           |     |         |     | 149         | 150       | 1               | 0.49   |
|            |         |           |     |         |     | 150         | 150.6     | 0.6             | 2.67   |

Table 2: Querosene Hole QD-44 – Total intercept results

The remaining holes in the campaign should be reported shortly and once complete, will be included in a resource update on the Querosene prospect.

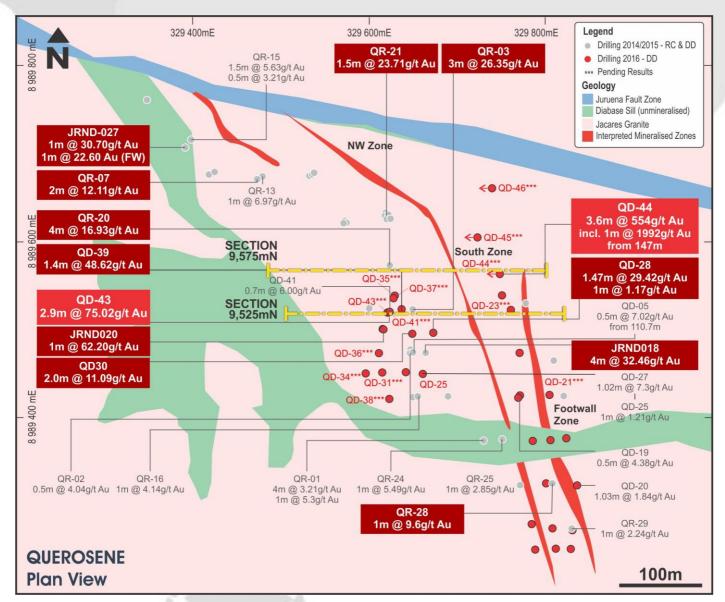
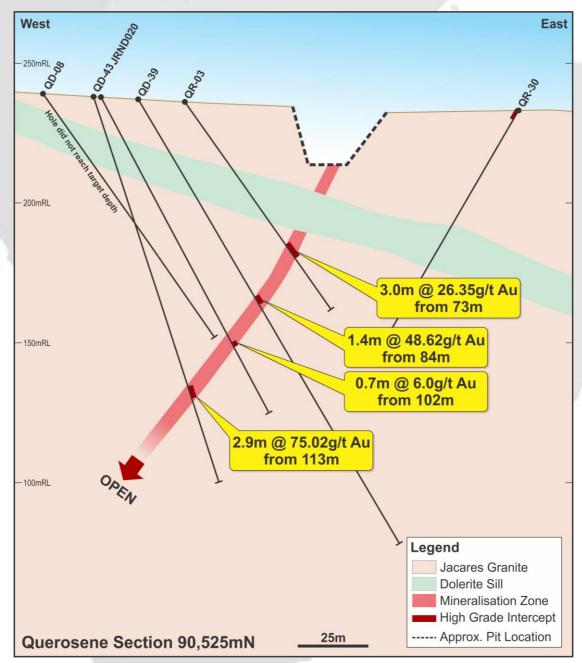


Figure 5: Querosene Prospect Drill Plan View



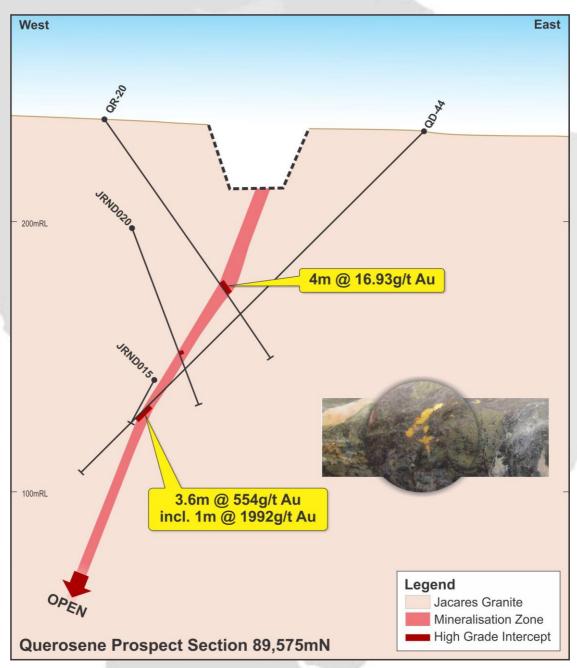
## Metallurgy

As previously reported (ASX release 1 July 2015), results for metallurgical testing on samples from the Querosene prospect indicate recoveries of > 90% for both gold and silver using standard leaching. Results also indicate the gold and silver are free milling and well distributed within the ore.



**Figure 6: Querosene Prospect Cross Section 525** 





**Figure 7: Querosene Prospect Cross Section 575** 

## **Dona Maria Prospect**

Dona Maria is located adjacent to the Crentes prospect, approximately 1 kilometre along the Juruena fault zone from Querosene (see Figure 2). Mineralisation at Dona Maria is perpendicular to the main Crentes trend (WNW) toward the NNW (see Figure 8 below). There is a broad, relatively shallow garimpo working over the mineralised trend and with the new intercepts, along with historical drilling, the central zone appears to show a coherent, high-grade core that is open at depth.



A total of 14 holes for 1,787m were completed at Dona Maria in the 2016 campaign, results released today are summarised in Table 4 and on drill plan in Figure 8 and include better results of;

- 4.8m @ 11.89 g/t Au from 101m in hole MD-10 including
  - 3m @ 18.47 g/t Au from 101m
- 4.0m @ 27.10 g/t Au from 84m in hole MD-14 including
  - 2m @ 50.13 g/t Au from 86m

Significantly, hole MD-10 is ~25m south of the central zone which has hosted the highest and broadest grade intercepts to date. Hole MD-14 is ~75m to the north of the central zone. The potential extension of this wide and high-grade zone should be significant for the planned update of the mineral resource estimate, due to be completed once all results are received and interpreted.

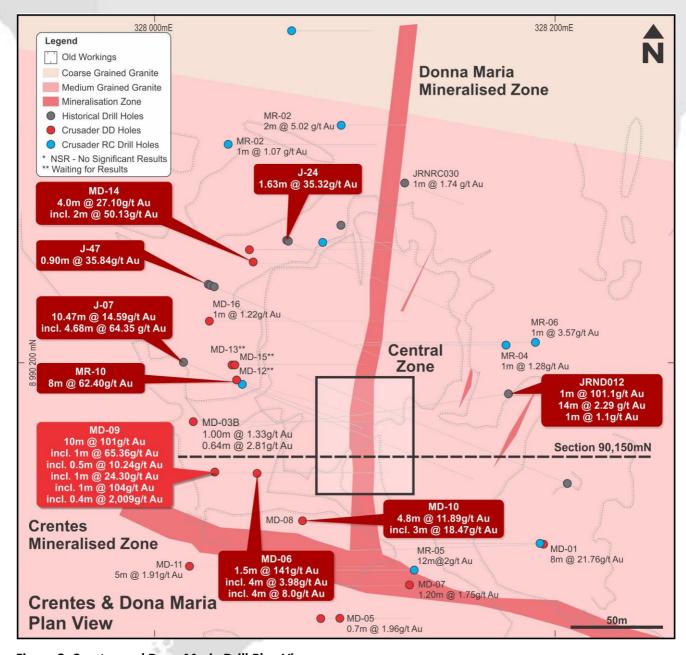


Figure 8: Crentes and Dona Maria Drill Plan View



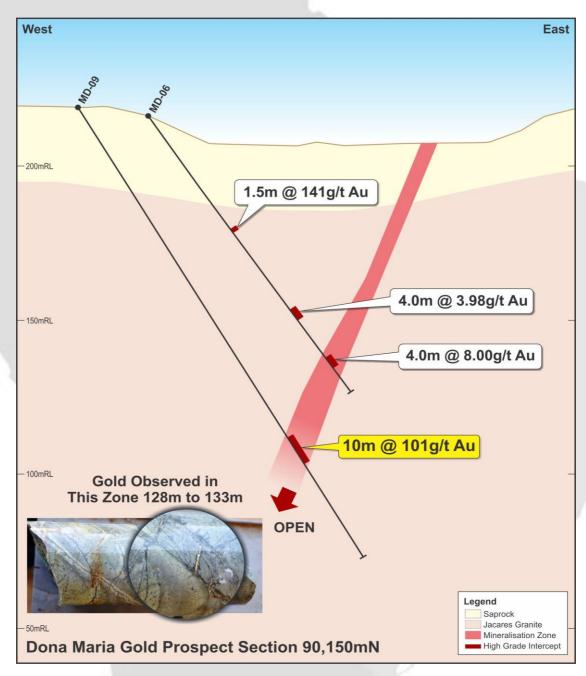


Figure 9: Dona Maria Prospect Cross Section 150

## Re-assaying of Dona Maria hole MD-09

As part of Crusader's ongoing quality control program, the entire intercept reported in the previous announcement (ASX 5 September 2016), **10m @ 101 g/t Au from 125m in MD-09** was re-assayed using the 'screen fire assay' technique. This technique is generally considered more accurate than traditional fire assay for coarse gold samples as the whole sample (sample rejects are stored in the lab for this reason and averaged ~ 3.2kg per sample) is crushed and pulverised in the process. The sample is then screened at 150 mesh (106 microns) and then each fraction is weighed before being fused and assayed. The total gold from each fraction is then weighed and the total content of the sample is weight averaged.



The table below includes results previously published fire assay results along with the new results from the screen fire assays. The differences in the results are generally minor and statistically the same.

| From                       | Width | Normal fire assay | Screen fire assay |
|----------------------------|-------|-------------------|-------------------|
|                            |       | g/t Au            | g/t Au            |
| 125                        | 1     | 65.36             | 61.07             |
| 126                        | 0.5   | 10.24             | 11.45             |
| 126.5                      | 0.5   | 0.64              | 0.64              |
| 127                        | 1     | 1.88              | 2.09              |
| 128                        | 1     | 0.02              | 0.03              |
| 129                        | 1     | 0.05              | 0.07              |
| 130                        | 1     | 0.15              | 0.16              |
| 131                        | 1     | 24.29             | 25.50             |
| 132                        | 1     | 104.9             | 94.41             |
| 133                        | 0.4   | 2,009             | 2306              |
| 133.4                      | 0.9   | 0.11              | 3.41              |
| 134.3                      | 0.7   | 7.21              | 0.53              |
| Weighted average intercept |       | 10m @ 101g/t Au   | 10m @ 112 g/t Au  |

Table 3: Dona Maria Hole MD-09 – Fire Assay Results and Screen Fire Assay Results



Figure 10: Gold collected from the Screen Fire Assay process is collected in a small crucible

As previously announced (ASX release 19 October 2015), metallurgical testwork at the Dona Maria prospect recovered +90% gold in standard leaching tests, with a significant portion (25-30%) reporting to a gravity concentrate. Preliminary flotation testwork at both Dona Maria and Querosene has returned comparable results to leaching, indicating this may also be a viable process route.



## **Development Update**

Crusader is currently completing a Scoping Study with a respected international engineering consultancy, Global Resource Engineering (GRE²), who are envisaging two mining operations with processing through a central CIL beneficiation plant to produce gold doré bars.

Both targets are open at depth and along strike and additional ounces are expected to be proven up with more drilling and as exploration work advances the geological understanding.

Both Querosene and Dona Maria are suitable for narrow vein mining (the current preferred option is the cut and fill method) and both deposits have similar metallurgical properties allowing them to be mined and treated concurrently.

The opportunity to commence operations via open pit mining on both Dona Maria and Querosene is under review.

Crusader and GRE are working together to complete trade-offs (such as contract vs owner operated, process route options etc.) during the Scoping Study process, which may have the result of further optimising the project economics.

## **Juruena Camp and Infrastructure**







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<sup>&</sup>lt;sup>2</sup> GRE Global Resource Engineering group are a multi-discipline mining and environmental consultancy, based in Denver USA, with extensive experience on developing gold projects in Brazil.



Table 4: Significant Intercepts – Juruena Gold Project – Dona Maria and Querosene

|           |               | F           | No. other co    |     |         |     | F           |        | 1.1              |        |      |  |
|-----------|---------------|-------------|-----------------|-----|---------|-----|-------------|--------|------------------|--------|------|--|
| Prospect  | Hole ID       | Easting (m) | Northing<br>(m) | RL  | Azimuth | Dip | From<br>(m) | To (m) | Interval<br>(m)* | Au g/t | Zone | Comments   |
|           | MD-03/2016    | 328,020     | 8,990,171       | 218 | 90      | -57 | 135.9       | 138    | 2.1              | 4.93   |      |  |
|           | MD-03B/2016   | 328,020     | 8,990,171       | 218 | 90      | -57 | 113         | 114    | 1                | 1.33   |      |  |
|           | 1010 030/2010 | 320,020     | 0,550,171       | 210 | 50      | 3,  | 136         | 136.64 | 0.64             | 2.81   |      |  |
|           | MD-05/2016    | 328,093     | 8,990,073       | 222 | 90      | -69 | 94.3        | 95     | 0.7              | 1.96   |      |  |
|           |               |             |                 |     |         |     |             |        |                  |        |      | inc. 101-102, 1m, 16.45 Au                               |
|           |               |             |                 |     |         |     | 101         | 105.8  | 4.8              | 11.89  |      | ppm/102-103, 1m, 10.71 Au                                |
|           | MD-10/2016    | 328,074     | 8,990,121       | 217 | 90      | -71 |             |        |                  |        |      | ppm/103-104, 1m, 28.26 Au ppm                            |
|           |               |             |                 |     |         |     | 22          | 23     | 1                | 1.1    |      |  |
| DONA      |               |             |                 |     |         |     | 37.14       | 37.5   | 0.36             | 1.9    |      |  |
| MARIA     |               |             |                 |     |         |     | 37          | 43     | 6                | 0.87   |      |  |
|           |               |             |                 |     |         |     | 54.15       | 55.15  | 1                | 3.02   |      |  |
|           | MD-11/2016    | 220 010     | 8 000 000       | 222 | 90      | -52 | 60          | 61     | 1                | 1.8    |      |  |
|           | IVID-11/2016  | 328,018     | 8,990,099       | 222 | 90      | -32 | 69          | 70     | 1                | 2.12   |      |  |
|           |               |             |                 |     |         |     | 77          | 78     | 1                | 1.74   |      |  |
|           |               |             |                 |     |         |     | 118.5       | 148.5  | 5                | 1.91   |      |  |
|           | MD-14/2016    | 328,049     | 8,990,250       | 217 | 90      | -62 | 84          | 88     | 4                | 27.1   |      | inc. 86-87, 1m, 70.78 Au ppm/87-<br>88, 1m, 29.48 Au ppm |
|           | MD-16/2016    | 328,028     | 8,990,221       | 219 | 90      | -51 | 107         | 108    | 1                | 1.22   |      | Hole results are incomplete                              |
| QUEROSENE | QD-44/2016    | 329,748     | 8,989,574       | 236 | 270     | -45 | 147         | 150.6  | 3.6**            | 554.26 |      | inc. 148-149, 1m, 1,992 Au ppm                           |

<sup>\*</sup>Intervals reported are downhole widths, which are approximately true widths. Significant intercepts are calculated using weighted averages of the intervals, a 1 g/t lower cut, no upper cut and up to 3m of consecutive internal dilution.

<sup>\*\*</sup>This is not true width as hole was drilled sub-parallel to the ore zone. Estimated true width is 1.55m



#### **About Crusader**

Crusader Resources Limited (ASX:CAS) is a minerals exploration and mining company listed on the Australian Securities Exchange. Its major focus is Brazil; a country Crusader believes is vastly underexplored and which offers high potential for the discovery of world class mineral deposits. Crusader has three key assets:

#### Juruena Gold

The Juruena Gold Project is located in the highly prospective Juruena-Alta Floresta Gold Belt, which stretches east-west for >400km and has historically produced more than 7Moz of gold from 40 known gold deposits.

The Juruena Project has been worked extensively by artisanal miners (garimpeiros) since the 1980s, producing ~500koz in that time. Historically there is a database of more than 30,000 meters of drilling and extensive geological data.

#### **Posse Iron Ore**

The Posse Iron Ore Mine is located 30km from Belo Horizonte, a city acknowledged as the mining capital of Brazil and the capital of Minas Gerais state. The project had an indicated and inferred Mineral Resource estimate of 36Mt @ 43.5% Fe when mining began in March 2013. Posse is currently selling DSO into the domestic market. With an experienced mining workforce amongst a population of over 2.5 million people, the infrastructure and access to the domestic steel market around the Posse Project is excellent.

#### **Borborema Gold**

The Borborema Gold Project is in the Seridó area of the Borborema province in north-eastern Brazil. It is 100% owned by Crusader and consists of three mining leases covering a total area of 29 km² including freehold title over the main prospect area.

The Borborema Gold Project benefits from a favourable taxation regime, existing on-site facilities and excellent infrastructure such as buildings, grid power, water, sealed roads and is close to major cities and regional centres. The project's Ore Reserve includes Proven and Probable Ore Reserves of 1.61Moz of mineable gold from 42.4Mt @ 1.18g/t (0.4 & 0.5g/t cut-offs for oxide & fresh). The measured, indicated and inferred Mineral Resource Estimate of 2.43Moz @ 1.10g/t gold, remains open in all directions.

#### **Competent Person Statement**

The information in this report that relates to Juruena Gold Project exploration results, Posse Iron Ore Project exploration results and Borborema Gold Project exploration results released after 1 December 2013, is based on information compiled or reviewed by Mr. Robert Smakman who is a full time employee of the company and is a Fellow of the Australasian Institute of Mining and Metallurgy. The information in this report that relates to Mineral Resources at the Juruena Gold Project is based on information compiled or reviewed by Mr. Lauritz Barnes and Mr. Aidan Platel who are independent consultants to the company and Members of the Australasian Institute of Mining and Metallurgy. Each of Mr. Smakman, Mr. Barnes and Mr. Platel have sufficient experience that is relevant to the type of mineralisation and type of deposits under consideration to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr. Smakman, Mr. Barnes and Mr. Platel consent to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to:

- a) Borborema Gold Project and Posse Iron Ore Project Exploration Results released prior to 1 December 2013 is based on information compiled or reviewed by Mr. Robert Smakman who is a full time employee of the company;
- b) Borborema Gold Mineral Resources is based on information compiled by Mr. Lauritz Barnes and Mr. Brett Gossage, independent consultants to the company;
- c) Borborema Gold Ore Reserves is based on information compiled by Mr. Linton Kirk, independent consultant to the company;
- d) Posse Fe Mineral Resources is based on and accurately reflects, information compiled by Mr. Bernardo Viana who was a full time employee of Coffey Mining Pty Ltd,

and who are all Members of the Australasian Institute of Mining and Metallurgy (Rob Smakman and Linton Kirk being Fellows), and who all have sufficient experience that is relevant to the type of mineralisation and type of deposit under consideration, and to the activity which they are undertaking to qualify as a Competent Person as defined in the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Each of Mr. Smakman, Mr. Barnes, Mr. Kirk, Mr. Viana, and Mr. Brett Gossage consent to the inclusion in the report of the matters based on their information in the form and context in which it appears. The information was prepared and disclosed under the JORC Code 2004. It has not been updated since to comply with JORC Code 2012 on the basis that the information has not materially changed since it was last reported.



# Juruena Gold Project JORC Code, 2012 Edition Section 1. Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections)

| Criteria            | JORC Code Explanation  | Commentary  |
|---------------------|--|---|
| Sampling Techniques | <ul> <li>Nature and quality of sampling (e.g. cut channels,<br/>random chips, or specific specialised industry standard<br/>measurement tools appropriate to the minerals under<br/>investigation, such as downhole gamma sondes, or<br/>handheld XRF instruments, etc.). These examples should<br/>not be taken as limiting the broad meaning of sampling.</li> </ul>   | Diamond drill samples: Diamond drilling of gold prospects using an industry standard wireline drill rig. Core size was typically HQ, although some areas were drilled at NQ size.   |
|                     | Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.  | <ul> <li>Diamond drill sample: diamond core was split in half lengthways and sampled typically<br/>at 1m intervals, although sampling was to geological boundaries and hence sample<br/>length ranged from 0.3 - 1.4m. Samples were placed in high density plastic sample<br/>bags and immediately sealed shut with cable ties. Half core was retained on site in<br/>Juruena for future reference.</li> </ul>  |
|                     | Aspects of the determination of mineralisation that are     Material to the Public Report.   | <ul> <li>Sample mass varied according to the sample length, typically mass varied between 1-6kg. Samples were sent for analysis at an independent lab and gold was determined via 50g fire assay. All efforts were made to ensure sample contamination was minimised and that all samples could be deemed representative of the interval that they originated from. Based on statistical analysis of field duplicates, there is no evidence to suggest samples are not representative.</li> </ul> |
|                     | 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. | <ul> <li>Crusader's current procedures are in line with industry standards, however samples in excess of 100g/t gold were re-assayed using a different lower detection limit (10ppb vs 5ppb).</li> <li>Screen fire assays were performed on samples previously reported and the samples were sourced directly from the laboratory. Samples were the coarse rejects of the original samples.</li> </ul>  |



| Criteria              | JORC Code Explanation   | Commentary   |
|-----------------------|---|--|
| 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.). | <ul> <li>Diamond drill-holes of HQ and NQ diameter. Down-hole surveys were routinely<br/>completed for the diamond drill-holes, with approximately half of the drill core<br/>oriented using a modern core orienting apparatus. Drilling was standard tube (not<br/>triple tube)</li> </ul>  |
|                       |   | <ul> <li>Drill-hole inclinations ranged from -50 degrees to -80 degrees and oriented on various<br/>azimuths depending on the geological formation. Dip and Azimuth information is in<br/>the significant intercepts table</li> </ul>  |
| Drill sample recovery | Method of recording and assessing core and chip sample recoveries and results assessed.   | <ul> <li>Diamond core recovery by measuring the length of core recovered compared to the<br/>length drill run. Drill recoveries were considered as good with over 90% of the drill<br/>runs &gt; 90% recovery.</li> </ul>  |
|                       | Measures taken to maximise sample recovery and ensure representative nature of the samples.   | <ul> <li>Care when drilling broken ground, dispensing with the core into the trays and working<br/>closely with the contractors to ensure sample recoveries remained consistent.</li> </ul>  |
|                       | Whether a relationship exists between sample recovery<br>and grade and whether sample bias may have occurred<br>due to preferential loss/gain of fine/coarse material.  | <ul> <li>Gold mineralisation does not apparently correlate to zones of low sample recovery;<br/>sample bias due to poor sample recovery is therefore not believed to be an issue.</li> </ul>   |
| 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.   | <ul> <li>All drill-holes have been geologically and geotechnically logged in detail, and the data<br/>stored in a digital database. Information collected in logging is considered appropriate<br/>for future studies.</li> </ul>  |
|                       | Whether logging is qualitative or quantitative in nature.  Core (or costean, channel, etc) photography.   | <ul> <li>Logging of diamond drill-core is a combination of qualitative and quantitative and<br/>recorded lithology, mineralogy, mineralisation, structure, weathering and colour. Core<br/>photographs also exist for all drill-holes. Interesting sections during the logging were<br/>often photographed and commented on in summary logs made available to the<br/>geological management team.</li> </ul> |
|                       | The total length and percentage of the relevant intersections logged.   | Logged data exists for 100% of the holes drilled.  |



| Criteria                                       | JORC Code Explanation   | Commentary   |
|--|---|--|
| Sub-sampling techniques and sample preparation | <ul> <li>If core, whether cut or sawn and whether quarter, half<br/>or all core taken. If non-core, whether riffled, tube<br/>sampled, rotary split, etc. and whether sampled wet or<br/>dry.</li> </ul>  | Diamond drill-core was cut in half lengthways on site using a diamond saw; for duplicate samples quarter-core was used. Sampling was performed on dry core, after washing and cutting.   |
|  | <ul> <li>For all sample types, the nature, quality and<br/>appropriateness of the sample preparation technique.</li> </ul>  | <ul> <li>Sample preparation was undertaken by SGS-Geosol Laboratories ("SGS") in Brazil. SGS used industry standard methods (dry – crush – split – pulverise) which are considered appropriate for the style of mineralisation intersected in the drill-holes. The sample preparation method used by SGS-Geosol laboratories is presented in the following section.</li> </ul>   |
|  | <ul> <li>Quality control procedures adopted for all sub-sampling<br/>stages to maximise representivity of samples.</li> </ul>   | <ul> <li>Standards (certified reference material), blanks and duplicates were inserted into the<br/>sample stream at the rate of 1:25, 1:25 and 1:40 samples, respectively for the sample<br/>batches of generally 50 samples.</li> </ul>  |
|  | <ul> <li>Measures taken to ensure that the sampling is<br/>representative of the in situ material collected, including<br/>for instance results for field duplicate/second- half<br/>sampling.</li> </ul> | The same side from each sample cut were routinely sampled. Field duplicates were completed using quarter core.   |
|  | <ul> <li>Whether sample sizes are appropriate to the grain size<br/>of the material being sampled.</li> </ul>   | <ul> <li>Sample lengths varied as determined by geological factors- this is considered appropriate for the grain size of the mineralisation. The coarse grained nature of some of the previous intercepts were reason to check results using screen fire analysis.</li> </ul>  |
| Quality of assay data and laboratory tests     | <ul> <li>The nature, quality and appropriateness of the assaying<br/>and laboratory procedures used and whether the<br/>technique is considered partial or total.</li> </ul>                              | SGS were used by Crusader for all analyses.  |
|  |   | <ul> <li>The samples were assayed for Au by Fire Assay of 50g aliquots followed by Atomic Absorption Spectroscopy (AAS), a technique designed to report total gold. This technique has a lower detection limit of 5ppb. Samples reporting above 100,000ppb (or 100ppm) were re-assayed from sample pulps using a Fire Assay 50 g charge and AAS finish with a 10ppb lower detection limit.</li> <li>Screen fire assays were performed as a check on an interval covering a high grade (+2,000ppm sample) as coarse gold is better detected using this method. The sample rejects are milled to and then screened to 150 mesh (106um). These are then fused separately and total gold is weighed from each fraction. The weight average of these fractions are then calculated to report total gold.</li> </ul> |



| Criteria   | JORC Code Explanation  | Commentary   |
|--|--|--|
| Quality of assay data and laboratory tests (continued) | 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.            | • NA   |
|  | <ul> <li>Nature of quality control procedures adopted (eg<br/>standards, blanks, duplicates, external laboratory<br/>checks) and whether acceptable levels of accuracy (ie<br/>lack of bias) and precision have been established.</li> </ul> | <ul> <li>The coarse and pulp sample rejects from the preparation and analytical laboratories were retained and stored at the laboratory, allowing for re-assaying in the future if required. All pulps and coarse rejects will be returned to Crusader and stored indefinitely.</li> </ul>   |
|  |  | <ul> <li>Standard Quality Control procedures were adopted by Crusader including field<br/>duplicates (1 every 40 samples), blanks (1 every 25 samples) and standards (1 every 25<br/>samples). Field duplicates are defined as quarter core samples for the diamond core.</li> </ul>   |
|  |  | <ul> <li>Routine analysis of the results of the Blanks, Standards and Duplicates are carried out<br/>and any variation away from pre-determined limits are discussed with the lab. Any<br/>issues not resolved to Crusaders satisfaction are re-analysed on a batch basis. No<br/>external check laboratory assays have yet been completed on these samples.</li> </ul>  |
| Verification of sampling and assaying                  | The verification of significant intersections by either independent or alternative company personnel.  | Significant intercepts were generated by Crusader personnel and verified by Rob     Smakman, the qualified person for this release.  |
|  | The use of twinned holes.  | No holes were drilled in this campaign   |
|  | Documentation of primary data, data entry procedures,<br>data verification, data storage (physical and electronic)<br>protocols.   | All drill-hole data are recorded in Microsoft Excel spreadsheets and then stored in a digital database (Microsoft Access). Only Crusader's database administrator has the capacity to enter or change data. Standardised geological codes and checks have been employed to ensure standardised geological logging and required observations performed. The database is stored on a central server which is backed up weekly. Work procedures exist for all actions concerning data management. |
|  | Discuss any adjustment to assay data.  | No adjustments or calibrations were made to any assay data.  |



| Criteria  | JORC Code Explanation  | Commentary   |
|---|--|--|
| Location of data points                                 | <ul> <li>Accuracy and quality of surveys used to locate drill<br/>holes (collar and downhole surveys), trenches, mine<br/>workings and other locations used in Mineral Resource<br/>estimation.</li> </ul>                   | <ul> <li>Collar surveys have been performed using handheld GPS with accuracy to ~10m. Once all drilling is complete a licensed surveyor will be used with DGPS to re-survey the hole collars to acceptable accuracy. All drill-holes have been checked spatially in 3D and all obvious errors addressed.</li> </ul>  |
|   | Specification of the grid system used.   | <ul> <li>The grid system used for all data types, was in a UTM projection, Zone 21 Southern<br/>Hemisphere and datum South American 1969. No local grids are used.</li> </ul>  |
|   | Quality and adequacy of topographic control.   | <ul> <li>Topographic control in the area is basic. The topographic surface was sourced from<br/>digital satellite imagery (Aster). Further surveying work is planned prior to future<br/>resource estimation work.</li> </ul>  |
| Data spacing and distributio                            | Data spacing for reporting of Exploration Results.   | The drilling carried out is on a variable grid, depending on the targeting stage of the drilling. Grid spacing varies from 25m x 25m to approximately 50m x 50m grid, both horizontally and vertically (in the plane of the mineralised structure, which is steeply dipping to sub-vertical, depending on the prospect).   |
|   | 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. | Sample spacing is considered sufficient for future resource estimation at Dona Maria and Querosene.  |
|   | Whether sample compositing has been applied.   | No sample compositing has been applied   |
| Orientation of data in relation to geological structure | <ul> <li>Whether the orientation of sampling achieves unbiased<br/>sampling of possible structures and the extent to which<br/>this is known, considering the deposit type.</li> </ul>                                       | <ul> <li>Mineralised structures were targeted and planned to be intersected so that minimal<br/>sample bias would occur. All structures were planned to be intersected as<br/>perpendicular as possible and to pass through the entire structure. Mineralised<br/>structures had relatively sharp contacts and samples respected these boundaries as far<br/>as practical.</li> </ul>  |
|   | 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.                   | <ul> <li>Where ever possible all drill holes were oriented to intersect the intended structure perpendicular to the strike and approximately 40 degrees to the dip of the mineralised zone. The mineralised structures are visible from within the artisanal miners' workings which allowed drill holes to be oriented to minimise introducing a sample bias. Hole QD-44 was drilled sub-parallel to the mineralised structure and is therefore not considered to be true width. True width is estimated at 1.55m for the reported intercept.</li> </ul> |



| Criteria          | JORC Code Explanation   |   | Commentary  |
|-------------------|---|---|---|
| Sample security   | The measures taken to ensure sample security.   | • | No sample security issues were raised or noted by Crusader during the transportation of the samples from the project site to the preparatory laboratory. All samples were sealed with double cable ties in strong high density plastic bags, two sample ID tags were placed in different locations inside the sample bags, all sample bags were clearly marked on the outside with permanent marker pen. All sample bags were checked off the dispatch list before being placed into a heavy duty and highly durable sacks for transportation to the laboratory. A packing list (confirming the number of sacks for transport) was received from the freight company transporting the sample bags to their destination. Upon receipt at the laboratory, samples were checked in and the list of received samples immediately sent back to the company's database administrator as a security check that all samples were received and all were fully intact and not opened. |
| Audits or reviews | <ul> <li>The results of any audits or reviews of sampling techniques and<br/>data.</li> </ul> | • | No external audits were commissioned by Crusader. The sampling techniques and data were reviewed by the Competent Persons as part of previous Mineral Resource estimation processes and were found to be of industry standard. Crusader routinely check the veracity of the results using standard QAQC checks.   |

# **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. | Results reported are from two exploration tenements, 866.080/2009 and 866.085/2009, both 100% owned by a wholly owned subsidiary of Crusader, Lago Dourado Mineração Ltda. There is an existing 1% net smelter return payable to a previous owner. There are two garimpo mining licences within the tenement package, allowing the garimpeiros to legally work under certain restrictions. Neither tenement is not subject to any native title interests, no known historical sites, wilderness or national park, but is located within the border zone around a national park. Within this border zone further conditions may be required to gain an operating licence. Cattle grazing and legal timber felling are the two primary industries and land uses for the area. |



## Section 2 - continued

| Criteria  | JORC Code Explanation  | Commentary   |
|---|--|--|
| Mineral tenement and land tenure status (continued) | 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 tenement is in good standing and there are no material impediments to operating in the area.   |
| Exploration done by other parties                   | Acknowledgment and appraisal of exploration by other parties.  | Garimpeiros first discovered the mineralised areas around Juruena in the 1970's.     Garimpeiros have been active in the region since, recovering gold from alluvial, colluvial and some oxidised rock. The area has been explored on and off from the mid 1990's through to the present, with the majority of drilling taking place over the last four to five years. Madison Minerals Ltd first explored and carried out some drilling evaluation of the Juruena core area in 1995/1996. Crusader considers Madison's information relevant from an exploration perspective and will use these results to guide future exploration work. Lago Dourado Minerals drill tested several anomalies and zones from 2010 to 2013. All work undertaken by Lago Dourado Minerals was performed to a JORC compliant standard and the data generated is considered sufficient to be used for a JORC compliant mineral resource estimate, should further results confirm continuity, grade and geological interpretation in the future. |
| Geology   | Deposit type, geological setting and style of mineralisation.  | The Juruena mineralisation is considered to have resulted from magmatic activity (intrusions and fluids) which could be sourced from a gold rich source rock and concentrated along structural zones. The mineralisation is hosted by Paleoproterozoic volcanic and granitoid rocks of varying composition. The host rocks are found within the Juruena-Rondonia block of the Amazon Craton.   |
| Drill hole Information                              | <ul> <li>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:</li> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level - elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> | All information is included in the Table of Significant intercepts where all drill holes are recorded.   |



# Section 2 - continued

| Criteria   | JORC Code Explanation  | Commentary  |
|--|--|---|
| Drill hole Information<br>(continued)                                  | 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 information is included.  |
| 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.   | Significant intercepts were calculated using a 1ppm lower cut-off, no upper cut, and up to 2m of consecutive dilution. Sample intervals which were not equal to 1m were weight averaged.  |
|  | <ul> <li>Where aggregate intercepts incorporate short lengths of<br/>high grade results and longer lengths of low grade<br/>results, the procedure used for such aggregation should<br/>be stated and some typical examples of such<br/>aggregations should be shown in detail.</li> </ul> | <ul> <li>Weighted averages were applied when considering intervals with different intercept<br/>lengths- regardless of the grades intercepted. No upper or lower cut were applied</li> </ul>  |
|  | <ul> <li>The assumptions used for any reporting of metal<br/>equivalent values should be clearly stated.</li> </ul>  | No metal equivalent values considered.  |
| Relationship between<br>Mineralisation widths and<br>intercept lengths | These relationships are particularly important in the reporting of Exploration Results.  | <ul> <li>As far as practically possible and with the geological interpretation available, the drill<br/>targets were tested with the aim of intersecting the interpreted mineralised structure<br/>as perpendicular as possible to the strike. All positive holes to date intersected the<br/>mineralisation at approximately 40 degrees to the dip, which will cause a slight<br/>overstatement of the actual intercept width.</li> <li>All results are reported as downhole widths. Hole QD-44 was drilled sub-parallel to<br/>the interpreted mineralised zone and is therefore not true width.</li> </ul> |
|  | If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.  | <ul> <li>Results are reported as downhole widths, in most cases, true width is approximately<br/>80% of down-hole length.</li> </ul>  |
|  | <ul> <li>If it is not known and only the downhole lengths are<br/>reported, there should be a clear statement to this effect<br/>(e.g. 'downhole length, true width not known').</li> </ul>  | • noted in table  |



# Section 2 - continued

| Criteria                           | JORC Code Explanation   | Commentary   |
|------------------------------------|---|--|
| Diagrams                           | <ul> <li>Appropriate maps and sections (with scales) and<br/>tabulations of intercepts should be included for any<br/>significant discovery being reported. These should<br/>include, but not be limited to a plan view of drill hole<br/>collar locations and appropriate sectional views.</li> </ul>  | See included Figure(s)   |
| 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.   | Results from all holes in the current program for which assays have been received are reported. Holes without significant intercepts are also included in the report tables and recorded as NSR.   |
| 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. | <ul> <li>Historical exploration data has been presented previously and includes soil sampling, auger drilling, geophysical surveys, geological mapping and interpretation. Release includes geological photographs of drillcore where gold is visible and identifiable. Metallurgical testing is preliminary at this stage, however the recoveries have been ~90% from both Querosene and Dona Maria.</li> </ul> |
| Further work                       | The nature and scale of planned further work (eg tests<br>for lateral extensions or depth extensions or large-scale<br>step-out drilling).  | <ul> <li>Future exploration will continue to target the already identified mineralised areas.         Additional drilling has been completed and results are expected to be reported when they are received and interpreted. Subject to the results of the drilling, the resource estimates will be updated and subject those, an economic assessment of the projects will be performed.     </li> </ul>         |
|                                    | <ul> <li>Diagrams clearly highlighting the areas of possible<br/>extensions, including the main geological<br/>interpretations and future drilling areas, provided this<br/>information is not commercially sensitive.</li> </ul>   | See attached figures   |