# Nant Llesg proposed Surface Mine

# Restoration and Aftercare Liability Assessment

## April 2015

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This report has been prepared by The Coal Authority for Caerphilly County Borough Council.

Any conclusions or recommendations made are those based on information obtained for the report and our current knowledge and practices. Data used within the report, either obtained by The Coal Authority or Third Party data has been cited within the report. Any limitations of the data are identified within the report. The Coal Authority does not accept liability for the accuracy of any Third party data. Should new data or information become available these results, conclusions and recommendations may require amending.

The report should only be used in the stated context.

**Confidentially Conditions**

The Coal Authority has signed a confidentially agreement with Miller Argent (South Wales) Ltd to undertake this assessment but at the time of writing a confidently agreement with Caerphilly County Borough Council has not been signed. As such specific details of output rates/project costs/income streams have been excluded from this report and only the risk profile is discussed. The supporting information is held by The Coal Authority.

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## Version Control

| Prepared by | Check by | Approved by | Document status | Version | Date |
|---|---|---|---|---|---|
| T Marples<br>M Carey | | | Draft | 1 | March 2015 |
| T Marples<br>M Carey |  |  | Issued | 2 | April 2015 |

**Coal Authority Report References**

Wisdom location: CA41/4/2/5

**CONTENTS**


| | Page |
|---|---|
| **1. EXECUTIVE SUMMARY** | **4** |
| **2. SCOPE** | **6** |
| **3. INTRODUCTION** | **7** |
| **4. RESTORATION** | **7** |
| **5. REHABILITATION & AFTERCARE** | **8** |
| **6. FINANCIAL APPRAISAL** | **9** |
| **7. RECOMMENDATIONS** | **11** |
| **APPENDIX A: List of received files** | **13** |
| **APPENDIX B: Fuel price trend** | **15** |
| **APPENDIX C: API2 – Coal price trend graph** | **16** |
| **APPENDIX D: Exchange rate trend graph** | **17** |


**Site Profile**

Nant Llesg is a 6.0 million tonne (Mt) 480 hectare site with a total excavation of 73.5 million cubic metres (Mm3) and an overall working ratio of 11: 1 (ratio of excavated volume minus recoverable coal volume divided by recoverable coal tonnage). Thirty seams with recoverable thickness between of 0.16m to 1.41m will be mined (including three major seams groups Big Vein, Rhaslas, Three Coals). Overall 28% of old workings has been estimated within the schedule of estimated quantities. The scheme also involves installation of a washing plant to recover around 760 thousand tonnes (Kt) from washing old workings material (OW's) and coal cleanings recovered as a result of excavating the coal.

## 1. EXECUTIVE SUMMARY

In October 2013 Miller Argent (South Wales) Ltd (MAL) submitted a planning application to Caerphilly County Borough Council (CCBC) for a surface mine located north of Fochriw. CCBC have commissioned The Coal Authority (TCA) to provide them with a view on the financial liability.

This report provides CCBC with estimates of financial liability relating to the restoration, rehabilitation and aftercare of the proposed Nant Llesg Surface Mine in the event of the Operator vacating during the life of the site. This assessment is calculated to allow for restoration of the site from the 'maximum void' position, i.e. the worst case scenario.

MAL working method and proposals for the operation, restoration and rehabilitation of the site have been examined and found to present an excellent basis on which to develop a detailed operational mine plan. Resource levels and plant unit costs have been derived from data provided by MAL and historical data held by TCA. Sensitivities in the data relating to the valuation should be addressed through further monitoring and review.

TCA assessment of the MAL models confirms

a) The total excavation (TEX), the maximum void excavation and the initial box cut excavation volumes are correct (within acceptance tolerance levels <2% variance) and therefore offer minimal risk.
b) The timescales and phasing for the project are realistic and therefore offer minimal risk.
c) The excavation bulkage ratio is conservative and therefore offers minimal risk.
d) The proposed overburden dumps have sufficient capacity to store the bulked excavated overburden, above final ground levels, at maximum void and therefore offer minimal risk.
e) The excavation ratio (the ratio of overburden excavated to coal recovered) significantly reduces after the maximum void.
f) The proposed plant fleet and site resources are appropriate for the volumes to be excavated and size of the site, therefore offers minimal risk.
g) The proposed plant fleet is 'new plant' which offers minimal risk however it subsequently increases project costs which in turn increases the restoration liability.
h) The proposed excavator hourly output rates are conservative at c70% to 80% of industry standard tendering rates and therefore offer minimal risk. Sensitivity in output variance is c£4.5M.
i) The rates for rehabilitation and aftercare tasks are realistic and therefore offer minimal risk.
j) Fuel costs are the key cost driver (c22-25% of costs) and the fuel rate used within the model is c15% above the March 2015 rate and therefore offers minimal risk. A fuel price trend is shown within the appendices. Sensitivity in fuel variance is c£2.5M at today's price.
*k)* For income the coal market price: API2 price (API2: the standard reference price benchmark for coal imported into northwest Europe priced in US dollars) used is c30% higher than the March 2015 rate and therefore offers a 'significant risk' until the coal price recovers. Note: The International Energy Agency World Energy Outlook report indicates an upward forward trend. However prior to the site commencing this key income driver should be confirmed by either monitoring spot price or confirming a hedged or contract price.

l) The US$ into Sterling exchange rates within the model to convert API2 income is conservative and therefore offers minimal risk.

m) The cost model provided by MAL provides for the full cost of carrying out the mining proposal and fully restoring the site.

Monitoring of these key cost and income drivers is discussed within section 7 (Recommendations)

The assessment has calculated the liability from a 'worst case scenario' situation, i.e. as the site reaches its 'maximum void'. This is when there is the maximum volume of material above ground level which needs to be replaced to achieve the submitted restoration scheme/profiles.

This sum is derived from evaluating three key elements set out below which will be expanded upon within the main body of the report.

| Restoration liability assessment – key elements | |
|---|---|
| 1. | Excavation and replacement of the overburden dump |
| 2. | Excavation and replacement of soils, site rehabilitation and aftercare |
| 3. | Tender, care and maintenance, mobilisation for 52 weeks |

Our independent assessment of the restoration liability presented by MAL relating to the sites restoration that achieves the proposed restoration landform, rehabilitation and aftercare is realistic at maximum void.

However in the MAL assessment the 'key element 3' sum was obviously not considered or included and therefore an additional sum of £766,000 should be added to ensure that the bond includes sufficient funds to allow for 'care and maintenance and re-tendering' in the event of MAL vacating the site.

To minimise risk to CCBC during the pre-excavation site establishment phase, a day one upfront bond payment of £3,947,000 is recommended, this figure includes the £766,000 referred in the previous paragraph.

## 2. SCOPE

The Coal Authority undertook to provide the following Services:

2.1. High level estimate of the restoration task at each major phase i.e.

a) At the commencement of coaling.

b) At the proposed operational extraction phases shown within the planning application including at maximum void excavation.

c) At the completion of coaling.

d) During the rehabilitation and aftercare phases.

2.2. High-level assessment of the scheme's:

a) Overburden dump and soils storage mound quantities.

b) Progressive soils, overburden and coal excavation proposals and the respective phasing including an opinion on the proposed void design.

c) Bulkage factors.

d) Progressive restoration proposals and aftercare tasks (including watercourse reinstatement, construction of access tracks etc.) and comments on the proposed restoration plan and quantity of progressive restoration required.

e) Review of the key operational drivers that will impact the scheme including operational production rates, fuel price assumptions and 'coal sales' income assumptions.

2.3. High level estimate of the aftercare task assuming that a third party undertakes the task, to include:

a) An estimate of costs for us to prepare all tender documentation and manage the tendering process.

b) An estimate of third party aftercare costs.

c) An estimate of TCA costs for the management of the aftercare scheme.

## 3. INTRODUCTION

3.1. CCBC commissioned TCA to calculate the liability in relation to the restoration, rehabilitation and aftercare of the Nant Llesg Surface Mine to assist with preparing a Section 106 agreement.

3.2. Background data and details relating to the proposed scheme were provided by CCBC and MAL. A list of received files is shown in Appendix A.

3.3. The restoration liability assessment is based on the assumption that plant fleet proposed by MAL to undertake the scheme will be deployed. Provisions have been included for a third party to undertake the works in the event that MAL vacates the site.

3.4. The calculation relies on the accuracy of the models from MAL to calculate the assessments of quantities.

3.5. The costs have been calculated following MAL's proposed method of working described within the planning application. Any variation to this method of working may result in a significant increase in the restoration costs calculated.

## 4. RESTORATION

4.1. In order to achieve a high degree of confidence the assessment of a restoration liability relies on a critical analysis of operational performance in terms of prime mover (main excavators) availability, output and costs to reflect site specific circumstances.

4.2. MAL provided their estimates of excavator outputs for overburden tip reduction and these are conservative output rates, typically 70-80% of usual tender rates.

4.3. MAL provided digital terrain models that depicted the development phasing of the site. These models were reviewed to confirm the operational viability of the scheme and to identify potential risks and sensitivities associated with the phased method of working.

4.4. The following sensitivities relating to the method of working are noted:

a) MAL's estimate of the bulkage factor of excavated material in our opinion is suitable for the nature of the material being excavated. This demonstrates a minimal risk factor.

b) Bulkage associated with re-handle and re-grading of overburden stored in temporary storage mounds is assumed to be zero.

c) MAL's estimates of in-situ and recoverable coal have not been assessed. The effect of a significant variation in coal quantities on restoration cost estimates are considered to be relatively low.

d) This said, estimates of the in-situ and recoverable coal will have a significant impact on the affordability of a restoration bond, especially for a 'rate per tonne' escrow arrangement. The schedule of estimated quantities (SEQ) assessment was outside the remit of this report, although is referred to in the recommendations within section 7.

e) The maximum void as calculated and compared with MAL's assessment is within acceptable tolerance levels (within acceptance tolerance levels <2% variance). This demonstrates a minimum risk factor.

f) The maximum capacity of the proposed overburden dumps as calculated have sufficient capacity to store the bulked excavated overburden at maximum void and therefore offer minimal risk.

g) It should be noted that the gradient of the access ramps within each phase are designed to not exceed the best practice safety recommendation of 1v:10h.

## 5. REHABILITATION & AFTERCARE

5.1. The assessment of the rehabilitation and aftercare (R&A) liabilities is based upon the following documents:

a) Restoration Strategy Plan MA/NL/PA009

b) Nant Llesg Surface Mine and Reclamation Scheme – Land Assembly Plan MA/NL/LA/001

c) Non-Technical Summary and Environmental Statement Volume 1

d) Design and Access Statement

e) Environmental Statement Chapter 9 – Agricultural Land Use and Soils

f) Proposed Replacement Rights of Way Network Plan MA/NL/PA/039 dated June 2013

g) Seeding and planting tables – A071403/29 January 2014

h) Technical review of the mine plan and associated restoration cost planning for the Nant Llesg proposed surface mine – SRK Consulting (UK) Ltd June 2014

i) Bryn Caerau Biodiversity Compensation Area Enhancement Plan MA/NL/PA/040 (Plan 2)

j) Breakdown of aftercare costs supplied by MAL

5.2. The following assumptions have been made in relation to MAL's proposals:

a) That the rehabilitation work will be carried out in 1 year and that the aftercare period is 5 years. Any increase in these periods will increase R&A costs overall.

b) Any increase in the periods outlined in 5.2(a) may increase land occupation costs and professional fees referred to in 6.14.

c) That the restoration strategy outlined in plan MA/NL/PA/009 has been agreed with the Landowners Common Rights Holders and CCBC

d) That the Bryn Caerau Biodiversity Compensation Area – Biodiversity Enhancement Plan MA/NL/PA-040 has been agreed with the tenant and CCBC.

5.3. Outstanding matters - the following matters remain to be agreed with MAL which may require additional minor provisions

a) For land within the site boundary shown on plan MA/NL/PA/009 during the aftercare period costs associated with rush control, beating up and weed control for hedges, beating up woodland, of footpath and bridleway surfacing if required by Footpath Officer and costs associated with maintenance of ponds all require confirmation with MAL.

b) In respect of the Bryn Caerau land, an annual provision has been made to cover the work shown on Bryn Caerau Biodiversity Compensation Area Enhancement Plan MA/NL/PA/040. It should be noted that; it has been stated by MAL that a breakdown of such costs will not be available until a detailed scheme is drafted following the grant of planning consent. It is recommended that a breakdown of such costs is obtained from MAL at that point to enable verification to be carried out to confirm the adequacy of the provisions made.

**6. FINANCIAL APPRAISAL**

6.1. Costs have been assessed in terms of data provided by MAL, historical rates held by TCA and assumptions relating to commercial rates for ancillary services.

6.2. The proposed method of working assumes that some restoration tasks will be undertaken whilst coaling operations are on-going. For these tasks, only a proportion of the site overheads and ancillary costs have been included as it is reasonable to allocate the bulk of these costs to the main activities related to advance excavation and coaling operations.

6.3. For operations undertaken after the completion of coaling all site overheads and ancillary costs have been included in the restoration liability assessment.

6.4. It has been assumed that major plant is charged out on operating hours whereas ancillary plant items and all other costs incur a weekly charge. Hourly plant rates include all labour, fuel, tyre and lubricant costs.

6.5. The number of weeks for weekly charged items is taken to be the total number of calendar weeks in the period. A plant week is determined from historical trends including reductions to reflect historical plant availability, weather and other site operational requirements.

6.6. Fuel consumption for each item of plant has been taken from the MAL model, this being based on MAL historical records, and also verified with historical estimates held by TCA. Fuel accounts for approximately 22-25% of the total costs.

6.7. The cost of fuel oil has been taken as indicated in the MAL model. History suggests that significant variation in fuel price is likely to occur and very difficult to predict with any degree of accuracy. A historical fuel price trend is shown in appendix B to highlight price elasticity.

6.8. Approximately 35-40% of the cost associated with the liability assessment relates to truck haulage costs (including labour and fuel). MAL relies on its experience, site working practices, supervision and the design of haul routes to achieve efficient haulage operations. Failure in either or all of these efficiencies will have a very significant impact on the site programme and therefore costs. TCA truck haulage evaluation returned a similar fleet requirement to that proposed by MAL, although efficient management of the fleet is the critical aspect to minimise potential cost risks.

6.9. Although the site is subject to high rainfall, the site benefits from a relatively high proportion of hard rock which should provide for good road building and maintenance. These factors help support MAL's view that high plant utilisation is achievable and this has been accepted for the purpose of the evaluation.

6.10. Site overheads have been estimated to reflect the resources that a third party may allocate, given the nature, scale and duration of the restoration phase.

6.11. The budget costs relating to the tendering of the project, should MAL vacate the site, have been considered and assume that European procurement rules apply due to the value of the work. Provision has been made in the cost model for care and maintenance to undertake works during a tender period.

6.12. If a third party were to be employed to undertake the restoration of the site, there may be scope for the existing plant fleet to be utilised if a commercial agreement could be reached in order to avoid mobilisation costs. However, this scenario would require the plant to stand on site during the tender period which may not be financially viable. As such, the estimated cost of plant mobilisation has been included in the cost model.

6.13. It has been assumed that soils restoration will generally be undertaken between April and September, during daylight hours. However bulk earthmoving operations will be undertaken throughout the whole year.

6.14. The assessment of R&A costs has been carried out in consultation with MAL and has involved the following verification process

a) Agreement on extent of activity within the schedule of R&A (subject to 5.3)

b) Verification and agreement with MAL on the specification for R&A

c) Verification and agreement on the R&A component costs

d) Verification and agreement on the aftercare activity periods (subject to 5.2 (a))

e) Assessment of professional fees associated with but not limited to matters set out in the Section 106 Agreement relating to the following matters

- Footpaths and bridleways
- Remediation works
- Ecological works and Management Plan
- Registration of Common Land

- Annual Progress Plan
- Procurement and Management of rehabilitation and aftercare
- Annual review of aftercare costs
- Preparation of Rehabilitation and Aftercare Scheme

## 7. RECOMMENDATIONS

7.1. The analyses have been undertaken to present CCBC with a professional opinion regarding the restoration liabilities associated with the proposed Nant Llesg surface mine. The assessment has calculated the liability from a 'worst case scenario' situation, i.e. as the site reaches its 'maximum void'. This is when there is the maximum volume of material above ground level which needs to be replaced to achieve the submitted restoration scheme/profiles. Maximum void occurs during year 6.

7.2. Prior to the scheme commencing and annually throughout its life key income and cost drivers should be monitored to ensure risks to the sites successful completion are recognised and managed. This monitoring will improve confidence in the valuations presented in relation to the sensitivities noted in this report.

7.3. For income these key drivers should at least include:

a) Coal tonnages recovered against the Schedule of Estimated Quantities (SEQ) including the percentage of old workings encountered and the washery output tonnages.

b) The coal market price: API2 price trend (API2: the standard reference price benchmark for coal imported into northwest Europe) and the $/£ exchange rate. Trends are shown in appendices C and D.

c) The markets that the coal is sold into, whether respectively the industrial market (at a premium), the power station fuel (PSF) market (linked to API2 price) or into an existing contract for the pulverised coal injection (PCI) market.

*A full review of the key income drivers was outside the scope of this report; however they have been referenced because of the very significant impact they have on cash flow and therefore solvency.*

7.4. For costs, these should at least include:

a) Confirmation that the scheme follows the proposed excavation sequence and planning permission.

b) Confirmation that the proposed plant fleet is used (especially excavators, dumptrucks, dozers) and their respective operational availability and fuel consumption rates.

c) Confirmation that the proposed hourly excavator rates are achieved (plant output m3/hr for each excavator deployed).

d) Confirmation of the actual bulkage factor for overburden.

e) The fuel price trend.

7.5. MAL to provide CCBC with an annual programme detailing the resources and timing of site operations.

7.6. A review of the restoration liability evaluation should be carried out on an annual basis, including a review of the key drivers, in order to ensure that sufficient funds are available to provide for an acceptable standard of restoration, aftercare and rehabilitation as the site progresses.

7.7. MAL to provide CCBC with early warning, by way of a written notice, of any material variation (planned or actual) relating to their proposed method of working.

7.8. Where significant deviation to the method of working or progress is identified, either CCBC or MAL should have the facility to call for the evaluation of the financial security measures in place to be reviewed and adjusted.

7.9. In order to manage the risk of there being sufficient funds available to safeguard the proper restoration, rehabilitation and aftercare of the site, MAL to provide CCBC with quarterly reports, (or at other agreed intervals) that address the following matters:

a) Annotated progress plans and updated programme detailing the extent of operations including progressive restoration;

b) Where actual progress lags behind the programme, MAL to provide details of measures that will be taken to catch up or confirm the impact on the project time frame if no additional measures are taken;

c) The volume of advance excavation undertaken;

d) The tonnage of recovered coal;

e) The volume and location of excavated material placed to fill identifying

i. If below overburden restoration horizon; and

ii. If above overburden restoration horizon;

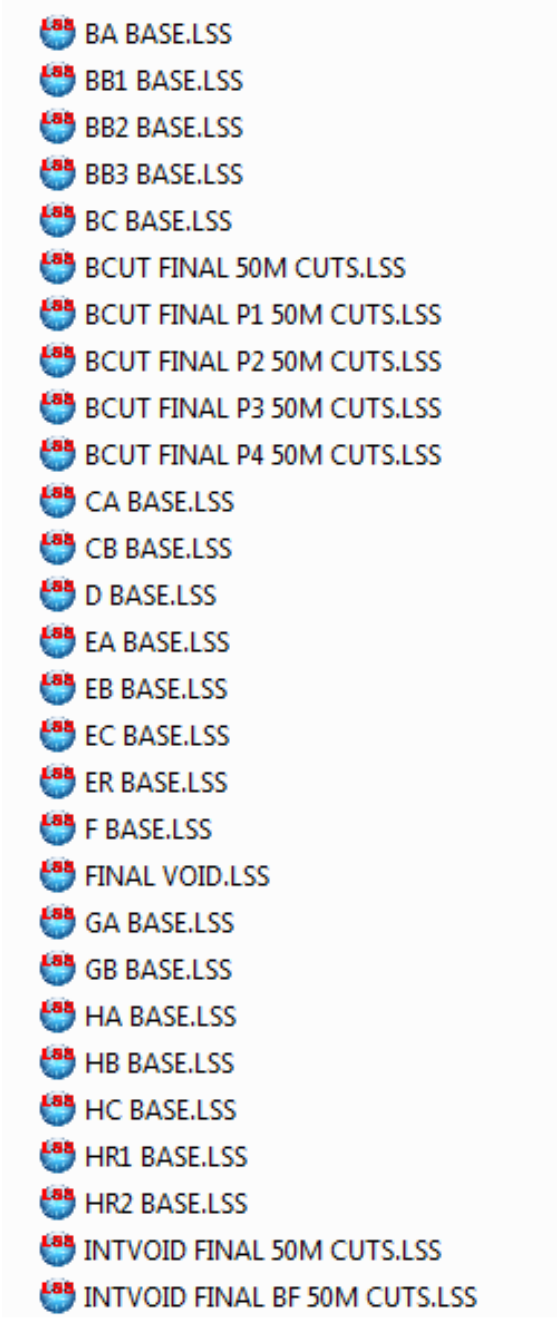
f) Areas of soil strip and location and volumes of all soil dumps;

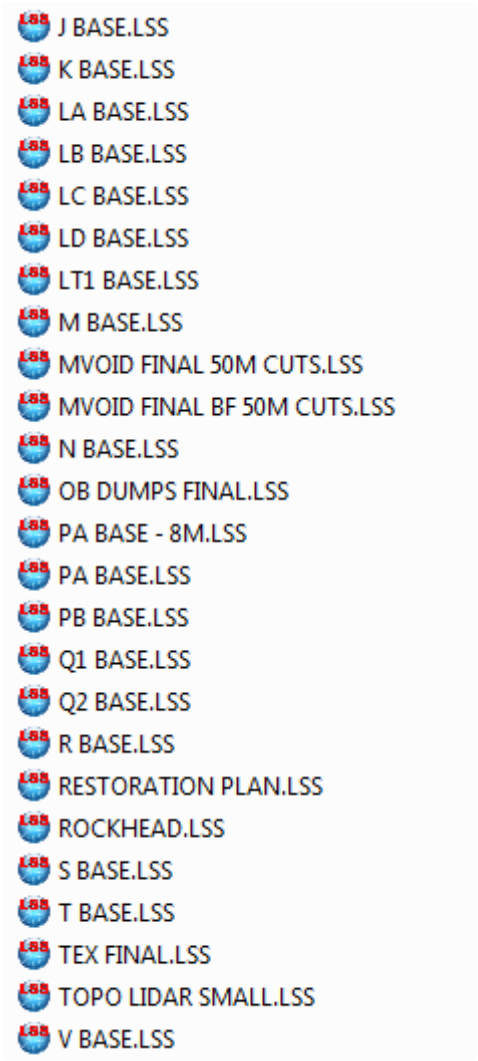
g) Confirmation that stripped and stored soil quantities are sufficient to achieve the planned restoration scheme.

7.10. Our recommendation is that based on the information assessed, CCBC should secure funds in line with the MAL assessment and the additional £766,000 'key element 3' sum to provide for the restoration, rehabilitation and aftercare liability for the proposed Nant Llesg surface mine.

7.11. To minimise risk to CCBC during the pre-excavation site establishment phase, a day one upfront bond payment of £3,947,000 is recommended, this figure includes the £766,000 referred in the previous paragraph.

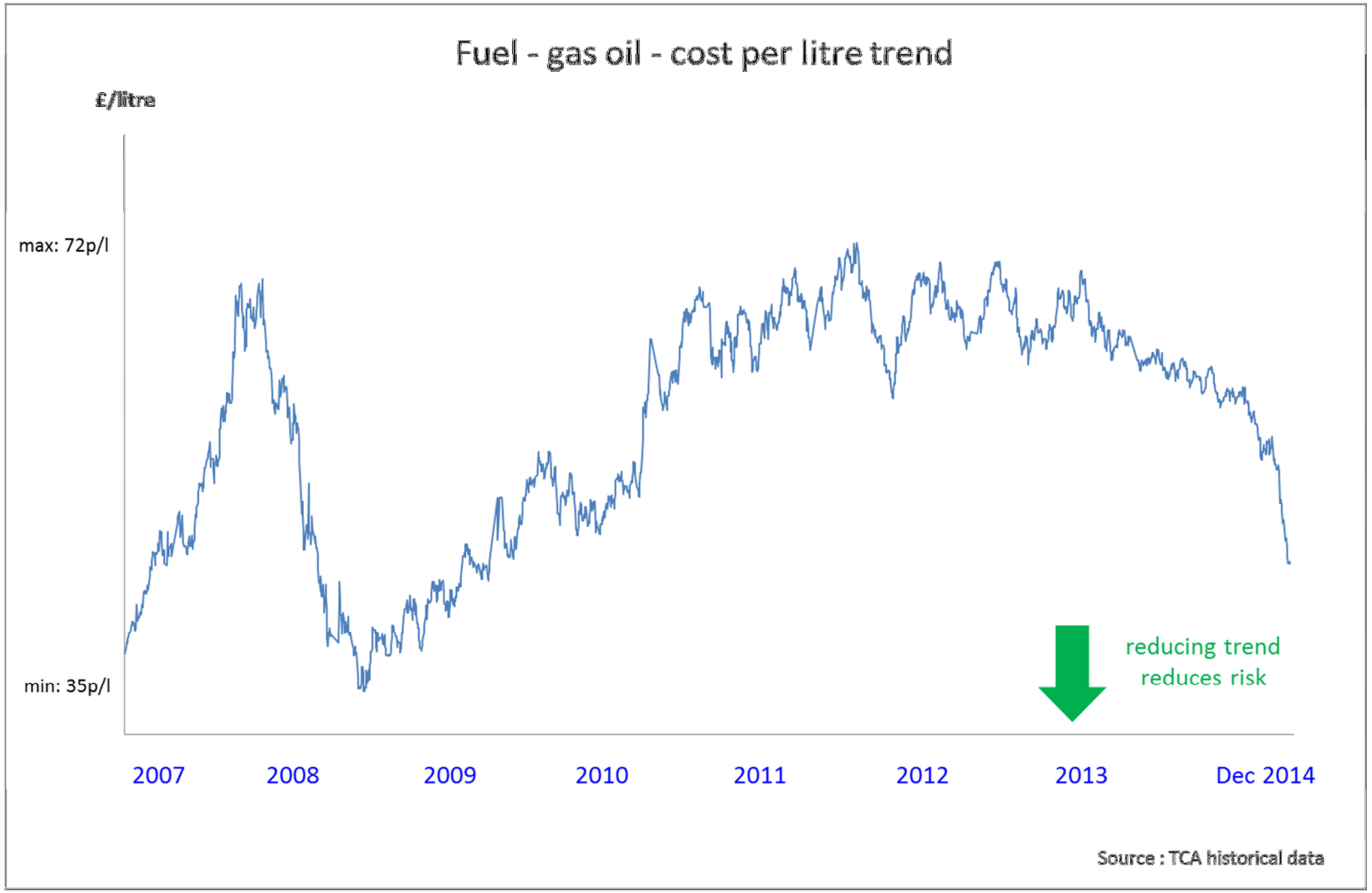
**APPENDIX A**
**LIST FO FILES - 1**



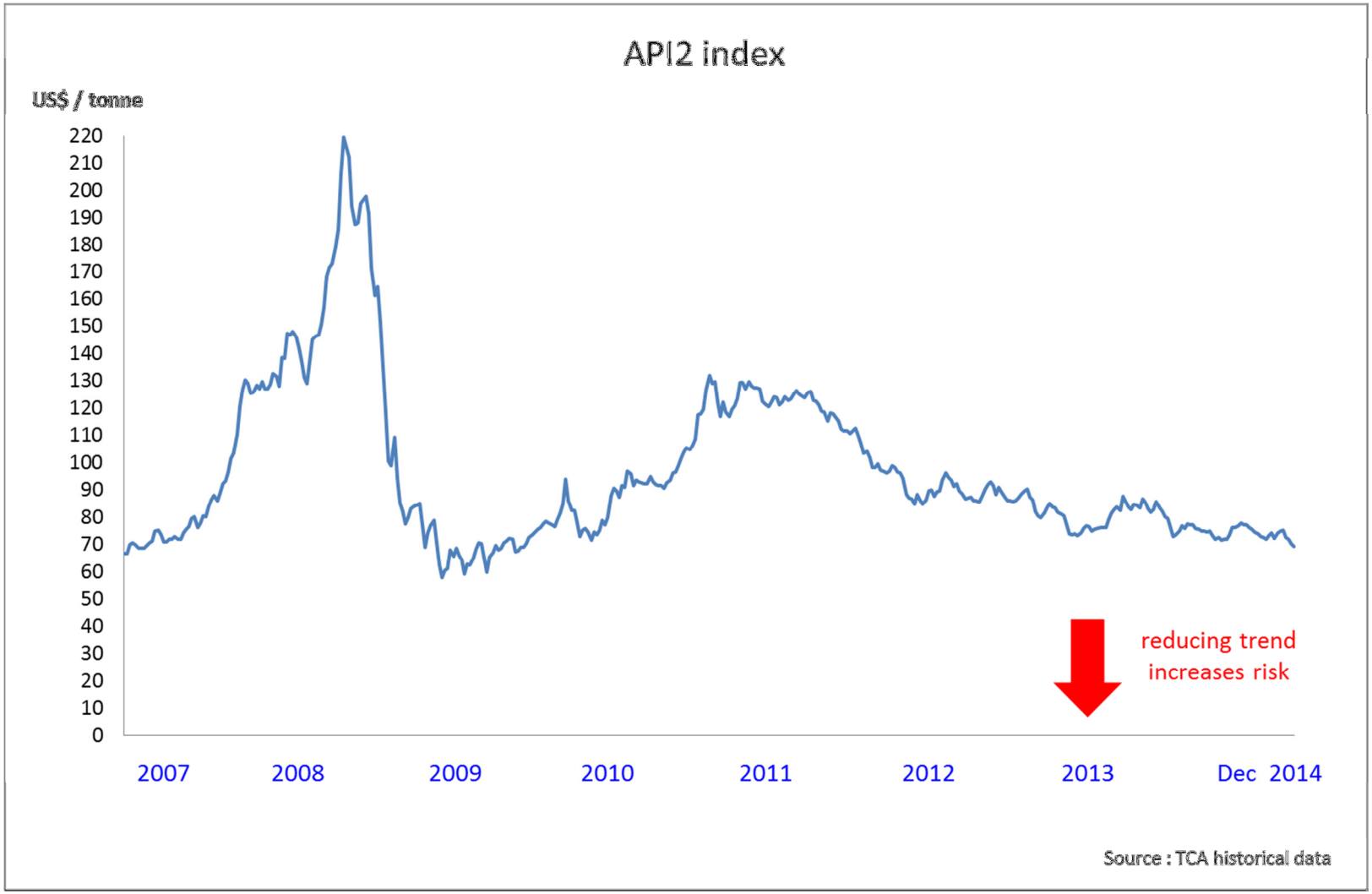
**APPENDIX A**
**LIST FO FILES - 2**

**APPENDIX B**
**FUEL PRICE TREND**



**APPENDIX C**

**API2 TREND – COAL PRICE**



**APPENDIX D**

**EXCHANGE RATE TREND – US$ into Sterling – API2 priced in US$**