



**DECEMBER 2010 QUARTERLY REPORT HIGHLIGHTS**

**DEGRUSSA COPPER-GOLD PROJECT, Western Australia**

**PROJECT DEVELOPMENT**

- **Pre-Feasibility Study (PFS)** essentially complete with the maiden **Ore Reserve** estimate for the DeGrussa Project expected to be reported in February 2011.
- **Definitive Feasibility Study (DFS)** on track for completion in Q2 of CY2011, paving the way for commencement of construction, underground development and pre-stripping of the open cut by mid-year.
- **Open pit and underground mine design** completed with tenders issued for the open pit and underground mining contracts, **plant layout finalised** and overall **plant design and flowsheets** nearing completion.
- **Project Management and Design of Early Works Contract** awarded to WA-based engineering company Mintrex.
- Metallurgical test work is underway on **treatment options for the oxide copper**, which is likely to be extracted by vat or heap leach methods in the early stages of the DeGrussa operation.
- **Mining Lease M52/1046** for DeGrussa Project formally granted by the WA Department of Mines and Petroleum (DMP) following signing of **Land Access Agreements** with the Yugunga Nya and Gingirana Native Title claimant groups.

**RESOURCES AND EXPLORATION**

- Updated Measured and Indicated Oxide Resource of **3.6Mt @ 1.2% copper and 0.5g/t gold** estimated for the near-surface oxide copper mineralisation within the DeGrussa open pit:
  - **containing 44,000t of copper and 57,000oz of gold**
  - **more than five-fold increase in contained copper over the previous oxide copper resource estimate**
- Oxide copper resource and a new lateritic gold resource increases overall metal inventory at DeGrussa to **643,000t of copper** and **725,000oz** of gold
- **Major new deep diamond drilling program commences** targeting potential down-dip extensions of the DeGrussa / Conductor 1 mineralisation in faulted offset positions beneath Conductor 4 and Conductor 5.
- **First 1,300-1,400m hole underway** targeting a position below the Conductor 4 deposit. 6-8 deep holes planned as part of the current program.

**CORPORATE**

- **\$103M capital raising** completed to accelerate development at DeGrussa, increasing the Company's total end Quarter cash reserves to \$124 million.
- Further key project development and operational appointments finalised including **Project Manager - Construction, Commercial Manager – Legal Counsel, General Manager – Operations, Commercial Manager** and **Underground Manager**.

**Sandfire Resources NL**

ABN 55 105 154 185

**ASX Code:** SFR

**Web Page:** [www.sandfire.com.au](http://www.sandfire.com.au)

**Issued Capital:**

Ordinary Shares	148.167M
Options	8.9M

**Major Shareholders:**

Oz Minerals	18.9%
POSCO	16.0%

**Directors:**

**Derek La Ferla**  
Non-Executive Chairman

**Karl M Simich**  
Managing Director and CEO

**W. John Evans**  
Executive Technical Director

**Jonghun Jong**  
Non-Executive Director

**Robert Scott**  
Independent Non-Executive Director

**Management:**

**Matthew Fitzgerald**  
CFO and Company Secretary

**Martin Reed**  
Project Manager



## 1.0 DEGRUSSA COPPER-GOLD PROJECT, Western Australia (100%)

The DeGrussa Copper-Gold Project is located within Sandfire's 100%-owned Doolgunna Project, a 400 square kilometre tenement package in Western Australia's Bryah Basin (see Figure 1). The Project is located within an established mining district, approximately 900km north-east of Perth and 150km north of the regional mining hub of Meekatharra. The project area has excellent infrastructure with the Great Northern Highway transecting the Doolgunna tenement package and the Goldfields Gas Transmission Pipeline located nearby.

Sandfire has a dominant position in the prospective north-eastern part of the Bryah Basin, which is considered to be an emerging VMS copper-gold province. Since the discovery of the DeGrussa deposit in April 2009, Sandfire has established a substantial JORC compliant copper sulphide resource inventory for the DeGrussa Project comprising Indicated and Inferred Resources of **10.67 million tonnes grading 5.6% copper, 1.9g/t gold and 15g/t silver**. Additional near-surface oxide copper resources have also been delineated, increasing the overall DeGrussa metal inventory to **643,000 tonnes of copper and 725,000 ounces of gold**.

The Company is completing a Definitive Feasibility Study (DFS) on the development of a 1.5Mtpa mining operation at DeGrussa and has aggressive exploration programs underway targeting copper-gold deposits, both in the near-mine environment and across its tenement holdings in the region.

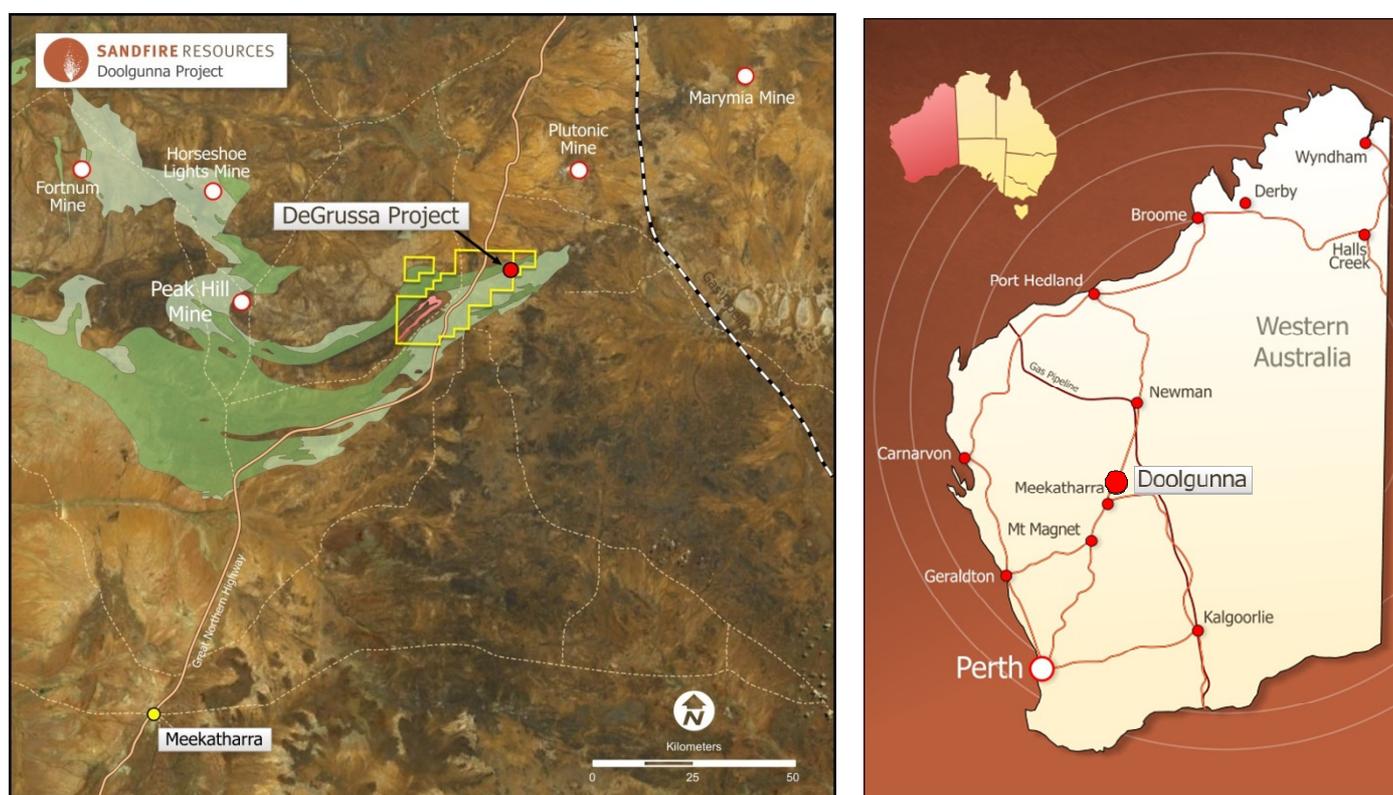


Figure 1 – DeGrussa Copper-Gold Project Location, Western Australia

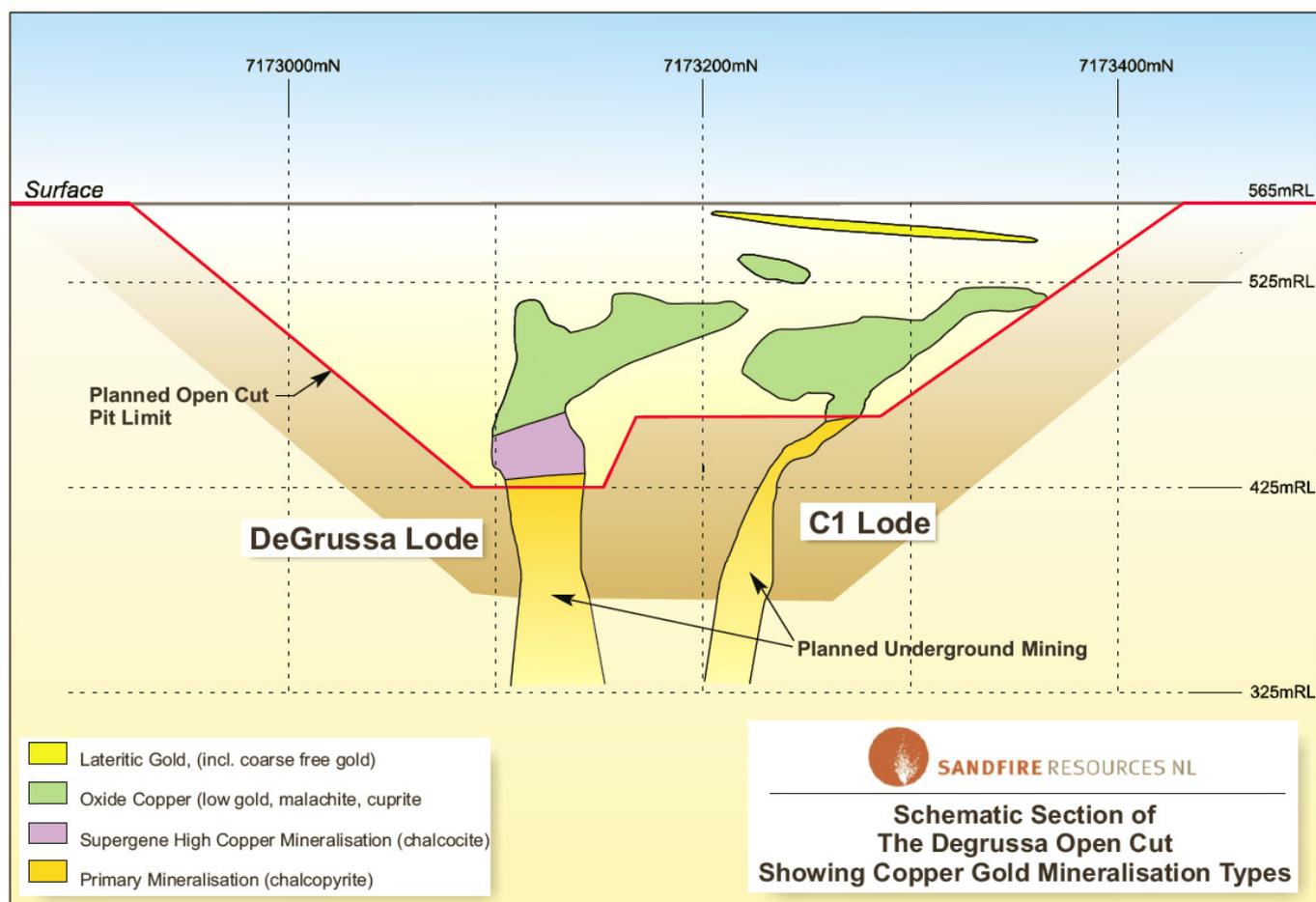
### 1.1 Increase in Copper Oxide Resource

Following the announcement of the Phase III resource (**10.67Mt grading 5.6% Cu, 1.9g/t Au and 15g/t Ag**) in September 2010, Sandfire completed an in-fill Reverse Circulation drilling program on a 20m by 20m spacing during the Quarter to more accurately quantify the oxide copper mineralisation within the proposed open pit, including a “dispersion” plume away from the top of the primary sulphide lodes (see Figure 2 below).

The updated oxide copper resource, which was prepared by Perth-based independent consultants McDonald Speijers based on a 0.25% Cu cut-off grade, now comprises a Measured and Indicated Resource of **3.6 million tonnes grading 1.2% copper and 0.5g/t gold** which is estimated to contain **44,000t of copper metal and 57,000oz of gold**.

This represents a substantial increase compared with the DeGrussa oxide copper resource reported as part of the Phase III resource announcement of 100,000 tonnes grading 8.8g/t copper, 2.2g/t gold and 11g/t silver containing an estimated 8,000 tonnes of contained copper, 7,000 ounces of gold and 33,000 ounces of silver (see ASX Announcement of 3 September 2010 – “DeGrussa Resource Jumps to 600,000t of Copper”).

Metallurgical test work including bottle roll and column leach test work is already well advanced to investigate potential treatment options for this oxide material, which is likely to be processed using heap leach or vat leach methods. Further information will be provided once results are received from this testwork.



**Figure 2 – Schematic Section of the DeGrussa Open Cut showing the lateritic gold, oxide copper and chalcocite zones overlying the main Conductor 1 and DeGrussa sulphide lodes**

The initial open pit (see Figure 2) is planned to extend to a depth of approximately 140m below surface and will extract the oxide copper material, the previously quantified direct shipping chalcocite material (151,000 tonnes @ 25.6% Cu, 2.6g/t Au and 21g/t) as well as approximately 200,000 tonnes of massive sulphide copper mineralisation and a further 100,000 tonnes of chalcocitic mineralisation not direct shipping material to be stockpiled as early mill feed for the concentrator.

In addition, McDonald Speijers has estimated a Measured Resource of **140,000 tonnes grading 1.5g/t gold** containing 7,000 ounces of gold in a zone of near-surface auriferous laterite located above the oxide copper and primary sulphide resources (shown in yellow on Figure 2).

With the exception of these two components, a review of the overall DeGrussa JORC Mineral Resource undertaken by McDonald Speijers has not resulted in any other material changes from the previously reported Phase III Measured, Indicated and Inferred Resource as reported on 3 September 2010 of **10.67Mt grading 5.6% copper, 1.9g/t gold and 15g/t silver for 600,000 tonnes of contained copper, 660,000 ounces of gold and 5.06 million ounces of silver.**

The increase in the oxide copper resource has resulted in a net increase in the overall metal inventory at DeGrussa to **643,000 tonnes of copper and 725,000 ounces of gold.** The oxide copper material and lateritic gold will be recovered in the first two years of the operation and represents a net addition to the DeGrussa resource inventory.

The updated oxide copper resource represents the third significant addition to the JORC Mineral Resource inventory for the DeGrussa Project since the maiden JORC Resource (Phase 1) was announced in February 2009.

The Phase III JORC Mineral Resource for the DeGrussa Project sulphide and oxide resources are summarised in Table 1 below:

**Table 1 – DeGrussa Copper-Gold Project: Combined Table of Phase III JORC Mineral Resource and Oxide Resources**

Zone	Resource Category	Tonnes (Mt)	Copper (%)	Gold (g/t)	Contained Copper (tonnes)	Contained Gold (ounces)
Au Laterite	Measured	0.14	-	1.6	-	7,000
Oxides	Measured	2.18	1.1	0.6	24,000	40,000
	Indicated	1.42	1.4	0.4	20,000	17,000
	Inferred	0.19	4.2	1.3	8,000	8,000
Supergene Chalcocite	Indicated	0.25	17.6	2.6	43,000	20,000
Primary Massive Sulphides	Indicated	7.91	5.4	1.8	427,000	453,000
	Inferred	2.42	5.0	2.3	121,000	180,000
	<b>Total</b>	<b>14.51</b>	<b>4.4</b>	<b>1.6</b>	<b>643,000</b>	<b>725,000</b>

Note: Values have been rounded and differences may occur.

## 1.2 Grant of Mining Lease

On 9 December 2010, Sandfire announced that the Mining Lease for the DeGrussa Project had been formally granted by the Western Australian Department of Mines & Petroleum (DMP), paving the way for development and mining to commence. Miscellaneous Licences L52/120 (Water Exploration) and L52/122 (Access Road) were also granted, while additional Miscellaneous Licence applications for the borefield and airstrip were submitted in early January 2011.

The grant of Mining Lease ML 52/1046 – which covers all four high-grade VMS copper deposits discovered to date at DeGrussa together with the proposed 1.5Mtpa treatment facility, accommodation village and other supporting infrastructure – represents a major milestone for the Company and a key step towards production.

The grant of the Mining Lease followed the signing of Land Access Agreements with both the Yugunga Nya Native Title Claimant Group and the Gingirana Native Title claimant group during the Quarter.

## 1.3 Mine development

During the Quarter, Sandfire awarded a Project Management and Design of Early Works Contract for the DeGrussa Project to Mintrex, a Western Australia based engineering company.

These early works include:

- Infrastructure for construction
- Access road
- Plant site bulk earthworks
- Concrete supply
- Preparation of tenders for construction of the plant and airstrip
- Submission of tenders for long lead items to key suppliers

These activities will ensure that, at the conclusion of the Definitive Feasibility Study for the DeGrussa Project in the second quarter of 2011, project development will be in a position to proceed to full construction without delay.

A revised open pit design was completed in December based on the increased oxide copper and gold mineral resource estimate. The open pit mining tenders has been received from experienced open pit mining contractors.

In addition, four experienced underground mining contractors have been selected to tender for the first three years of the underground mine, with tenders to be received in late January 2011.

Detailed drawings for the construction camp layout and services have been completed and a building permit has been received from the Shire of Meekatharra. Tender packs for site works, electrical and hydraulic services were issued during December. Tenders for a 400-person accommodation village, airstrip, access roads and process plant facilities have been prepared and issued.

Drilling to establish a groundwater supply within the Company's tenements continued during the Quarter, with four additional bore production sites identified. The Company is also evaluating the neighbouring catchment as a potential contingency water supply area.

Metallurgical testwork was largely completed by December 2010, representing the culmination of a significant amount of testing that validates the process design criteria. Locked cycle testing, regrind testing and bulk flotation testing were completed which resulted in the production of 27.5% copper concentrates at a projected 91% copper recovery.

The Pre-Feasibility Study (PFS) of the DeGrussa Project based on a 1.5Mtpa underground mine and copper concentrate processing plant with associated infrastructure has essentially been completed by Mintrex, with significant contributions by a number of independent consultants. A final review of the PFS is underway and the results of the study will be reported during Q1 2011.

The PFS is transitioning seamlessly into a Definitive Feasibility Study (DFS), key elements of which are already well advanced. Following the scheduled completion of the DFS in Q2 2011, Sandfire will commence mining and construction at DeGrussa, and remains on track to achieve its key targets of:

- *completing the Definitive Feasibility Study on the DeGrussa Project in Q2 of CY2011 following delivery of a Pre-Feasibility Study during Q1;*
- *commencing underground mining in Q2 of 2011 with excavation of a box-cut and development of a decline portal;*
- *commencing pre-strip of the DeGrussa open cut, to extract the high-grade copper and gold resources which lie directly above the primary underground orebodies in Q2 of 2011;*
- *commencing bulk earthworks and design in Q2 of 2011 to allow construction of the 1.5Mtpa plant to begin in Q3 of 2011, subject to finance; and*
- *commencing production of first Direct Shipping Material ("DSO") from the open pit in Q4 of 2011.*

As reported in the September 2010 Quarterly Report, based on the Phase III resource upgrade and expected high Resource/Reserve conversion rate, Sandfire has increased the plant capacity from 1.0Mtpa to 1.5Mtpa to increase annual copper and gold production and further enhance the project economics.

#### **1.4 Recruitment of Senior Managers**

During the Quarter Sandfire appointed a number of senior managers to oversee the transition into production at DeGrussa. Key appointments included further key project development and operational appointments finalised including Project Manager - Construction, Commercial Manager – Legal Counsel, General Manager – Operations, Commercial Manager, Underground Manager and Quarry Manager.

#### **1.5 Exploration and Resource Definition Drilling**

Drilling completed during the Quarter was focused on further testing the oxide copper zone of the open pit, plus testing the newly-identified thickening of massive sulphide mineralisation in the upper part of Conductor 1. Drilling was also conducted to test an Induced Polarisation (IP) anomaly, Target 1, to the west of Conductor 1, as well as a group of targets in the eastern tenement (E52/1698) identified during the recently-completed high power fixed loop TEM survey.

In addition, the Company undertook a programme of sterilisation drilling across the areas of planned mine infrastructure and the site of the new camp.

Assay results from these programmes are awaited and will be announced in due course when they are available.

Subsequent to the end of the Quarter, Sandfire commenced a major new program of deep diamond drilling at the DeGrussa Project comprising 6-8 deep holes targeting potential down-dip extensions of the known high-grade mineralisation in fault offset positions beneath the Conductor 4 and Conductor 5 deposits. This is based on a new interpretation of the potential distribution of mineralisation within the DeGrussa VMS system based around the major Shiraz and Merlot fault structures.

The first hole, a recently commenced directional diamond drill hole sited on an area where part of the mine infrastructure will be located, will target a position directly beneath Conductor 4. This hole will be drilled to a down-hole depth of 1,300-1,400m and will take approximately 3-4 weeks to complete. Additional holes will be drilled targeting positions beneath Conductor 4 and Conductor 5 within these newly identified fault blocks. Down-hole EM (DHEM) surveys will be undertaken to target accumulations of massive sulphide mineralisation at depth.

Three diamond drill rigs are currently on site, with one rig assigned to the deep drilling program and the other two to clearing out casing and cementing previous diamond drill holes as part of the preparations to commence mine development activities. A RAB/Aircore rig and a reverse circulation drilling rig are conducting sterilisation drilling. Additional drilling capacity will be brought on stream as exploration activities ramp up during the current Quarter.

## 1.6 Doolgunna Project – Iron Ore Exploration

*Sandfire has located and mapped seven separate zones of iron mineralisation within the Robinson Range at Doolgunna. The total area of low phosphorus, hematite-goethite mineralisation is approximately 200,000 square metres contained in two moderate sized deposits and five small deposits. There are several areas where the mineralisation extends under cover. The Doolgunna Project straddles the Great Northern Highway and is ideally located for a small mining operation, trucking to either railheads or export ports.*

In light of the Company's focus on the DeGrussa Project, no significant activity was carried out on the Doolgunna iron ore prospects during the Quarter.

## 2. BORROLOOLA PROJECT, Northern Territory (100%)

*The Borroloola Project comprises a total area of approximately 10,887 square kilometres, following a compulsory partial surrender, of granted tenements and tenements under application in the Northern Territory. The Project encloses a significant proportion of the Batten Fault Zone, host to the giant McArthur River lead and zinc mine deposit. This deposit is the second largest SEDEX base metal deposit in the world. The Project also covers near-coastal areas of Cretaceous rocks considered to be highly prospective for sedimentary manganese mineralisation, similar to the world-class Groote Eylandt manganese deposits north of the Borroloola Project in the Gulf of Carpentaria.*

### 2.1 Base Metal Exploration

Four prospects were targeted in the 2010 field season across the Northern Territory tenements. These were Tawallah 1 and 2, prospective for base metal SEDEX style deposits; Yiyintyi for unconformity related Uranium mineralisation and the Emu Fault prospect – a series of deep stratigraphic drill holes designed to access the stratigraphy around faulted sections of the Emu Fault Zone and the presence and location of the Barney Creek Formation, that hosts the giant McArthur River Mine, lead and zinc deposit.

A total of 94 reverse circulation drillholes and 4 diamond drillholes were completed across the four projects. Of these, 69 RC drillholes tested the Tawallah 1 prospect, 17 tested the Tawallah 2 prospect, 8 tested the Yiyintyi prospect and 4 diamond drillholes were drilled across the Emu Fault Zone.

Prospect	No drillholes	Tenement	Total metres
Tawallah 1	69	SEL26939	8179
Tawallah 2	17	SEL26833	3840
Yiyintyi	8	SEL26837	1193
Emu Pre-collars	4	SEL26835	738
Emu diamond	4	SEL26835	906

A wide zone of visible copper oxide mineralisation has been intersected at the Tawallah 1 prospect. This shallow (approximately 20-40m deep) zone has thus far returned subeconomic grades of copper. Twenty two RC drillholes

in the Tawallah 1 prospect area, largely confined to an area of 500 by 200m, encountered visible copper oxide mineralisation. Complete analytical results are awaited. A typical interval was recorded in hole BLRC062 from 25 to 39m recording 0.3% copper. This is associated with elevated trace elements of cobalt, manganese, bismuth and antimony. Further exploration on the Tawallah 1 Prospect is planned for 2011.

## 2.2 Manganese Exploration

No field work was carried out on the Borroloola Manganese Project during the quarter.

## 3. URANDY PROJECT: Western Australia (Sandfire 100%)

*The Urandy Project is located in the West Pilbara region some 80 km southeast of the coastal town of Onslow. The property is prospective for gold and base metals, hosted in the Paleoproterozoic Ashburton Formation.*

No field work was carried out on the Urandy Project during the Quarter.

## 4. YANNARIE PROJECT: Western Australia (Sandfire 100%)

*The Yannarie Project is located 250 km northeast of Carnarvon on the west coast of Western Australia.*

During the quarter Sandfire commenced an IP geophysical survey over a strong lead and zinc soil geochemical anomaly. The survey team was forced to abandon the program due to torrential rain and flooding, after completing one line centred over the highest lead-in-soil value. Modelling of this line indicates a chargeability anomaly coincident with the soil lead response. The IP survey will be completed when ground conditions permit access for the geophysical crew. Sandfire is planning a drilling program to test this target during 2011.

## 5. CORPORATE

### 5.1 Completion of \$103 million capital raising

In November 2010, Sandfire announced plans to undertake a capital raising to underpin initial development activities and ongoing exploration at DeGrussa. The raising comprised a 1-for-12 accelerated non-renounceable pro rata entitlement offer to raise approximately \$72 million, and an underwritten institutional placement to raise a minimum of \$30 million. The Entitlement Offer was underwritten with an offer price of \$6.60, and included an institutional component and a retail component.

The institutional entitlement offer closed on 17 November, and enjoyed strong support from shareholders with a 90% take-up rate and \$35 million raised. New shares under the placement and new shares equivalent to the entitlements not taken up by institutional shareholders were offered via an institutional bookbuild process. The final price for this institutional bookbuild was \$7.00.

The retail component of the entitlement offer closed on 8 December, and raised a total of \$37 million with 90% of eligible shareholders participating in the offer. The offer was fully underwritten, and new shares not subscribed for by eligible shareholders were allocated to Goldman Sachs in accordance with the underwriting agreement.

The combined entitlement offer and institutional placement raised a total of \$103 million, which increased the Company's cash reserves at the end of the Quarter to \$124 million.

The proceeds of the raising will be used for:

- *Completion of the Pre-Feasibility Study (PFS) and Deinitive Feasibility Study (DFS) of the DeGrussa Project;*
- *Completion of other pre development and infrastructure activities requir4ed for the DeGrussa Project, as well as completion of the approvals process;*
- *Pre-stripping of the initial open pit, which is targeted to commence, subject to the receipt of approvals, in the second quarter of calendar 2011 to extract the high grade near-surface oxide and chalcocite material which lies above the main ore bodies. A portion of this has been classified as Direct Shipping material, with first production targeted by the end of 2011;*
- *Deposits to be placed for the acquisition of key long-lead items for the proposed 1.5Mtpa concentrator; and*

- *Working capital.*

## 5.2 Proposed Transaction with LS-Nikko Copper Inc.

The Company advised the market on 27 October 2010 that, following several months of productive discussions, its proposed agreement with LS-Nikko Copper Inc. announced on 23 July 2010 would not proceed.

During this time, the parties have established a strong working relationship and continue to maintain open and constructive dialogue to examine future business arrangement for the benefit of both parties.

**KARL M. SIMICH**  
**MANAGING DIRECTOR AND CEO**

27 January 2011

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**Competent Person's Statement**

The information in this public report that relates to Exploration Results and Mineral Resources is based on information compiled by Mr John Evans who is a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Evans is a permanent employee and Director of Sandfire Resources NL. Mr Evans has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the Australasian Code of Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Evans consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

**Forward-Looking Statements**

Certain statements made during or in connection with this statement, including, without limitation, those concerning exploration targets, contain or comprise certain forward-looking statements regarding Sandfire's exploration operations, economic performance and financial condition. Although Sandfire believes that the expectations reflected in such forward-looking statements are reasonable, no assurance can be given that such expectations will prove to have been correct. Accordingly, results could differ materially from those set out in the forward-looking statements as a result of, among other factors, changes in economic and market conditions, success of business and operating initiatives, changes in the regulatory environment and other government actions, fluctuations in metals prices and exchange rates and business and operational risk management. Sandfire undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events other than required by the Corporations Act and ASX Listing Rules.

**Exploration and Resource Targets**

Any discussion in relation to the potential quantity and grade of Exploration Targets for the DeGrussa Project is only conceptual in nature. While Sandfire is confident that it will report additional JORC compliant resources for the DeGrussa Project, there has been insufficient exploration to define mineral resources in addition to the current JORC compliant resource inventory and it is uncertain if further exploration will result in the determination of additional JORC compliant Mineral Resources.