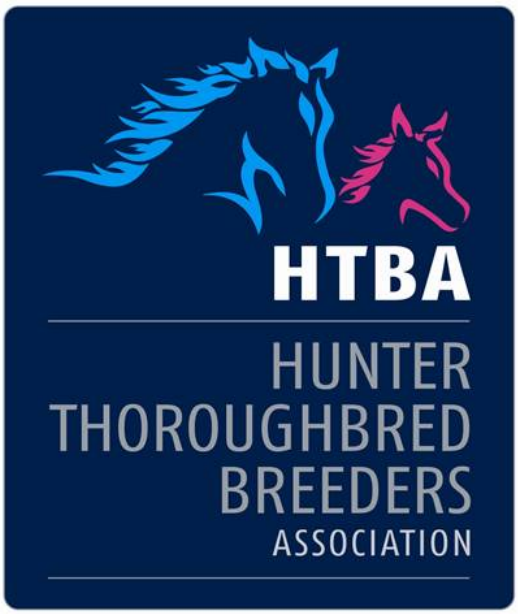

HTBA SUBMISSION

MAXWELL UNDERGROUND COAL MINE OPTIMISATION MODIFICATION - SSD 9526

AUGUST 2022

EXECUTIVE SUMMARY

1. We submit that the Maxwell Underground Mine Optimisation modification application be refused because it seeks to overturn, and is entirely in breach of, a fundamental consent basis and conditions upon which the Independent Planning Commission (Original Consent Authority) approved the Maxwell underground mine in 2020.
2. The Original Consent Authority's conditions related to the protection of water resources, land, biodiversity, Aboriginal and historic heritage sites, infrastructure and built features from the potential impacts of subsidence.
3. The Original Consent Authority unequivocally stated that the subsidence impacts should be *no greater than predicted in the EIS and assessed by DPIE*." (Emphasis added) (IPC Determination Report p36,37).
4. This modification seeks to overturn this fundamental determination and consent issue, increase the incidence of subsidence and significantly reduces the "buffer" distance from the predicted zone of subsidence to the Hunter River and Saddlers Creek by 23 % and 65% respectively.
5. Based on expert advice, this proposed modification will increase the potential of risk for subsidence to occur and result in significant and irreparable damage to the water systems the original consent conditions were designed to protect and avoid.
6. We consider it a significant breach of trust and failure of process if the modification consent authority is now minded to ignore and overturn a fundamental and core basis upon which original consent was provided, and for which strict conditions were put in place to allow the Maxwell Underground Mine to proceed in the first place.
7. The modification consent authority should not ignore the Original Consent Authority's determination.
8. If it is minded to accommodate the Proponent in any way, it should not do so without first requiring the Proponent to undertake a comprehensive and best practice subsidence assessment using a range of Angle of Draw (AoD) from 10 to 40+ degrees to more accurately reveal what the impacts to surface and groundwater water (especially to the Hunter River and Saddlers Creek) would be and what avoidance, management or mitigation measures should be put in place to avoid damage to these water resources.
9. The subsidence assessment should also apply best practice AoD to assess potential impacts to nearby roads (Golden Highway and Edderton Road) and farms (including Godolphin Woodlands and Coolmore). This subsidence assessment should be publicly exhibited, and the modification consent authority should benefit from the public's input prior to making its determination.
10. As part of that subsidence assessment the Proponent should also be asked to present options to change its mine and extraction plan and reduce the length of some longwall panels to prevent subsidence risks to the Hunter River and Saddlers Creek, nearby roads and stud farms.
11. This subsidence assessment should be publicly exhibited and the modification consent authority should benefit from the public's input prior to making its determination.
12. In its determination the Original Consent Authority imposed conditions of consent requiring the groundwater model be updated and independently reviewed every three years. Given

the frequency of modifications now being experienced, and their significant potential impacts on groundwater, we recommend that this condition of consent be updated to require the groundwater model to be updated and independently reviewed every three years or as part of modifications presenting potential impacts to groundwater, whichever the earlier.

13. We note that no noise and vibration modelling assessment has been undertaken for this modification on sensitive receivers at the Godolphin Woodlands Stud and that the Coolmore stud in order to assess impacts by Ventilation fan noise under certain meteorological conditions.

14. We submit that the consent authority should be provided with an updated noise assessment including assessment of sensitive receivers at the Godolphin Woodlands stud and actions to avoid, mitigate noise exceedances cause by Ventilation fan noise and any other noise emanating from this modification proposal. Both Coolmore and Godolphin should be consulted in, and agreeable to, the updated noise management and mitigation measures.

1. HUNTER THOROUGHBRED BREEDING ASSOCIATION

15. The HTBA represents Australia's multi-billion dollar thoroughbred breeding industry centered and concentrated in the Hunter Valley consisting of over 250 thoroughbred breeding operations and support industries.

16. The Hunter is home to Australia's largest concentration of thoroughbred breeding operations (second largest in the world) and largest producer, supplier and exporter of premium thoroughbreds. The industry contributes some $5 billion, $2.6 billion and over $0.5 billion per annum to national, state and regional economies.

17. It is one of 3 Centres of Thoroughbred Breeding Excellence in the world, is world renowned, and has been recognized and mapped by the NSW Government as an Equine Critical Industry Cluster, protected from coal seam gas development and identified for heightened protection from incompatible development, including coal mining, and recognized as a national and state significant industry.

18. Coolmore and Godolphin are central to the Hunter's internationally renown thoroughbred breeding industry. They are the largest domestic and international breeding operators and, in terms of contribution to the industry, they are larger than all other Australian states combined. They have been recognized as "central players" and the "epicenter" of the ECIC.

19. Further information on the Hunter's thoroughbred breeding industry and the importance of reputation to our brand is provided at Attachment 1.

2. THE MAXWELL UNDERGROUND MINE "OPTIMISATION" MODIFICATION

20. Maxwell Ventures (Management) Pty Ltd, a wholly owned subsidiary of Malabar Resources Limited (Malabar) has lodged a modification with the following components:

    a. re-orientation of the longwall panels in the Woodlands Hill, Arrowfield and Bowfield Seams resulting in a minor increase in the approved underground mining extent;

    b. reduction in the width of some of the longwall panels in the Woodlands Hill Seam;

    c. repositioning of the up cast ventilation shaft site and associated infrastructure; and

    d. other minor works and ancillary infrastructure components (e.g. access road and ancillary water management infrastructure for the repositioned ventilation shaft site)

21. The 1257 page plus modification application was placed on public exhibition for 2 weeks. We thank the Department for extending that period for a further seven days.

22. However, for the record, we express our strong concern regarding the inadequate time provided for the public to properly examine this modification proposal and its impacts. This is a lengthy and highly technical modification proposal. It is not a minor modification. Its implications, as outlined below, could be significant and have serious environmental implications – particularly for the Hunter's stressed water systems and the livelihoods of all who rely on them.

3. WHY WE OPPOSE THIS MODIFICATION PROPOSAL

3.1 INTRODUCTION

23. In approving the Maxwell underground mine in December 2020, the consent authority (the Independent Planning Commission) imposed "169 conditions to seek to avoid serious or irreversible damage".

24. Included in the consent authority's strict conditions were specific environmental conditions relating to water supply (including compensation if water supply is adversely or directly impacted) (B 27-44), subsidence (C1), noise and blasting criteria and operations conditions (B 12 – 14) and air quality criteria (B15 -16).

25. In its report the consent authority made it very clear that it "imposed conditions that set out subsidence performance measures to ensure the subsidence impacts to water resources, land, biodiversity, Aboriginal and historic heritage sites, infrastructure and built features *are no greater than predicted in the EIS and assessed by DPIE*." (Emphasis added) (IPC Determination Report p36,37)

26. The proposed modification is in direct contravention of consent condition C1 – subsidence where the consent clearly states:

    a. No greater subsidence impacts or environmental consequences than predicted in the documents listed in condition A2(c) (i.e. the original EIS and EAs) to water quality, water flows (including baseflow) or stream health (including riparian vegetation).

    b. No greater subsidence impacts or environmental consequences than predicted in the documents listed in condition A2(c) (to land within the subsidence area);

    c. No greater subsidence impacts or environmental consequences than predicted in the documents listed in condition A2(c) to biodiversity

    d. No greater subsidence impacts or environmental consequences than predicted in the documents listed in condition A2(c)

    e. First workings to remain long term stable and non-subsiding; emphasis added

    f. Second working to be carried out only within the approved mine plan, in accordance with an approved Extraction Plan. (Emphasis added)

    g. Edderton Road and Golden Highway – always safe and serviceable (C5, Table 10) (Emphasis added).

27. This modification not only contravenes these conditions but also presents heightened and unacceptable risks and permanent damage to water systems, which the consent conditions are designed to avoid.

28. It reduces the distance and therefore "buffers" to the Hunter River and Saddlers Creek by 23% and 65% respectively thereby increasing the risks of subsidence and irreparable damage to both ground and surface water.

29. In its determination, the consent authority particularly noted the noise and blasting concerns and the potential impacts on both the Coolmore and Godolphin Woodlands studs. In this respect the Commission imposed advanced warning, monitoring and notification conditions in

its consent and the public availability of noise and vibration data so that these studs can manage their safe functions of their operations

30. It is therefore unacceptable that there has been no assessment of the proposed modification's noise impacts on sensitive receivers at the Godolphin Woodlands stud farm.

3.2 WATER

31. Water is the lifeblood of our industry and the productive future of our region.

32. We have consistently raised concerns with the Maxwell underground mines' potential risks and impacts to the Hunter's water systems.

33. The proposed modification significantly reduces the buffer distance (by some 23%) from the Hunter River to the edge of the subsidence area and 65% from the centre of Saddlers Creek. This buffer reduction significantly heightens risks of irreparable damage to surface and groundwater systems. Risks the original consent authority sought to avoid by imposing stringent conditions.

34. These risks can be avoided by refusing the modification application. Should the consent authority for this modification decide to override the original consent authority's decision and strict conditions of consent, which in our view they should not, this unnecessary risk may be able to be avoided by changing the extraction plan and reducing the length of some longwall panels. Our mining expert can provide more details on how this can be done should it be necessary.

35. In the short time available we commissioned expert water advisers to comment on the water related risks posed by this modification. Their findings are as follows:

3.3 SURFACE WATER

36. We have previously raised serious concerns regarding the potential surface water environmental assessments conducted by the Proponent for underground mining at the Maxell site. These have included:

    a. Incomplete analysis of the effect of subsidence on surface hydrology;

    b. No confidence in Project water balance model;

    c. Lack of coherence between surface water and groundwater assessments;

    d. Lack of meaningful consideration of the implication of a changing climate;

    e. The legacy impacts for the State and community as a result of the post-project plan:

    f. No meaningful recognition or assessment of cumulative impacts.

37. These failings are repeated in the environmental assessments accompanying this modification application.

38. Of serious concern is that not only are these failing being perpetuated but risks are now being increased and "margins for error" decreased due to the proposed modifications.

39. The proposed modifications:

    a. Lead to increased subsidence in terms of both the total area of subsidence now predicted to be 20km^2 (increasing from 19km2 in the current approval) and maximum vertical subsidence now predicted up to 6.5m (increasing from 5.6m in the current approval);

b. Represent a significantly reduction in distance from the predicted zone of subsidence to the Hunter River and Saddlers Creek:

   i. Distance from the centre the Hunter River now predicted at 290 m, decreased by 23% from 375 m, noting even less buffer from the associated Hunter River alluvium.

   ii. Distance from the centre of Sadllers Creek now predicted at 60 m, decreased 65% from 170 m.

40. Importantly, as raised in our previous advice, the above predicted distances are based on an assumed 'Angle of Draw' (AoD), without any consideration of the implications of a potentially higher value.

41. The adoption of a single value for AoD in this case is effectively a simplifying assumption without any particular physical basis specific for this Project. This exact point is described in a background review undertaken in 2014 by the Independent Expert Scientific Committee (IESC, 2014[1]), which states:

> *"Ren and Li (2008) report a range of values for AoD varying between 19 and 50 degrees based on limited data from the Newcastle coalfield. A rule of thumb used in NSW is to adopt an AoD of 26.5, if no better information is available (MSEC 2007)."* (emphasis added).

42. If the actual AoD turns out to be higher than the 'rule of thumb' value adopted in the Proponent's studies, the area of subsidence would be greater than that predicted here and could extend into the key surface and groundwater resources of the Hunter River and Saddlers Creek - with the greatest potential for intersection with the Hunter River alluvial and consequent formation of a direct hydraulic connection between the mine workings, the Hunter Alluvial aquifer and therefore the Hunter River.

43. This would impact how the surface water/groundwater system behaves and have implications for the local and wider catchment water resources.

44. To date, no sensitivity assessment of this fundamental and uncertain assumption has been reported and this remains a material risk associated with the Project, both in its currently approved state and increasingly so under the proposed modifications.

45. The information provided and conclusions reached with regard to surface water cannot be relied upon and there remains an unknown risk of significant and irreversible harm to local and regional water resources and water availability for the range of uses, environmental and consumptive, to which water is applied in the area.

3.4 GROUNDWATER

46. As a general point, all the matters previously raised with respect to the deficiency of groundwater modeling remain valid and apply to this modification proposal. Further we note that the Original Consent Authority also raised concerns with groundwater modeling (as did the Independent Expert Scientific Committee).

[1] IESC (2014), Background Review on Subsidence from coal mining activities. Commissioned by the Department of the Environment. June 2014.

47. In its determination the Original Consent Authority imposed conditions of consent requiring the groundwater model be updated and independently reviewed every three years. Given the frequency of modifications now being experienced, and their significant potential impacts on groundwater, we recommend that this condition of consent be updated to require the groundwater model to be updated and independently reviewed every three years or as part of modifications presenting potential impacts to groundwater, whichever the earlier.

48. The groundwater assessment completely relies upon the assumption that the "Angle of Draw" chosen for the subsidence calculation is correct and that fracturing will be constrained to the estimations provided. The consequences of an underestimation of subsidence impacts will mean that the alluvials of the Hunter River and Saddlers Creek could be significantly impacted and groundwater losses to mine inflow will be significantly above those estimated.

The effects of Subsidence on Surface water and Alluvials

49. The estimates of surface subsidence are likely underestimated within water courses or near faults. The modelling does not effectively address subsidence and contends that subsidence of 20mm or greater will not extend significantly into the alluvials associated with Saddlers Creek or the Hunter River. It relies heavily on the calculated extent of subsidence with the provision that should subsidence and resulting loss of water from the stream be discovered through borehole monitoring it will be accounted for through water licensing.

50. The provision for the remediation of surface fractures also remains unaddressed and problematic. Surface fractures under alluvials are difficult if not impossible to locate.

51. In its present form the groundwater flow model is inadequate to effectively model the potential effects of subsidence on groundwater flow and baseflow. It also will not adequately account for the effects of subsidence on overland flow and therefore changes to groundwater recharge over the life of the mine.

52. The model will therefore contain inherent errors in predicted groundwater flow scenarios due to the increased flow characteristics caused by fractures as they develop due to subsidence.

53. The groundwater model focuses on simulating regional groundwater flow using assumption of a porous media flow model. These models do not incorporate impacts from surface cracking and near surface ground movement (subsidence).

54. This means that the model does not account for changes to baseflow (groundwater flow to streams) or the rainfall infiltration rate to groundwater caused by subsidence induced cracking.

Model Conceptualisation

55. Model calibration hydrographs (in the original EIS model) show water level differences of between 5 m and 40 m. These have not been explained nor implications identified. Calibration graphs have been presented for the updated model. A large number of these graphs do not show any reasonable correlation to aquifer response over time.

56. The hydrographs are plots of actual recorded water levels against modelled water levels. Poor correlation of the two data sets is indicative of poor calibration, lack of monitoring or errors in parameterisation of the model.

57. While the overall calibration of the model shows reasonable confidence with a scaled root mean square of 5.5% (4.3% original EIS model calibration) there is a *large disparity* between actual and modelled groundwater levels in certain areas indicates poor calibration in those areas.

58. The lack of curve matching (actual groundwater levels verses modelled levels) indicates that the model is not replicating the groundwater level response over time. This is a major concern given that statistically the model appears calibrated yet in the majority of bores the predicted groundwater levels do not match the actual field data nor does the groundwater level response match actual water level fluctuations.

Groundwater Quality

59. The Groundwater Assessment suggests that water quality will improve in the Hunter River due to decreased inflows from the Permian Coal Measures. The Assessment also suggests that the extracted Permian Groundwater will be of beneficial use on the site. Neither suggestion provides any quantification of likely changes to water quality.

60. The statement that Hunter River water quality will improve is dependent on a number of factors including a reduction of poor quality baseflow from the coal measures. However, should baseflow continue it is possible that water quality will decrease due to the interaction of groundwater flowing through fresh rock exposed due to subsidence. As yet these factors remain unreviewed.

Accumulative Effects of Nearby Mines

61. Several existing and proposed mines are located in close proximity to Maxwell Underground including, Mt Arthur, Bengalla, Muswellbrook, Mangoola, Mount Pleasant, Spur Hill and Liddell. However, the Mt Arthur mine is the only mine accounted for in the modelling. The inclusion of additional mines will likely indicate an accumulated effect and potentially a greater groundwater impact at Maxwell. The inclusion of the closed (but the subject of an extension) Drayton Mine should also be considered. The Drayton Mine may have an effect of the regional groundwater flow as it will be acting as a groundwater sink.

Additional Impacts by the Proposed Modification 2

62. In our view, the proposed modification raises greater concerns with regard subsidence and groundwater drawdown predictions:

Subsidence

63. The proposed changes to the mine plan mean that the area of predicted subsidence is increased from 19 km^2 to 20 km^2. The maximum predicted total vertical subsidence, based on the Modified Layout, is approximately 16 % greater than the maximum predicted value based on the EIS Layout with the calculated maximum vertical subsidence increased from 5.6 m to 6.5 m.

64. Saddlers Creek is located to the north of the mining area. The center of the creek channel is at minimum distances from the mining area of 125 m based on the Modified Layout and 230 m based on the EIS Layout.

65. The center of the creek will be approximately 60 m from the 26.5° angle of draw, at its closest point, based on the Modified Layout. This would mean that the Saddlers Creek alluvium will almost certainly be impacted by subsidence at various locations.

66. The center of the Hunter River is located at minimum distances of 470 m from the mining area and 290 m from the 26.5° angle of draw, at its closest point.

67. As was noted in previous reviews of the Maxwell EIS the effects of mine subsidence on effected groundwater resources can be significant in terms of long term impacts.

68. The groundwater assessment is highly reliant on the MESC (2019) report on mine subsidence and in this case the MESC (2022) report.

69. In both these reports MESC defined the area of potential subsidence caused defects as follows:

    "*The extent of the Study Area has been calculated, as a* ***minimum****, as the surface area enclosed by the greater of the 26.5° angles of draw from the limits of secondary extraction in each seam and by the predicted total 20 mm subsidence contour*". The concept of the angle of draw is presented in Figure 1.

Figure 1: Example of Subsidence showing Angle of Draw (Source: Rio Tinto 2006)

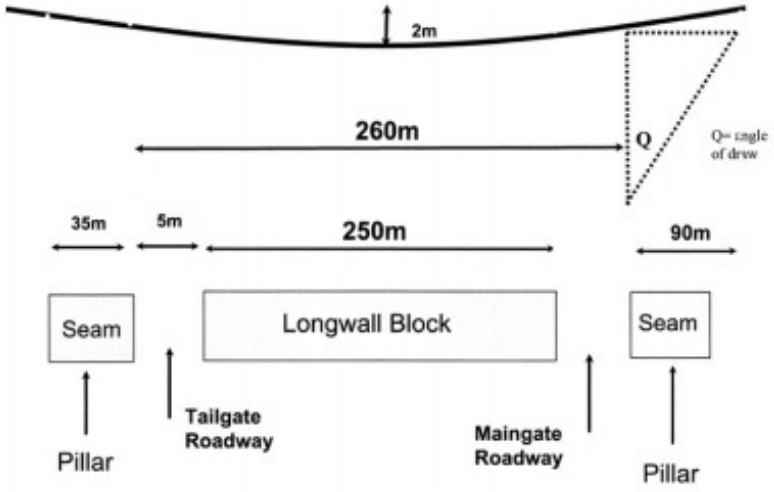

Figure 5: An example of subsidence: Estimated subsidence under a 250m wide longwall block for the Kestrel Mine near Emerald (Copied from Rio Tinto, 2006)

70. MESC (2019 and 2022) state: "*The mapped limit of alluvium for the Hunter River within the relevant Water Sharing Plan is located more than 50 m outside the 26.5° angle of draw lines from the proposed longwalls in the Woodlands Hill, Arrowfield and Bowfield Seams. The alluvium is predicted to experience less than 20 mm vertical subsidence and is not expected to experience measurable tilts, curvatures or strains*".

71. The MESC (2022) report indicates that the "*Saddlers Creek Channel could experience very low-levels of upsidence and closure. It is unlikely that the compressive strain due to these valley-related effects would be sufficient to result in fracturing in the bedrock beneath the creek. Even if fracturing were to occur in the bedrock beneath Saddlers Creek, it is unlikely that it would be visible at the surface due to the overlying alluvium. The creek channel itself is*

therefore not expected to experience adverse impacts resulting from the conventional or valley-related effects due to the Project (as modified)".

72. These assessments are highly reliant on the assumption that the Angle of Draw of 26.5^0 is appropriate for the geology of the area.

73. Further, Mr. Scott (2020) states '*the angle of draw varies with geology and depth of cover and typically ranges from a few degrees, such as the case of a near-vertical step at the panel edge, up to 60 degrees. Most commonly, angle of draw is in the range of 10^0 to 35^0 (MSEC 2007); Ren and Li (2008) report a range of values for Angle of Draw varying between 19 and 50 degrees based on limited data from the Newcastle coalfield*'.

74. The 2019 groundwater assessment accepts the MESC assessment of the angle of draw and contends that subsidence of 20mm or greater will not extend significantly into the alluvials associated with Saddlers Creek or the Hunter River. However, should the angle of draw even be slightly more in reality at 35^0 both the Hunter River and Saddlers Creek will be directly affected.

75. The MESC (2022) subsidence assessment is indicating that the Saddlers Creek Alluvium will be directly impacted and may or may not experience fracturing but if it occurs will not be visible. This is problematic as discussed previously as fractures visible or not *will* adversely impact both surface water and alluvial groundwater in the area. Given that the estimations of the 'angle of draw' are already considered conservative and potentially an underestimation there would appear to greater risk of significant impacts to not only the Saddlers Creek but the Hunter River Alluvium.

76. A more robust and scientifically appropriate approach to this would be the use of a range of potential values which will allow the determination of at least best case and worst case scenario's. This would allow for an informed understanding of the realistic risks posed to the alluvial aquifers.

Groundwater Drawdown Predictions

77. The model predictions of drawdown are completely dependent on the subsidence estimates as presented within the model. Any increase in the actual "angle of Draw" from what has been modelled will see significant increases in inflows from the alluvials of Saddlers Creek and dependent on scale from the Hunter River alluvials.

78. Current predictions are indicating an increase in drawdown within the alluvials of Saddlers Creek by up to 2 m (Figure 11A and Figure 11B SLR Report) yet the overall inflow volume is reported to decrease by approximately 500 ML over the life of the mine. Notably, groundwater inflows for the post mining period have not been addressed other than the statement that alluvial inflows will not exceed the EIS approved levels.

3.5 SUBSIDENCE

79. As noted above, this proposed modification is in direct contravention of the current conditions of consent.

80. As part of the original Maxwell Underground mine proposal, the HTBA commissioned Mr Peter Scott, a geoscientist with 48 years' specialist experience in assessment, management and rehabilitation of mining waste for mine sites including mine subsidence, to examine Malabar Coal's proposal with respect to subsidence and rehabilitation.

81. Mr Scott's examination has found serious inadequacies and impacts resulting from the Malabar underground coal mine proposal.

82. In his report Mr Scott noted that each geological site is unique and subsidence predictions are inherently uncertain and unpredictable. In this respect, best practice modeling, and experience, suggests that AoDs of at least 10 to 40+ degrees should be modeled to assess all potential scenarios (including worst case). Importantly, the "rule of thumb 26.5" degree Angle of Draw (AoD) to assess the impacts of subsidence on the Hunter River and Saddlers Creek watercourses and alluvials is not the best practice modeling tool to use and does not reflect the potential risks and damage that can be caused.

83. Mr Scott further noted that when the higher AoDs are applied to Malabar Coal's underground mine proposal the impacts on the Hunter River and Saddlers Creek are both closer and potentially more impactful.

    a. This risk will now be heightened as the Proponent through this modification proposes to reduce distances to both the Hunter River and Saddlers Creek and increase the risks associated with serious and irreversible impacts to both surface and groundwater.

84. Mine induced impacts on the Hunter River, Saddlers Creek and associated alluvials could result in permanent damage to these groundwater aquifers (shallow and deep).

85. Mr Scott found that the subsidence impacts of the proposed Malabar underground coal mine will be significant (much larger and more extensive) than predicted and will have significant consequential impacts, potentially permanently damaging, the Hunter River, Saddlers Creek and their highly productive alluviums.

    a. In turn damaging productive agricultural lands, soils, vegetation and critically engendered ecologically communities and dependent ecosystems.

    b. This will likely affect the suitability of lands for subsequent rural uses, specifically the viability of grazing on improved pasture.

    c. Mine related subsidence will have long term consequences however Malabar Coal has only committed to subsidence monitoring for a period of 2-5 years post mining.

86. Further Mr Scott found that the higher AoD will place the Golden Highway within the area affected by longwall panels as opposed to the minimum distances suggested by Malabar Coal of 150 m and 210 m from the proposed longwalls in the Woodlands Hill, Arrowfield and Bowfield seams. There is also a risk that this level of subsidence will spread further impacting on land currently operated by the studs and/or the Hollydene winery.

87. With respect to Edderton Road, Mr Scott found that despite reducing mining activity beneath Edderton Road to one seam, it does not remove the probability that surface subsidence will occur and will damage Edderton road which will impact traffic flow. Given Edderton Road is a critical transport route for the studs, particularly during the breeding season (September to December each year) this presents a potentially significant impact for the studs' operations.

88. Mr Scott found that mine induced subsidence will have significant impacts on highly productive agricultural lands, a direct impact on Biophysical Strategic Agricultural Land (which Drs Bacon and Hazelton estimate at 300ha rather than the 72 ha claimed by Malabar Coal) and impact nearby equine and viticulture mapped cluster lands. This is clearly inconsistent with NSW policies and commitments to protect these lands.

89. The key concern is the extent to which mining causes surface cracking and near-surface ground movement, which has important consequences for the interactions between groundwater and surface water and their dependent resources. Mr Scott found:

    a. that the estimates of surface subsidence are likely underestimated within watercourses and near faults;

    b. little confidence in the estimates of non-conventional subsidence at the local scale (and other associated ground movements) in areas that are most vulnerable to ecological decline.

90. We strongly recommend this consent authority reads Mr Scott's report as many of the issues he highlighted then are relevant now and more importantly the risks are heightened as the proposal seeks to reduce the buffer distance to the Hunter River and Saddlers Creek, and increase the risk of permanent damage. A copy of his report is provided at Attachment 2 for your convenience.

91. We strongly recommend that should this consent authority chose to disregard the original consent authority's determination and consent conditions, (which we strongly oppose) it should require the Proponent to undertake a robust and scientifically appropriate subsidence assessment, using a range of potential AoD values (from 10 to 40+ degrees) to demonstrate best case and worst case scenarios. This would allow for an informed understanding of the real risks posed to the alluvial aquifers.

92. Further should this consent authority chose to disregard the original consent authority's determination and consent conditions, (which we oppose) we strongly recommend that the Proponent be required to submit revised mine extraction plan to reducing the length of longwall panels to prevent potential irreversible damage to the both the Hunter River and Saddlers Creek. This revised extraction plan should be developed in consultation with our mine expert and to our satisfaction.

3.6 NOISE AND BLASTING

93. We know that this currently approved mine plan will result in noise exceedances.

94. In its determination, the consent authority noted the noise and blasting concerns raised by Coolmore and Godolphin and others and that sudden blasting event will potentially adversely affect their operations.

95. The consent authority imposed conditions to ensure advanced notification of blasting events for sensitive received and the implementation of monitoring and complaints measures and conditions to ensure noise and vibration data is publicly available.

96. Against this background, and the known sensitivity of the studs' reputation and safe operations to noise and blasting, it is incomprehensible that no noise impact assessment has been undertaken on the impacts of this modification to the operations of the Godolphin Woodlands stud.

97. As noted above, this modification application is in clear contravention of the original consent authority's conditions of consent.

98. Should this consent authority be inclined to approve this modification, prior to making any decision it should require the Proponent prepare a revised noise, blasting and vibration assessment to include sensitive receivers at the Godolphin Woodlands stud.

99. Further it should be noted that at another sensitive receiver on a neighbouring stud farm (receiver number 228r) the Proponent's Ventilation fan noise may be audible, particularly at times when meteorological conditions maximize noise travel.

100. All efforts should be taken to ensure compliance with the Proponents' claims and commitments for "no impacts at the studs" and to comply with conditions of consent B10.

3.7 AIR QUALITY & GREENHOUSE GAS EMISSIONS

101. We note that Total Suspended Particles (TSP) emissions attributable to the Mine Ventilation Fans will increase by 26% (from 89,215 kg/year to 112/411kg/yr.

102. This is an example of an incremental creep that adds to the Upper Hunter's already poor air quality and full air shed.

103. We and the community at large have previously submitted scientific evidence regarding the air quality in the Upper Hunter, its impact to human and horse health, the incongruence of continuing increases in mine related air pollution contrary to the Government's Net Zero Emissions policy and our domestic and international Greenhouse Gas obligations, and the continued lack of duty of care to the residents of the Upper Hunter.

104. Those representations remain valid.

3.8 RECOMMENDATIONS

105. We submit that this consent authority refuse this modification application because it seeks to overturn and is in breach of fundamental consent conditions imposed by the Independent Planning Commission (Original Consent Authority) in approving the Maxwell underground mine in 2020.

106. The Original Consent Authority's conditions relate to the protection of water resources, land, biodiversity, Aboriginal and historic heritage sites, infrastructure and built features from the potential impacts of subsidence. The conditions they imposed unequivocally state that the subsidence impacts should be *no greater than predicted in the EIS and assessed by DPIE*." (Emphasis added) (IPC Determination Report p36,37).

107. This modification seeks to overturn this fundamental determination and consent issue, increase the incidence of subsidence and significantly reduce the "buffer" distance from the predicted zone of subsidence to the Hunter River and Saddlers Creek by 23 % and 65% respectively. In short, increase the potential of risk for subsidence to occur and result in significant and irreparable damage to the water systems the original consent conditions were designed to avoid.

108. We would consider it a significant breach of trust and failure of process if the modification consent authority is now minded to ignore and overturn a fundamental and core basis upon which original consent was provided to allow the Maxwell Underground Mine to proceed in the first place.

109. The modification consent authority should not ignore the Original Consent Authority's determination.

110. If it is minded to accommodate the Proponent in any way, it should not do so without first requiring the Proponent to undertake a comprehensive and best practice subsidence assessment using a range of Angle of Draw (AoD) from 10 to 40+ degrees to more accurately

reveal what the impacts to the Hunter River and Saddlers Creek would be and what avoidance, management or mitigation measures should be put in place to avoid damage to these water resources.

111. The subsidence assessment should also apply best practice AoD to nearby roads (Golden Highway and Edderton Road) and farms (including Godolphin Woodlands and Coolmore). This subsidence assessment should be publicly exhibited and the modification consent authority should benefit from the public's input prior to making its determination.

112. As part of that subsidence assessment the Proponent should also be asked to present options to change its mine and extraction plan and reducing the length of some longwall panels to prevent subsidence risks to the Hunter River and Saddlers Creek, nearby roads and stud farms.

113. In its determination the Original Consent Authority imposed conditions of consent requiring the groundwater model be updated and independently reviewed every three years. Given the frequency of modifications now being experienced, and their significant potential impacts on groundwater, we recommend that this condition of consent be updated to require the groundwater model to be updated and independently reviewed every three years or as part of modifications presenting potential impacts to groundwater, whichever the earlier.

114. Further the consent authority should be provided with an updated noise assessment including assessment of sensitive receivers at the Godolphin Woodlands stud and actions to avoid, mitigate noise exceedances caused by Ventilation fan noise and any other noise emanating from this modification proposal. Both Coolmore and Godolphin should be consulted in, and agreeable to, the updated noise management and mitigation measures.

ATTACHMENT 1

HUNTER THOROUGHBRED BREEDING INDUSTRY

The Hunter is home to Australia's largest concentration of thoroughbred breeding operations (second largest in the world) and largest producer, supplier and exporter of premium thoroughbreds. The industry contributes some $5 billion, $2.6 billion and over $0.5 billion per annum to national, state and regional economies.

The Hunter Thoroughbred Breeding industry provides sustainable employment to over 5,000 people in the Hunter and supports a sophisticated network of equine support industries, including the Scone Equine Hospital, the largest in the Southern Hemisphere and a Centre of Equine Veterinary Excellence in its own right.

The Thoroughbred Breeding industry has a proud history in the Upper Hunter starting from the late 1800's and spanning nearly 200 years.

The industry is vertically integrated into the NSW Racing Industry and provides employment and business opportunities to over 200,000 people across its national network – upstream and down from fodder and saddlery through to racing, accommodation, fashion, tourism and hospitality.

It is a significant national, state and local employer and has been recognised by the NSW Government as a state significant industry. The industry has been mapped as an Equine Critical Industry Cluster, protected against coal seam gas development and promised heightened protection from coal mining. Appendix 1 to this submission provides further information on the industry, its economic significance.

The Hunter's Thoroughbred Breeding Industry is one of 3 Centres of Thoroughbred Breeding Excellence in the world, alongside Kentucky in the USA and Newmarket in the UK. It is the only thoroughbred breeding industry of such significant size, importance and global reputation that is not protected from incompatible development (such as mining) with buffers, protection zones or preservation orders.

Our industry is founded on the strength of our premium stallions. The stallion farms in the Hunter Valley are inextricably linked to over 150 broodmare operations clustered in the Hunter Valley and the sophisticated network of equine support industries. These operations would not be in the Hunter Valley if it were not for the stallion stud farms, such as Coolmore and Godolphin.

The Hunter Valley's breeding industry underpins NSW's racing industry (and indeed racing industries across Australia, particularly the Eastern seaboard) and the significant revenue, investment and tourism that NSW breeding and racing attracts.

Critical to the ECIC are Coolmore and Godolphin - Australia's and the world's largest thoroughbred breeding studs. They are the global and Australian market leaders. As previous PACs have found, they are "pivotal" "central actors" the "epi-centre" of the Hunter's Equine Critical Industry Cluster (ECIC).

Coolmore and Godolphin are Australia's world and domestic market leaders in breeding and racing. They command some 50% of both the Australian and Hunter Valley stallion market. Together these studs are larger than all other thoroughbred breeding states in Australia combined.

They are as dominant in the sales ring as they are on the racecourse (representing 40-50% of the market in both). Coolmore and Godolphin stallions represent some 50% of the top ten stallions in

Australia. The progeny of their stallions are highly successful, highly valuable and coveted by domestic and international breeding and racing interests.

COOLMORE AND GODOLPHIN "CENTRAL PLAYERS" OF THE ECIC

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INVESTMENT, BRAND AND REPUTATION

The global thoroughbred breeding industry is extremely competitive and investment is highly mobile. Reputation and brand are paramount to attracting investment and retaining clients. This is reflected in every aspect of a world scale stud's appearance and operation – from the approaches, surrounds, the front gate and throughout every acre of the stud's operation.

The production of elite equine athletes requires a unique operating environment combining scenic landscape, plentiful clean water, rich soils and a varied undulating terrain to produce and develop young equine athletes into champions of the future.

Where Coolmore and Godolphin's Woodlands Studs are situated in the Upper Hunter Valley, all of these characteristics are present. Any threat to this environment (perceived or real) will threaten the fundamental basis of the industry's business model and reputation.

Since Coolmore and Godolphin established their operations in the Upper Hunter, the Hunter Valley's rich history of breeding thoroughbred champions has attracted significant domestic and international investment (billions of dollars) and a concentration of Thoroughbred Breeding support industries making the Hunter Valley the envy of our domestic and international competitors.

Once the Hunter Valley would have been without question the ideal and natural place that international and domestic investors would choose to locate and establish their operations. However, investment is now stalling as thoroughbred breeders and key support industries grapple with investment uncertainty due to the encroachment of mining and the decades of instability and uncertainty that has entailed.

Investor perceptions have been negatively affected in the Hunter Valley due to the uncertainty mining creates. Significant investments that would once have naturally come to the Hunter Valley have been deterred and diverted to other states – including Victoria and Queensland – because of inherent incompatibility of the two industries and the significant threat mining poses to every aspect of thoroughbred breeding – including and importantly its brand.

HUNTER VALLEY THOROUGHBRED BREEDING INDUSTRY
ECONOMIC SIGNIFICANCE

Internationally Significant	
1 of 3	International Centres of Thoroughbred Breeding Excellence in the World – alongside Kentucky in the USA and Newmarket in the UK
1 of 2	Recognised and mapped critical industry clusters in NSW and recognised as internationally significant by NSW Government (2012).
Largest	Concentration of thoroughbred studs in the world outside Kentucky USA
Largest	Australian producer & supplier of premium thoroughbreds
Largest	Australian exporter of premium thoroughbreds, representing:
Nationally significant	
$5b	Contribution to national GDP annually
230,000	Jobs generated and sustained nation wide
Critical Industry Cluster	Recongised by NSW Government as nationally significant industry; mapped and legislated critical industry cluster in 2012; protected from coal seam gas mining (2012/13); and earmarked for protection.
State Significant	
$2.6b	Contribution to NSW economy annually
53,696	People employed or participating in thoroughbred breeding and racing in NSW
34,000	People directly involved in breeding, racing or training in NSW
21,837	Thoroughbred owners in NSW
134	Racing Clubs in NSW
$175m	Investment in NSW Racing infrastructure underpinned by the quality of bloodstock & racing product produced in the NSW Hunter Valley
Regionally Significant	
55% +	Of the $2.6b total value added occurs in regional NSW
Largest	Agricultural industry in the Hunter Valley:
2 times	The value of irrigated agriculture
4.5 times	The value of dairy
10 times	The value of meat and cattle
200	Stallion and Broodmare farms
Sophisticated	Network of equine support industries dependent on Hunter Valley stud farms – incl. farriers, fodder producers, saddlers, equine transport companies and the Southern Hemisphere's largest equine veterinary practice, Scone Equine Hospital
Significant Regional Employer	
42,586	Employees and participants in regional NSW:
5,745	in the Hunter
10,159	in Sydney
5,633	in Western Sydney
9,693	in Mid North Coast, Central Coast, Illawara, Southern Inland and South Coast
11,356	throughout the rest of regional NSW
Significant Regional Investor	
$5b +	Invested in the HV thoroughbred breeding industry in the past 10 years (& rising)

85%	Of breeders' operational expenditure occurs within the local region.

AT A GLANCE

NSW At A Glance	
2,048	Breeders
53,696	Employees and Participants*
134	Race Clubs
761	Race Meetings
5436	Races
39,227	Racing Club Members
1,233,786	Attendances
$2.6b/pa	Total value added to NSW economy by the thoroughbred breeding & racing industry
Hunter At A Glance	
470	Breeders
5, 745	Employees and Participants*
6	Race Clubs
78	Race Meetings – including the only Saturday Stand Alone meeting in regional Australia
595	Races
3,080	Racing Club Members
100,416	Attendances
$564.6m/pa	Value added injected in the local economy by the thoroughbred breeding & racing industry
Sydney At A Glance	
10,159	Employees and Participants
3	Race Clubs
66	Race Meetings
494	Races
7,550	Racing Club Members
291, 858	Attendances
$11.1 billion	Value added injected into the economy by the thoroughbred breeding & racing industry
Western Sydney At A Glance	
5, 633	Employees and Participants
1	Race Club
76	Race Meetings
392	Races
8,149	Racing Club Members
237, 411	Attendances
$321.9 million	Value added injected into the Western Sydney by the thoroughbred breeding & racing industry

* Participants are the lifeblood of the industry. They provide investment, time, skills and passion that underpins the horse racing industry in the State.
Source: IER Pty Ltd, Size and Scope of the NSW Racing Industry, 2014