# **NEW AGE** Exploration Limited

**ASX RELEASE** 

27 October 2014

# SCOPING STUDY CONFIRMS ROBUST ECONOMICS, LOW COSTS AND LONG LIFE FOR LOCHINVAR COKING COAL PROJECT

# **HIGHLIGHTS**

- Scoping Study confirms robust economics for project development:
  - NPV<sub>9</sub> of US\$263M (real, after tax, unleveraged)
  - IRR of 20%
  - Payback Period of 4.9 years (undiscounted)
- Average annual saleable coal production of 1.4 Mt over a 26 year mine life from an underground longwall mine
- Low average annual operating costs of US\$70 per tonne product resulting from short rail transport distances, low labour costs, royalties and taxes
- Realised coal sales price of US\$143 per tonne assumed for Lochinvar low ash high volatile coking coal (including freight benefit)
- Strong operating cashflows averaging US\$75M per annum with an operating margin of US\$73 per tonne of clean coal
- Low project construction capital cost of US\$284M (including 13% contingency) with only 7km rail spur to connect to mainline rail to domestic customers and ports
- High yield of 71% (all inclusive LOM average including roof and floor dilution)
- Infill drilling and seismic surveys, first Reserve and Pre-Feasibility planned during 2015
- Construction planned to commence in 2017 with first coal production planned in 2018

**NAE Managing Director, Gary, Fietz commented:** "We are delighted to report such a robust economic outcome for Lochinvar. The study confirms the potential for a long life operation producing a low ash, high volatile coking coal to supply domestic UK and European steel mills with operating costs in the lowest quartile of the global seaborne coking coal cost curve.

Lochinvar benefits from immediate access to existing rail and port infrastructure and locally available utilities required to develop the project. We are excited about developing a major new coal project in the UK, an excellent investment destination with low risk, an attractive fiscal regime and a rich coal mining history".

ASX Code: NAE www.nae.net.au

# INTRODUCTION

New Age Exploration Ltd. (ASX: NAE) is pleased to announce the positive results of the Lochinvar Scoping Study ("Study").

The majority of the Study was undertaken by Palaris Australia Pty Ltd (Palaris), an internationally recognised mining consultancy specialising in coal exploration and mining. A number of other specialist consultants completed components of the Study with some sections being undertaken internally by NAE.

Lochinvar is situated on the border of Scotland and England and benefits from close proximity to excellent infrastructure including direct access to rail, power, water, major roads, the major town of Dumfries and city of Carlisle.

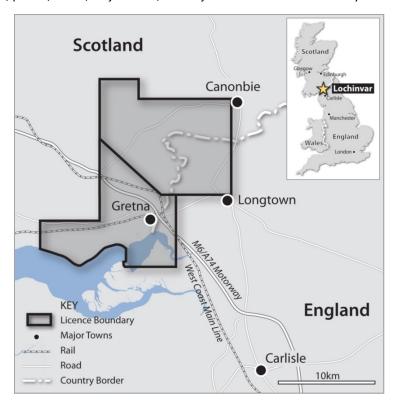


Figure 1: Lochinvar Project Location

NAE holds a 100% interest in the Exploration Licences and Conditional Underground Mining Licences over the Lochinvar and Lochinvar South areas as shown in Figure 1. The Lochinvar and Lochinvar South licences were granted to NAE by The Coal Authority in June 2012 and March 2014, respectively. Since then, NAE has undertaken two exploration drilling programs over the Lochinvar licence outlining a total Indicated and Inferred Resource of 111 million tonnes (Mt) to date.

# **RESOURCES**

In August 2014 NAE announced an upgrade to the Lochinvar coal resource following completion of its 2014 drilling program. A total resource of 111 Mt, comprising of a 49 Mt Indicated Resource and a 62 Mt Inferred Resource, was defined for the Nine Foot and Six Foot Seams as show in Table 1. The Lochinvar resource estimate has been independently prepared in accordance with the requirements of the JORC Code (2012) by John Bamberry of Palaris who is a competent person in this regard.

The resource estimate is based on 9 holes drilled by the National Coal Board (NCB) from 1979 through to 1983 and 10 holes drilled by NAE in 2013 and 2014. Over 100km of seismic data was also incorporated in the resource estimate providing interpretative evidence for the lateral continuity of coal seams. For full details of the resource estimate, refer to the NAE announcement 'Lochinvar Resource Upgrade and Product Quality' dated 29 August 2014.

Coal Seam (Air Dried Basis)	Indicated Resource (Mt)	Inferred Resource (Mt)	Total Resource (Mt)
Nine Foot Seam	37	49	86
Six Foot Seam	13	13	26
Total	49	62	111

Table 1: Lochinvar Resource Statement (August 2014)

The Nine Foot Seam has an average thickness of 2.2m over the entire resource. The Study assumes mining of the Nine Foot Seam only at depths between 260m and 1,000m.

A revised structural interpretation was completed by Palaris in August 2014 based on geological data from the two NAE drilling programs and a re-interpretation of the historic seismic data. The revised structural interpretation shown in Figure 2 identified an increased density of faulting at Lochinvar and the resource and mine plans used in the Study are based on the revised structural interpretation. Additional minor faults have also been interpreted on seismic profiles which have not been included in the revised structural interpretation due to very low confidence in existence, orientation and extent of these faults.

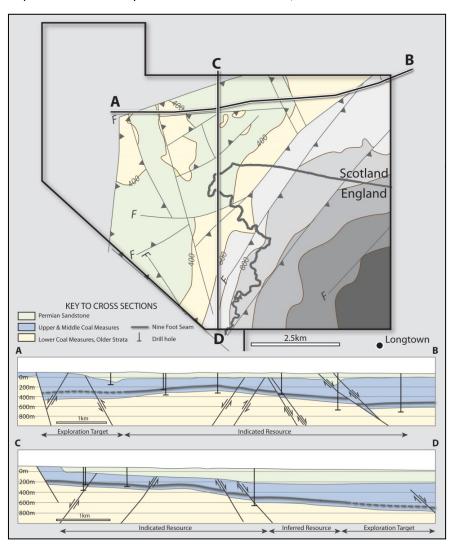


Figure 2: Lochinvar Revised Structural Interpretation (August 2014)

An additional Exploration Target of 31 - 64 Mt has been identified in areas where there is insufficient information to define a resource at Lochinvar. These areas are located primarily to the south and west of the resource area shown in Figure 5 and also extend further south on the Lochinvar South licence.

The Lochinvar Resource and Exploration Target are constrained by a minimum seam thickness of 1.2m, a maximum depth of cover of 1,000m and a maximum parting distance of 0.8m between coal plies of the Nine Foot Seam where the upper plies are split from the lower ply of the seam.

# **PROJECT OVERVIEW**

An underground mine connected by a drift (decline) to the surface where coal will be processed and loaded into rail wagons has been selected as development case for the Study (see Figure 3).

Underground coal will be mined using a 200m wide longwall with development roadways constructed by 3 continuous miner/holters

An average of 1.9 Mt per annum (Mtpa) of run-of-mine (ROM) coal will be conveyed from underground to the surface through the drift where it will be stockpiled in the ROM stockpile.

The ROM coal stockpile will be reclaimed via front end loader and fed into an adjacent coal processing plant (CPP) which will produce an average of 1.4 Mtpa of clean saleable coal. From the CPP, the clean coal will be conveyed to nearby final product stockpiles located alongside a rail siding.

The short rail siding will connect the operation to the West Coast Main Line (WCML). Coal will be loaded from final product stockpiles into rail wagons by front end loader for direct delivery to UK steel mills or export to European steel mills via Hunterston and/or Blyth ports.

Reject from the CPP will be trucked to a nearby reject storage area that will be contoured into the surrounding landscape. Excess process and mine water will be treated on site and piped to the Solway Firth for discharge in line with approved water quality standards.

Ventilation will be a single vertical shaft, with the drift completing the ventilation circuit. The ventilation shaft will also be utilised as the second means of egress for emergency evacuation.

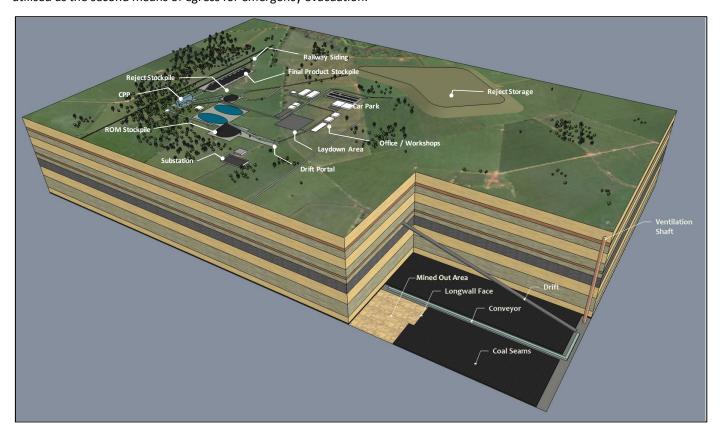


Figure 3: Schematic Lochinvar Mine and Surface Layout

#### **MINING**

#### **COAL ACCESS AND VENTILATION**

The Nine Foot Seam will be accessed from the surface with a single drift approximately 1,700m in length and 6m in diameter. This will be excavated with a tunnel boring machine (TBM) to a 1 in 8 gradient to allow rubber-tyred vehicle access for mine workers and machinery. Coal will be transported to the surface by a 3,500t/h (tonnes per hour) overhead conveyor hung from the drift roof and exit the mine onto a 60,000 tonne ROM stockpile adjacent to the CPP.

Ventilation will be by means of a single 5m vertical shaft. A second ventilation shaft is required in year 8 of the project.

# MINING METHOD

Coal will be mined primarily using a single bi-directional longwall shearer with a panel width of 200m. In some cases, panels have been reduced to a minimum width of 140m in areas of structural complexity as shown in Figure 5. Panel lengths range from 0.44km to 4.4km (average length of 2.8km).

The longwall shearer has a cutting height range of 1.8m to 3.6m which will accommodate the expected range in thickness of the Nine Foot Seam within the planned mining area (1.6m minimum thickness, 3.2m maximum thickness, 2.4m average thickness), including roof (0.1m) and floor (0.05m) dilution.

A geotechnical assessment has been undertaken by Strata Control Technology (SCT), an Australia based company with principals that have direct experience in underground coal mines in the UK. This assessment showed that the roof and floor conditions for the Nine Foot Seam are best suited to longwall extraction. SCT's geotechnical assessment has been used by Palaris in setting mine design and productivity assumptions used in the Study.

Longwall mining was pioneered in England and Wales and is well tested in this setting, having since been the primary method of extracting underground coal across the UK. A cornerstone of the Study is the application of modern longwall equipment and mine design to increase safety and efficiency while reducing costs.

Development roadways will be driven to a minimum height of 2.0m using 3 continuous miner / bolters. Roadways will be supported using rock bolts with 50-70m wide pillars being left between longwall panels and gateroads.

Pre-drainage of gas ahead of mining is expected to be required and done conventionally via long holes drilled from underground.



Figure 4: Typical Longwall Shearer

### **PRODUCTIVITY ASSUMPTIONS**

Longwall mining productivity has been individually assessed for each of the 29 mining panels in the preliminary mine plan and all longwall moves have been included in the mining schedule and economic analysis. An overall longwall productivity factor of between 43% and 50% of maximum shearer productivity has been adopted by Palaris to de-rate longwall productivities due to the following factors:

- Seam height
- Depth
- Geological structure
- Roof and floor conditions
- Gas management
- Mechanical availability

Estimates of longwall productivity are well within internationally demonstrated and documented benchmarks and have been independently reviewed.

Development productivities and costs are based on 3 continuous miners, each achieving 120m of development per week.

#### MINE PLAN AND PRODUCTION SCHEDULE

The Study is scoping level and no reserves have yet been calculated, however Palaris have generated a preliminary mine plan and production schedule for the Study as shown in Figure 5 and Figure 6. The preliminary mine plan is conceptual in nature and will change with further exploration and definition of the resource and, as further exploration and a more detailed mine design is done, estimates of subsidence and mitigation will be addressed.

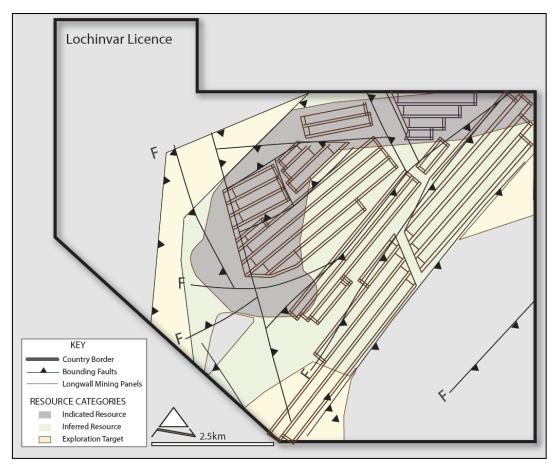


Figure 5: Lochinvar Preliminary Mine Plan (longwall panels only) and Resource Areas

Based on the production schedule (see Figure 6) over the life of mine, a total of 47.3 Mt ROM coal will be produced, averaging 1.9 Mtpa ROM coal with a peak production of 3.1 Mtpa ROM coal in year 16.

Annual variations in ROM coal production are primarily a result of the number of longwall moves and seam thicknesses mined in each year. No attempt has been made to modify the mine plan to smooth annual variations in ROM coal production; however this will be examined in subsequent phases of study.

The preliminary mine plan and production schedule are based on Indicated and Inferred Resources and Exploration Target. Over the 26 year life of the project as follows:

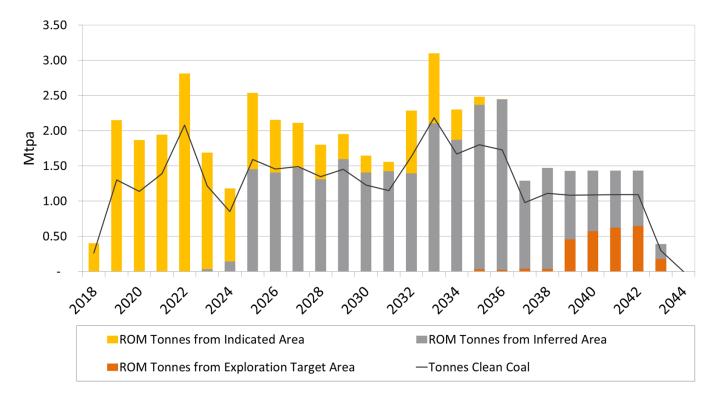
- 38% of total ROM coal will be mined from the Indicated Resource area
- 56% of total ROM coal will be mined from the Inferred Resource area
- 6% of total ROM coal will be mined from the Exploration Target area

The first 7 years of mining are 100% within the Indicated Resource area, years 8-11 of mining is within a mix of Indicated and Inferred Resource areas and from year 12 onwards mining is primarily within the Inferred Resource area.

NAE believes there is reasonable basis for the inclusion of a small tonnage of Exploration Target in the production target because there are indications from seismic surveys that the coal is present in the south and west of the Lochinvar licence, but as there is no drilling to date, this remains to be confirmed.

**Cautionary Note:** There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of Indicated Resources or that the production target itself will be realised.

**Cautionary Note:** The potential quantity and grade of an exploration target is conceptual in nature, there has been insufficient exploration to determine a mineral resource and there is no certainty that further exploration work will result in the determination of mineral resources or that the production target itself will be realised.



**Figure 6: Production Schedule** 

# COAL PROCESSING AND MINE SITE INFRASTRUCTURE

QCC Resources, a leading Australian coal processing and materials handling design and construction company, have designed the coal handling and processing plant and determined the indicative product specification for the Study. Other mine site infrastructure has been designed by Palaris. Yield has been estimated by QCC Resources and Palaris and includes adjustments for stone partings within the working section, roof and floor dilution and moisture.

Over the life of mine, a total of 47.3 Mt of ROM coal will be processed at a high 71% yield to produce 33.7 Mt of clean coal (saleable product), averaging 1.4 Mtpa clean coal, with a peak of 2.2 Mt clean coal production in year 16 (see Figure 6).

A single compact Mine Infrastructure Area (MIA) will be located on the western side of the Lochinvar licence which will include; the drift portal, ROM coal stockpile, crushing and screening plant, coal processing plant (CPP), product stockpiles, rail loading siding, offices, bathhouses, workshops, electrical substation and car park.

The ROM coal stockpile will be reclaimed via front-end loader and fed into a hopper feeding a crushing and screening plant and then to the CPP. The CPP flow sheet is shown in Figure 7 and includes; single stage dense media cyclones, teetered bed separators and flotation circuits in order to minimise ash and Sulphur levels in product coal and maximise yield.

The initial CPP capacity is 400 t/h (2.5 Mtpa) and capital has been allocated to upgrading the capacity to support higher production in later years.

From the CPP, the clean coal will be conveyed to final product stockpiles (50,000 tonne capacity) located alongside a rail siding. Coal will be loaded from final product stockpiles into rail wagons using two front end loaders. The rail siding will connect the operation to the West Coast Main Line.

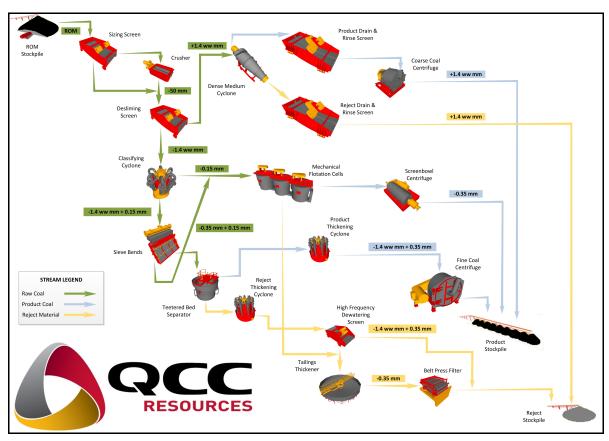


Figure 7: Coal Processing Flowsheet

Fine rejects will be thickened, belt press filtered and recombined with coarse rejects for transport via truck over a short distance on private road to a local storage area that will be contoured into the surrounding landscape.

#### UTILITIES

Lochinvar has close proximity and access to existing infrastructure and utilities, in particular power and roads.

Electrical power will be sourced from the Gretna substation (132kV) which is located within the Lochinvar licence. There is a well-developed network of existing sealed roadways traversing the project linked to the M6/A76 Motorway.

Potable water supply is locally available. Excess process and mine water will be treated on site piped to the Solway Firth where they will be discharged in line with approved water quality standards.

Additionally, NAE plans to source a significant proportion of the Lochinvar workforce from nearby townships and major regional centres.

# TRANSPORT AND PORT

#### RAIL

The West Coast Main Line traverses the Lochinvar South licence and is currently used for coal freight. Capacity for Lochinvar coal on this route at proposed production rates has been confirmed by an independent UK based transport consultant (Deltix) and by Network Rail.

There are several rail operators currently transporting coal in the UK with available locomotives and rolling stock. Quotes for rail transport costs to domestic customers and export ports have been sourced independently from selected operators. Coal freight trains are typically 1,500t capacity in the UK.





Figure 8: Coal train operating on the UK Rail Network (Source: Freightliner) and Hunterston Port

# **PORT**

Following a review and visits to a number of UK ports, two preferred port options have been identified. These are the Ports of Hunterston and Blyth. Both are directly accessible via the existing rail network and Lochinvar product could be shipped to customers from either (or both) ports.

# Hunterston

Hunterston is approximately 190km via rail from Lochinvar and is primarily a coal import port with existing ability to load as well as unload bulk cargos. Hunterston has a draft of 19.8m and the capacity to berth vessels of Panamax size.

Hunterston has the ability to receive and unload trains from Lochinvar with an excavator but does not currently have bottom dump train discharge facilities to accommodate rapid unloading of trains. The port operator has indicated a willingness to invest

in appropriate train discharge, handling and stockpile facilities as part of negotiating a long term (5+ year) contract to export Lochinvar coal.

# **Blyth**

Blyth is a smaller port than Hunterston (draft 9.5m, Handysize) and is located 120km by rail from Lochinvar on the east coast of the United Kingdom. Blyth currently handles several bulk products including coal and petroleum coke, and also requires some minor modifications to improve rail discharge operations.

# **MARKET**

Lochinvar is uniquely located to supply coking coal to domestic UK and European steel mills. In 2013 the UK imported 6.2 Mt of coking coal (for 11.9 Mt of steel) and Europe imported 21.6 Mt of coking coal (for 85.9 Mt of steel). At an average LOM annual production of 1.4 Mtpa clean coal, Lochinvar only needs to achieve a 5% market share to sell all of its production into UK and European markets where Lochinvar enjoys a significant freight advantage over competing HV coking coals imported from the United States. Lochinvar would currently be the only indigenous coking coal supplier in the UK able to deliver regularly by rail.



Figure 9: Markets for Lochinvar Coking Coal

# **COAL QUALITY**

An indicative target specification for Lochinvar coking coal has been determined by QCC Resources based on drilling and washability test results.

Lochinvar is expected to produce a high volatile coking coal product with very low ash content for sale to UK and European steel mills which typically use a blend of: (a) prime hard coking coals (e.g. Peak Downs Australian HCC benchmark coals), and (b) high volatile semi hard coking coals primarily imported from the United States.

Lochinvar's main competitor in the UK and European markets are US high volatile (HV) coking coals. There are a number of US HV coking coal suppliers, however the most important supply to UK and Europe comes from Central and Northern Appalachia and is shipped from three main terminals at Hampton Roads on the east coast of the United States. Reference specifications are published by Argus and by Platts for two different qualities of high volatile coking coal exported from Hampton Roads. These are Hampton Roads HV A and Hampton Roads HV B coking coal.

Table 2 shows the expected Lochinvar coal quality and a comparison with competing US Hampton Roads HV A and US Hampton Roads HV B coking coal qualities based on their reference speciation published by Argus.

In comparison to competing coals, Lochinvar coal has:

- · Very low ash (a major environmental and cost benefit to steel mills) and low Phosphorous
- Comparable Volatile Matter, CSN and predicted CSR levels
- High Sulphur content but is understood to be within blend limits for all UK mills and most European mills.

Table 2: Lochinvar Indicative Product Quality and Comparison with Competing US Coals (Air Dried Basis)

	Lochinvar Target Specification	US Hampton Roads HV A <sup>(1)</sup> Specification	US Hampton Roads HV B <sup>(1)</sup> Specification
Inherent Moisture (%)	3.0	NA	NA
Ash (%)	5.0	<9	<9
Volatile Matter (%)	34.0	31-34	34-37
Fixed Carbon (%)	59.2	NA	NA
Total Sulphur (%) <sup>(2)</sup>	1.2 - 1.4	<1.2	0.9-1.3
Phosphorus (%)	0.007	NA	NA
CSN	7.0	8-9	7-9
Gray – King Coke Type	G6	NA	NA
CSR (3)	50	>50	45-54
Gross Calorific Value (Kcal/kg)	7,775	NA	NA
Vitrinite Content (%)	70	NA	NA
Vitrinite Reflectance R <sub>o</sub> Max (%)	0.84	1.0-1.1	0.85-1.0
Max Fluidity (ddpm) (4)	100 - 11,000	27,000-30,000	20,000-27,000

#### Notes:

<sup>&</sup>lt;sup>(1)</sup> Argus Steel Feedstock's, Methodology and Specifications, June 2014

<sup>(2)</sup> Lochinvar coal processing modelling results indicate potential to produce a 1.2% Sulphur product, and 1.4% is considered the expected upper limit

<sup>(3)</sup> Lochinvar Coke Strength after Reduction (CSR) has been predicted by Pearson Coal Petrography, Australia. Bulk samples and CSR tests are planned for the next phase of studies at Lochinvar but have not yet been undertaken.

<sup>(4)</sup> Lochinvar currently shows a wide range of fluidity results which is understood to be caused by wash media used in the laboratory during washability tests. This has a documented effect on supressing fluidity in some coals. Further work is required to more accurately determine fluidity for Lochinvar coal.

# **COAL PRICING**

The Study economics are based on an average realised price of US\$143/t assumed by NAE for Lochinvar coal on a delivered by rail to UK customer basis for sales to UK mills and on an FOB (Hunterston/Blyth Port) basis for sales to European mills.

The US\$143/t average realised price for Lochinvar Coal has been determined by NAE based on the following assumptions:

- A long term Hard Coking Coal Benchmark price FOB Australia of US\$165<sup>1</sup> per tonne (HCC Benchmark Price). This is within the range of current long term HCC Benchmark Price forecasts published by major investment banks and market analysts.
- A **quality discount of 20%** relative to the HCC Benchmark Price which is in between the quality discount historically applied to US Hampton Roads HV A and US Hampton Roads HV B coals on an FOB basis.
- A **freight premium of 7%** of the HCC Benchmark Price, reflecting the average freight advantage of direct rail delivery of Lochinvar coal to UK customers and sea freight to European customers from Hunterston/Blyth UK ports vs the cost of sea freight from Hampton Roads port in the US to UK and European customers.
- Application of these factors results in a realised price of US\$143/t which is 87% of the HCC Benchmark Price (as illustrated in Figure 10)

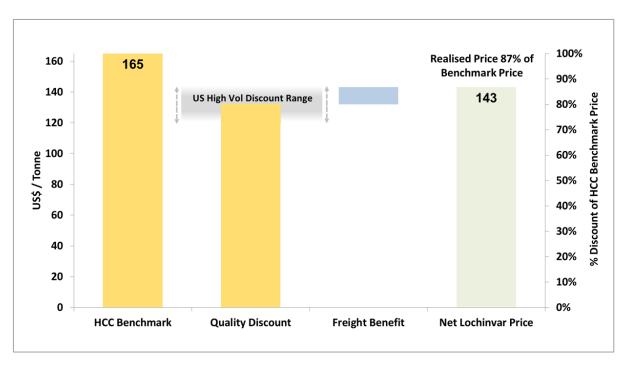


Figure 10: Realised Lochinvar Coal Pricing Estimate

<sup>&</sup>lt;sup>1</sup> 2014 Real dollar basis

#### **ENVIRONMENT**

Prior to commencing its initial exploration program NAE commissioned environmental surveys and reports over its landholding, to identify potential environmental issues or sensitivities in this predominantly agricultural area.

The ecological and hydrological assessments highlighted two small and isolated areas of mire identified as a declining and protected habitat. These areas will be avoided. NAE has undertaken extensive and detailed mapping of these areas and of all water features over its licence area, in close liaison with the Scottish Environment Protection Agency (SEPA), in obtaining the necessary permits for its exploration program.

Ongoing ecological and hydrological monitoring will add to baseline data on the surface environment. Piezometer installations planned for 2015 and a long term monitoring program, also in liaison with SEPA, will confirm the hydrogeological regime in the mining licence.

NAE will require additional licences and permits from SEPA prior to mine construction. The Company is committed to environmental best practice across its surface and underground operations to ensure no detriment to existing surface and groundwater quality.

Further studies will be undertaken on landscape and visual effects of the mine infrastructure, on wildlife, on archaeological sites and on emissions. In its evaluation of potential issues that may arise, it is NAE's opinion that that any effects may be avoided, or satisfactorily mitigated, such that the necessary planning permission, licences and permits may reasonably be expected to be obtained.

# **COMMUNITY**

The Lochinvar licence covers an area of predominantly agricultural land, comprising, for the most part, small, individual landholdings. There are two small settlements in the area, Chapelknowe and Evertown. Over the period of its exploration programs to date, NAE has established close ties with the local community and its representatives through open forums and exhibitions. Continued interaction and dialogue with the community is a cornerstone of the project.

The farming activities of the local community are vital and NAE, in designing the underground mine and surface infrastructure, is committed to ensuring that any potential disruption to the community and its interests is minimised. Landowner cooperation in the exploration program has been significant and indications are that this will continue through to the development stage.

NAE will address the wider community issues of coal transportation on rural roads through the provision of a dedicated rail link. Agricultural water supply concerns will be addressed through appropriate design of the underground mine and surface infrastructure, as will any potential for surface subsidence.

Other interested parties include wildlife bodies and recreational user groups, all of whom may be expected to participate in the planning permission process. NAE believes that through thorough community consultation it will be able to address any issues raised.

A requirement for approximately 270 persons at peak of mine operations and it is the intention of the Company to fill as many of these positions from nearby locations as possible.

# **PROJECT ECONOMICS**

Economic evaluation of the project has been undertaken by Palaris with involvement of NAE. The results of the economic evaluation are summarised in Table 3.

The project has an NPV<sub>9</sub> of US\$263M with and IRR of 20% and a payback of 4.9 years.

These results demonstrate the potential for Lochinvar to deliver excellent returns on investment with lowest quartile operating costs and a low capital cost structure.

Table 3: Summary Economic Results - Lochinvar Scoping Study

Parameter		Unit	Result
Production	LOM ROM	Mt	47
	LOM Saleable Coal	Mt	34
	Life of Mine	Years	26
	Annual Ave. ROM	Mt	1.9
	Annual Ave. Saleable Coal	Mt	1.4
Revenue	Benchmark HCC Price	US\$/t	165
	Ave. Realised Price	US\$/t	143
	Average Discount	%	13.3
Operating Costs	Unit Operating Cost	US\$/t	70
Capital Costs	Construction Capital	US\$ M	284
	Life of Mine Capital	US\$ M	593
Cash	Annual Cash	US\$ M pa	75
	Operating Margin	US\$/t	73
Valuation <sup>2</sup>	NPV (@9%)	US\$ M	263
	IRR	%	20
	Payback (undiscounted)	Years	4.9

Leasing of mobile mining and surface equipment has been assumed for the Study. An alternate case assuming up-front purchase of mobile mining and surface equipment increases construction capital by US\$31.5M but decreases operating costs by US\$3.9/tonne of clean coal and increases NPV by US\$10m to US\$273M.

The economic outcomes documented in Table 3 are based on the preliminary mine plan and production schedule which are dependent on the inclusion of Inferred Resources and Exploration Target. With regard to the inclusion of Inferred Resources and Exploration Target in the production target, the reader is referred to the cautionary notes on page 7 of this announcement.

If Inferred Resources and Exploration Target are excluded from the production target, the mine life is reduced to 6 years. As the undiscounted payback period for the project is 4.9 years the project remains viable but the NPV is significantly reduced.

Where possible, capital and operating costs have been estimated in the source currency. This is mostly in GBP, USD, AUD and EUR.

<sup>&</sup>lt;sup>2</sup> Real after tax,unleveraged, 1 Jan 2015 basis

#### **OPERATING COSTS**

Operating costs have been estimated by Palaris using a combination of first principles and industry benchmarks. A breakdown of the operating cost estimate is shown in Table 4.

An **FOB cost of US\$69.8/tonne clean coal** has been estimated as an average for the life of mine. This places Lochinvar in the lowest quartile of the global seaborne coking coal cost curve and delivers a high operating margin of US\$73.3/tonne clean coal (average over life of mine) based on the price assumptions used in the Study.

Lochinvar benefits from a low cost structure as a result of low labour rates, low royalties and a low transport cost to all target markets.

**Cost Area** US\$/t ROM **US\$/t Clean Coal** Development 5.8 8.2 Longwall 10.3 14.4 Outbye 8.1 11.4 **Technical Support** 3.5 4.9 **Operations Support** 3.9 5.5 **ROM Cash Costs** 31.6 44.4 **Coal Handling & Processing** 6.8 9.6 **FOR Cash Cost** 54.0 38.4 13.3 **Transport & Handling** 9.5 **Corporate & Marketing** 2.3 1.6 **Royalties** 0.2 0.3 **FOB Cash Costs** 49.7 69.8

**Table 4: Operating Cost Estimate by Area** 

# **CAPITAL COSTS**

Construction capital costs to first coal sales have been estimated by Palaris using a combination of first principles, quotes and industry benchmarks. The capital cost estimate includes a 13% contingency. A breakdown of capital costs is shown in Table 5.

A **construction capital cost** for the project of **US\$284M** has been estimated which is in line with average industry capital intensity for coking coal projects of this size based on information available to the Company.

The financial evaluation includes sustaining and replacement capital in line with industry standards for the life of the project. The project benefits from a low infrastructure component of the overall capital cost, which is partially offset by the initial cost to access the coal.

The capital costs shown in Table 5 do not include pre-construction costs such as exploration and studies.

**Table 5: Capital Cost Estimate by Area** 

Category	Capital Estimate (US\$M)
Drift and Shafts	50.7
Longwall Equipment etc.	41.2
Underground Infrastructure	37.6
Capitalised Development	14.9
<b>Total Underground Development</b>	144.4
Surface Facilities	43.2
Coal Handling and Preparation	23.5
Rail Spur	18.8
Total Surface Development	85.5
Owner Cost and Land Acquisition	22.7
Contingency (@13%)	31.5
Total Construction Capital	284.0

# SENSITIVITY ANALYSIS

Sensitivity of the evaluation model has indicated the valuation results are most sensitive to:

• **Realised Price:** As with most mining projects, the Lochinvar Project is most sensitive to variation in the realised selling price of the final product. This is driven by a combination of the Hard Coking Coal Benchmark Price, product quality discount and the freight differential.

Table 6: NPV Sensitivity to HCC Benchmark Price (US\$/t)

HCC Price	110	123	130	140	150	160	165	170	180	190	200
NPV <sub>9</sub> (US\$)	-89	0	43	106	169	232	263	295	357	420	483

- Coal Yield: Coal yield drives revenue and costs and therefore financial returns are sensitive to the assumptions that influence the coal yield. These assumptions include ash content, roof and floor dilution and CPP performance. Every 1% change in the yield (base case at 71%), results in a US\$10M movement in NPV.
- Discount Rate: For the Study a discount rate of 9% has been used. At 10% discount rate the NPV is reduced to US\$215M.
- **Longwall Tonnage:** The productivity of the longwall has been identified as a key risk factor of the project. A 20% reduction of the longwall production tonnes would reduce the NPV<sub>9</sub> to US\$103M.
- Operating Costs: Mining, processing and G&A costs have a lesser impact on the NPV than those variables that drive the revenue of the project. However, the low operating cost is a key feature of the Lochinvar Project and the importance of creating a project that delivers low FOB costs is critical to long term economic viability. A 10% movement in operating cost results in a US\$46M movement in NPV<sub>9</sub>.
- **Construction Capital Costs**: The Lochinvar project is relatively insensitive to construction capital cost as a 10% movement in the cost results in a US\$21M change in NPV<sub>9</sub>.

The sensitivity to changes in the key inputs and their assessed potential risk ranges is shown in Figure 11.

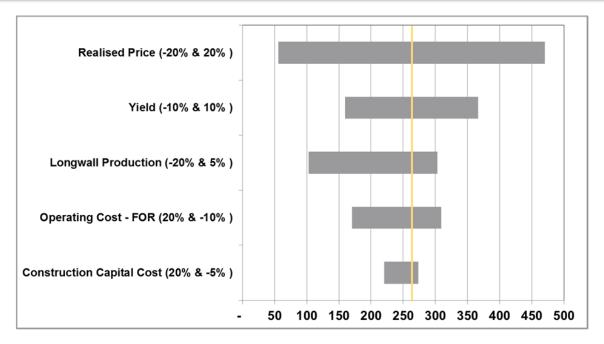


Figure 11: Lochinvar Sensitivity Analysis Chart

# **KEY RISKS**

# **GEOLOGICAL STRUCTURE AND MINE PRODUCTIVITY**

Exploration to date has identified areas of faulting which have been incorporated into the Study. Faulting of the Nine Foot Seam negatively impacts on mining and further exploration may identify additional faulting that degrades the economics of the project to an unknown extent.

#### **M**ARKET

The Study assumes that all coal produced can be sold into the domestic UK market (first 850 ktpa) and the remainder into Europe at an average realised price of US\$143/t. NAE believes this assumption to be reasonable based on an internal market study. There is a risk that the volume and/or price for Lochinvar coal is not realised. An external study is planned during the first half of 2015 to independently verify these assumptions.

# **COAL QUALITY AND YIELD**

Nine boreholes drilled by NAE have intersected the target Nine Foot Seam. A full suite of coal analysis on raw and clean coal has been undertaken on these holes and provided confidence of the coal quality for the Study results. Until additional infill drilling with associated coal analysis is completed there remains a risk in relation to the coal quality. Additionally, a coking test has not been completed to date due to the requirement for a larger sample than available from drilling. A program of infill drilling including a larger sample boreholes for coking test work is proposed for completion in 2015.

# PLANNING, ENVIRONMENT AND COMMUNITY

The Lochinvar Project covers rural farmland and NAE has established a strong track record for informing and involving the community. The majority of stakeholders have been supportive of NAE to date, however ongoing support is required to progress Lochinvar to development. There is a risk that land access required for exploration and surface infrastructure may not be obtained, or may be more expensive and/or time consuming than anticipated.

Planning approvals are required to be obtained prior to commencing construction. There is a risk that these approvals may not be awarded or be delayed.

#### **FUNDING**

The Study assumes NAE obtains funding to (a) progress Lochinvar to development and (b) construct the project. There is no certainty this funding will be available in the time frames envisaged in the Study.

#### **EXCHANGE RATES**

For the purposes of the financial assessment all results have been reported in USD, however many of the capital and operating cost inputs have been estimated in GBP. Additionally, NAE is an Australian based company and reports all financial results in AUD. Therefore, a significant exposure to exchange rates exists at both the project and corporate level.

# **GAS MANAGEMENT**

Based on a limited knowledge of the gas regime, Palaris has assessed that Lochinvar has a moderate gas levels. The current plan allows for the management of gas through standard gas drainage techniques. If gas levels are higher than estimated then additional underground ventilation will be required.

#### **OVERLAPPING GAS RIGHTS**

IGas Energy (previously Dart Energy) have the rights to commercial extraction of the coal bed methane gas through a Petroleum Exploration Development Licence (PEDL159) issued by the Department of Environment and Climate Change (DECC). The NAE right to mine coal within its licences have an equal standing and priority to the IGas right to extract gas from the coal seams. There is little overlap between NAE and IGas proposed activity in the area and interactions between the two activities are ultimately managed by a process regulated by the Coal Authority.

# **PROJECT UPSIDE**

NAE has quickly and successfully defined an Indicated and Inferred Resource at Lochinvar with exploration to date. Significant portions of the Lochinvar licence and almost all of the Lochinvar South licence remain undrilled and there is potential to increase total Resource in both the Nine Foot and Six Foot Seams with further exploration drilling expected to commence in 2015.

Additionally the Study assumes extraction of the Nine Foot Seam only. More detailed consideration on the viability of mining both the Nine Foot and Six Foot Seams during the next stage of analysis may support inclusion of the Six Foot Seam in the mining plan.

# **STUDY CONSULTANTS**

The Study was led by Palaris (Newcastle, Australia) with a number of other specialist consultants completing components. Table 7 lists all consulting groups that have contributed to the Scoping Study.

**Table 7: Scoping Study Consultants** 

Consultant	Specialist Area
Palaris Australia Pty Ltd	Resource estimate, mining, surface infrastructure, capital costs, operating costs, economic evaluation
Strata Control Technology (SCT)	Geotechnical Engineering
QCC Resources	Coal processing and product handling, capital and operating costs
Dalgleish Associates (Scotland)	Environment and community
<b>Deltix Transport Consulting</b>	Rail capacity, capital and operating costs for rail integration
Adam Chartering	Coal transport to UK and European steel mills
Xstract Mining Consultants	Independent Review

# **NEXT STEPS**

The outcomes of the Study have provided NAE with the confidence to continue with further exploration and development of the Lochinvar Project. The 2015 work program is focussed on minimising the technical and commercial risks identified by the Study. Importantly this will include seismic surveys and infill drilling to increase the resource confidence and deliver a Reserve to support a pre-feasibility study during the second half of the year. Commencement of environmental baseline studies and a comprehensive environmental impact assessment is also planned.

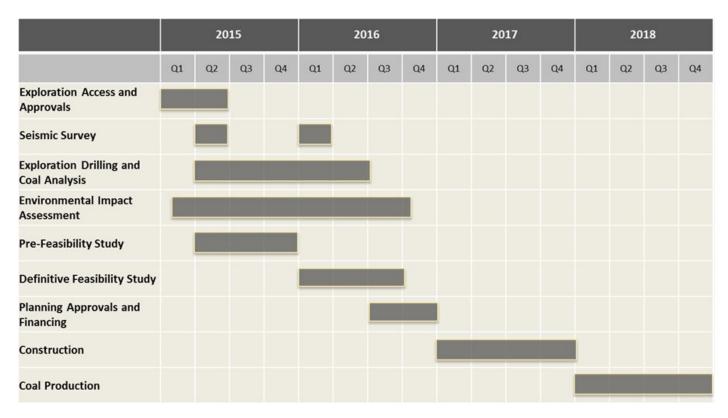


Figure 12: Lochinvar Future Work Program

# **SUMMARY**

The Study highlights Lochinvar as a low cost operation producing a high value-in-use product with a clear transport advantage over competitors to domestic UK and European markets. This, in combination with nearby existing rail and utilities and the low risk investment destination, confirms Lochinvar to be an attractive development project with robust economics.

Additionally, the Company and the project offer a low cost option to upside in coking coal price recovery, now at cyclical lows.

#### COMPETENT PERSONS STATEMENT

The Resources estimate is based on information compiled by Dr John Bamberry, who is a Member of the Australasian Institute of Geoscientists (Member No. 4090). Dr Bamberry is General Manager of Geological Services of Palaris. He has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity he is undertaking 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. Dr Bamberry has over 25 years' experience in exploration and mining of coal deposits.

Neither Dr Bamberry nor Palaris have a direct or indirect financial interest in, or association with New Age Exploration Ltd, the properties and tenements reviewed in this report, apart from standard contractual arrangements for the preparation of this report and other previous independent consulting work. In preparing this report, Palaris has been paid a fee for time expended based on standard hourly rates. The present and past arrangements for services rendered to New Age Exploration Ltd do not in any way compromise the independence of Palaris with respect to this review.

Exploration Target: The potential quantity and quality of the exploration targets identified in this presentation are conceptual in nature, and there has been insufficient exploration to date to define a mineral resource in accordance with the Australian Code for Reporting of Mineral Resources and Ore Reserves published by the Joint Ore Reserve Committee ("JORC Code"). Furthermore, it is uncertain if further exploration at its exploration targets will result in the determination of a mineral resource.

# **FORWARD LOOKING STATEMENTS**

This report contains "forward-looking information" that is based on the Company's expectations, estimates and forecasts as of the date on which the statements were made. This forward-looking information includes, among other things, statements with respect to the Company's business strategy, plans, objectives, performance, outlook, growth, cash flow, earnings per share and shareholder value, projections, targets and expectations, mineral reserves and resources, results of exploration and related expenses, property acquisitions, mine development, mine operations, drilling activity, sampling and other data, grade and recovery levels, future production, capital costs, expenditures for environmental matters, life of mine, completion dates, commodity prices and demand, and currency exchange rates. Generally, this forward-looking information can be identified by the use of forward-looking terminology such as "outlook", "anticipate", "project", "target", "likely", "believe", "estimate", "expect", "intend", "may", "would", "could", "scheduled", "will", "plan", "forecast" and similar expressions. The forward looking information is not factual but rather represents only expectations, estimates and/or forecasts about the future and therefore need to be read bearing in mind the risks and uncertainties concerning future events generally.

FOR MORE INFORMATION

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