

# ***PCG 2016/D17 - ATO compliance approach - exploration expenditure deductions***

⚠ This cover sheet is provided for information only. It does not form part of *PCG 2016/D17 - ATO compliance approach - exploration expenditure deductions*

⚠ This document has changed over time. This version was published on *14 November 2016*



## **ATO compliance approach – exploration expenditure deductions**

### **Relying on this draft Guideline**

This Practical Compliance Guideline is a draft for consultation purposes only.  
When the final Guideline issues, it will have the following preamble:

*This Practical Compliance Guideline sets out a practical administration approach to assist taxpayers in complying with relevant tax laws. Provided you follow this guideline in good faith, the Commissioner will administer the law in accordance with this approach.*

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### **What this draft Guideline is about**

1. The Ruling provides the ATO's view in relation to the deductibility under section 8-1 and subsection 40-730(1) of the *Income Tax Assessment Act 1997* of expenditure on mining and petroleum exploration and prospecting activities.
2. This draft Guideline sets out how the ATO will administer the law and the Ruling to assure deductions claimed for exploration expenditure. The term 'exploration expenditure' in this draft Guideline takes the same meaning as in the Ruling.<sup>1</sup> This draft Guideline sets out the factors that the ATO will consider when assessing your risk of non-compliance and therefore, how likely we are to review your exploration expenditure claims.
3. You can use this draft Guideline to check the processes you undertake to support your exploration expenditure claims and to assess the likelihood that the ATO will devote compliance resources to reviewing your claims. Following the principles in this draft Guideline will increase your confidence and ours that your deductions for exploration expenditure are claimed correctly.
4. This draft Guideline sets out three lenses through which to check your exploration expenditure deductions. The first is to assess the quality of your governance policies for your projects and your tax characterisation decisions; the second is to identify and keep adequate analysis and evidence so that you can easily substantiate your exploration expenditure deductions; the third is to identify and explain any expenditure viewed as high risk by the ATO.
5. The ATO is committed to working with you to help you mitigate potential risk associated with your exploration expenditure claims. If you are unsure of the risk associated with your deductions or would like more certainty in relation to your exploration deductions you are encouraged to contact the ATO for assistance.

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<sup>1</sup> See paragraph 2 of the Ruling.

**Glossary**

AFC	Appropriate for construction
AFD	Appropriate for design
AFE	Authorisation for Expenditure
ALARP	as low as reasonably practicable
ATO	Australian Taxation Office
BFD	basis for design
Board	Board of Directors, or other relevant approval authority
CAD	computer-aided design
CAPEX	Capital expenditure
DSP	Decision support package
EFS	Economic feasibility study
EIA	environmental impact assessment
EIS	environmental impact statement
EMP	Environmental Management Plans
EPC	Engineering, procurement and construction
EP	exploration permit
FDP	field development plan
FEED	front-end engineering & design
FID	Final investment decision
GA	general arrangement
Guideline	Practical Compliance Guideline
GSA	gas sales agreement
HAZOP	hazard and operability study
HAZAN	hazard analysis
H&BM	heat and material balances
HR	human resources
HSEC	health, safety, environment and community
I/O	Input/output
IT	information technology
ITAA 1997	<i>Income Tax Assessment Act 1997</i>
JORC	Joint Ore Reserves Committee
JV	joint venture
LNG	liquefied natural gas
ML	mining lease
MP	Management plan
MTO	material take-off
OEM	Original equipment manufacturers
Opex	Operating expenditure
P&ID	Piping and instrumentation diagram
PCR	Pre-compliance review
PEP	Project execution plan
PFD	Process flow diagram
PS	project specification
PVT	pressure-volume-temperature
QA/QC	quality assurance / quality control
QRA	quantitative risk assessment
the Ruling	Draft Taxation Ruling TR 2015/D4: <i>Income tax: deductions for mining and petroleum expenditure</i>

SIMOPS	simulated operations
VIP	value improving practises
WBS	work breakdown structures

### **Date of effect**

6. This draft Guideline will have effect from its date of issue. The ATO will adopt this draft Guideline's approach when reviewing claims made after the date of issue.

7. The use and application of this draft Guideline will be under continuous review over the next three years. Any revisions to improve its efficacy will be made at the end of the review period or on an 'as necessary' basis. We will consult with you in relation to proposed material changes.

### **Who this draft Guideline applies to**

8. This draft Guideline is relevant to all taxpayers who claim deductions for exploration expenditure. The principles in this draft Guideline apply to claims made in relation to all exploration activities.

9. This draft Guideline is to be read in conjunction with the Ruling and no part of this draft Guideline should be read as contradicting or overriding the principles outlined in the Ruling.

### **The ATO's compliance approach**

10. The ATO takes a risk based approach to compliance across all taxpayer populations. In practice this means that the ATO will tailor its engagement with you to reflect your behaviour and risk appetite. Consistent with this approach, the ATO will take a risk based approach when deciding whether to review your exploration expenditure claims.

11. The ATO will not generally seek to review all your exploration expenditure deductions. There will be some expenditure which from a practical perspective is readily identifiable and broadly accepted as incurred on exploration or prospecting for minerals or petroleum. This draft Guideline outlines the circumstances when the ATO is likely to review your exploration expenditure deductions and what you may expect when this occurs.

12. More generally, we are publishing this draft Guideline on the premise that if we are transparent about how we assess the risk associated with your exploration expenditure deductions and if you opt to apply a similar approach with similar rigour prior to making your claims, there will be mutual cost and system benefits.

### **Governance**

13. Our compliance approach will seek to leverage the existing project governance frameworks that many taxpayers will have in place. If you have governance policies that mandate strong project and tax control processes for your project and claims for exploration expenditure deductions and you can evidence that these processes are followed, you can lower the risk associated with your exploration expenditure deductions, and therefore, the likelihood that the ATO will review your exploration expenditure claims.

14. We may seek to test the quality of your governance framework and whether it is consistently followed. Part A of this draft Guideline provides details of what we would generally expect to see in your project and tax governance frameworks. Aligning your governance framework with these principles will generally limit further ATO reviews to the 'high risk areas' identified in this draft Guideline.

15. Conversely, if your governance framework is not apparent or is considered to be lacking, the ATO will consider there is a higher risk of your deductions not complying with the law. In these circumstances, the ATO may seek to review a larger cross-section of your exploration expenditure claims, not just those relating to the high risk areas.

16. The ATO does not require you to implement a governance framework for the purposes of this draft Guideline. However, in the absence of formalised governance practices, we cannot apply the approach outlined in this draft Guideline. In these circumstances, the ATO will consider your expenditure claims by reference to your primary source documents.

### ***Substantiating your claims***

17. Part B of this draft Guideline provides helpful guidance to assist you to substantiate your exploration deductions. Broadly, we have included guidance on the analysis and documentation you would prepare and keep to support of your claims, including:

- (a) when to prepare your supporting documentation
- (b) what to include in your supporting analysis, and
- (c) what questions we may ask you when reviewing your governance framework and exploration deductions.

18. It is anticipated that following this approach will assist you to assure your claims and increase your confidence that you have complied with your obligations.

19. The ATO expects you to have analysed the nature and character of all expenditure claimed as exploration expenditure and that you are able to substantiate all of your claims.

20. This does not mean that each and every item of expenditure attracts the same level and intensity of analysis. We expect you will apply a level of analysis that is proportionate to the risk that attends your exploration expenditure claims. For example, expenditure that is conducted early in a project life cycle will generally require less detailed analysis to support its deductibility if it is obviously spent on understanding the size and nature of the resource. The closer a project is to development or commencing construction, the more detailed analysis we would expect to support your tax treatment of the expenditure.

21. Similarly, the size and nature of your business and the materiality of the expenditure will also influence the level of analysis and documentation required. However, we expect all claims to be able to be substantiated by reference to primary source documents.

### ***High risk areas***

22. The ATO considers it more likely that expenditure incurred in certain phases of the project life cycle is at higher risk of being mischaracterised according to law. From a practical perspective, the closer a project is to being developed or constructed, the greater the degree of complexity in characterising your exploration expenditure deductions in keeping with the law. We acknowledge that these claims are not black and white and may require intensive factual inquiries.

23. Areas we consider to be at higher risk include:

- (a) cost of long lead assets and early works activities
- (b) expenditure that is incurred ‘too soon’ or goes ‘too far’, and
- (c) certain costs in relation to EFS.

24. If you satisfy the governance criteria, the ATO will seek to sample check your characterisation of expenditure in the high risk areas as an initial step. Review of a wider

range of exploration expenditure will generally only occur if the sample check raises concerns.

25. Further details regarding these areas of concern are outlined in Part C of this draft Guideline.

## **Part A: Governance**

26. The first aspect of the ATO's compliance approach is to review your governance framework, including the:

- (a) business and commercial policies and procedures associated with the progression of a project through its life cycle or stage-gate process, and
- (b) tax policies and procedures to safeguard correct characterisation of exploration expenditure.

27. If your governance framework meets the principles set out in Part A of this draft Guideline and you follow your framework consistently, the ATO will generally only seek to review those areas identified in this draft Guideline as being at higher risk. The ATO may test your governance framework to assess your compliance with the principles in this Part.

28. If you have not or you cannot demonstrate that you have implemented a governance framework consistent with the principles in this Part you may be subject to further and more intense compliance activity as we consider there is a greater risk that your exploration claims may be incorrect.

29. We understand that in some circumstances you will not have governance frameworks, policies and procedures as detailed as outlined in this draft Guideline (for example you are a small business). In these circumstances, you may apply the principles in this draft Guideline insofar as they are applicable to your circumstances. When reviewing your claims we will tailor our engagement with you having regard to your circumstances and risk profile.

### **Project governance**

30. We will seek to understand and test your ordinary business and commercial governance frameworks to obtain an indication as to your compliance risk management profile and therefore the risk associated with your exploration expenditure claims. Reviewing your policies and procedures will also assist us to understand the activities you undertake and the tax treatment accorded to certain types of expenditure (for example, DSPs and special approvals may identify long lead items, detailed design activities, or capital items such as land purchases).

31. Taxpayers adopting "better practices" will have documented business and commercial policies and procedures governing their investment in projects, including approval and authority guidelines in order to progress or advance a project.

32. We expect you to have policies and procedures governing the making of investments, and progression of a project through its life cycle for business and commercial purposes. These include:

- (a) approval limits
- (b) identification of who has the necessary authorisation to approve the progress of a project from one stage to the next
- (c) the level of documentation (quantity and quality) required to support such a decision
- (d) the project plan describing the activities required to be performed at each stage of the project

- (e) financial reporting and cost analysis, and
  - (f) processes to seek approval from JV participants (see below).
33. We expect you to also maintain copies of:
- (a) an overview of the decision making process and policies in relation to the project
  - (b) presentations or documents provided to the Board, in support of its decisions (for example, Board papers, investment committee papers), and
  - (c) internal approvals required in order to:
    - (i) progress a project through various decision gates (including long lead asset approvals, and early works approvals), and
    - (ii) make key contracts, or meet milestones and trigger events impacting the project.
34. The ATO may review all, or a subset, of the documents in the above categories in assessing the existence and adoption of project governance policies and procedures for your projects and whether they are applied consistently.

### ***Joint Venture arrangements***

35. Where projects are operated as JVs, we expect that joint venturers would ordinarily implement governance procedures and policies covering the operation of the JV project. These include:
- (a) agreements governing the operation of the project or JV (for example, JV operating agreements)
  - (b) agreements governing cost sharing arrangements
  - (c) processes and approvals for the progress of a project including agreed-upon project sanction criteria and parameters
  - (d) agreements on the types and detail of information to be provided by project operators to participants in order to facilitate decision making, including level of detail in DSPs, and
  - (e) agreements as to the information to be provided to allow participants to correctly identify and characterise exploration expenditure, including the level of detail in any JV tax packs and any tax advice to be sought on participants' behalf.
36. We expect that JV participants would ordinarily maintain copies of critical to business documentation including:
- (a) records of key JV decisions, and documents provided to participants in support of these decisions
  - (b) project schedules and timetables, Gantt charts and other progress and status reports prepared for the management or operating committee and other subcommittees including technical, finance and fiscal committees or working groups, and
  - (c) AFEs, associated budgets and details of activities to be performed under each authority (including any subsequent variations).
37. We may also examine a JV participant's own governance framework in order to ascertain whether its exploration expenditure claims are at risk of non-compliance.

## **Tax governance**

38. This section focusses on the process for characterising your exploration claims, to ensure as far as practicable, a correct tax treatment. We note that this process will form part of your broader tax risk management framework that may also be tested and assessed by the ATO. This draft Guideline focuses on the process to support characterising exploration expenditure deductions. The ATO has published a *Tax Risk Management and Governance Review Guide* to assist you to understand more broadly what the ATO views as better tax corporate governance.<sup>2</sup> You are encouraged to review the policies and responsibilities outlined in the *Tax Risk Management and Governance Review Guide* and test the robustness of your overall tax governance practices.

39. There is neither a ‘point in time’ nor a ‘bright line’ test to distinguish exploration expenditure from other expenditure. The fact that an amount is incurred during what is sometimes regarded as the ‘exploration phase’ of mining – that is in the absence of a decision to commence a project at the time the expenditure is incurred – does not determine its nature or character as exploratory or as evaluating the economic feasibility of mining following a discovery for the purposes of claiming an immediate deduction under section 8-1 or section 40-730 of the ITAA 1997.<sup>3</sup> Further, the technical analysis supporting your deductions will differ depending on whether your claim is pursuant to section 8-1 or section 40-730.

40. Therefore, you will need to have local/domestic policies and procedures in place that allow you to identify and analyse whether and to what extent costs are properly characterised as incurred ‘on exploring’ and provision of the tax law under which your costs may be deductible. This is referred to in this draft Guideline as the ‘tax characterisation’ process.

41. You will need to document your tax characterisation and be able to demonstrate that your process is followed consistently. Generally, when the ATO reviews your tax characterisation process, we will ask you to provide a ‘walk-through’ of your internal policies, and to demonstrate how you apply your policies by reference to a sample of your exploration expenditure deductions.

42. Your tax characterisation process should provide the following:

- (a) a schedule, or schedules, detailing **all** your exploration expenditure claims for the relevant year (whether claimed under section 8-1 or Division 40 of the ITAA 1997, or some other provision)
- (b) a schedule or schedules identifying project expenditure that has been reviewed and assessed as not being exploration expenditure (for example, the cost of long lead assets)
- (c) reports, or similar documents, evidencing the factual and legal analysis of your activities (including circumstances where you conclude that the activities may not be exploration or apportionment is required). Your reports should clearly articulate the reasons why your costs are in the nature of exploration expenditure and explain the basis for any apportionment you have undertaken (if relevant). We would generally expect that as decisions are taken you will carefully consider whether your costs are directed towards developing or commencing a project. Generally speaking early expenditure will require a less detailed analysis of its tax character. It is not necessary that apportionment be done on a line-by-line analysis – for example, it may be appropriate for apportionment to occur at a cost centre, or AFE level, as relevant, and

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<sup>2</sup> <https://www.ato.gov.au/business/large-business/in-detail/key-products-and-resources/tax-risk-management-and-governance-review-guide/>

<sup>3</sup> Paragraph 10 of the Ruling.

- (d) an audit trail that clearly shows when and how you identify expenditure in respect of particular activities conducted at each stage of your project (including exploration activities). This will generally require an analysis of your project cost centres and sub-system in the form of WBS or similar systems.<sup>4</sup> Some WBS will record expenditure that relates entirely to exploration activities, and the expenditure incurred in these cost centres will not require any apportionment. Equally, some WBS will record costs that do not contribute to exploration activities at all (for example, long lead asset AFEs / cost centres). In any event, this analysis should not be limited to a mere examination of WBS or cost centre descriptions. A more detailed analysis examining the activities relating to the costs authorised to be included in the WBS or cost centre should be undertaken.

43. For JV projects, the operator generally provides information for participants to use in preparing their tax returns. The presence of JV governance policies as outlined at paragraph 35 of this draft Guideline may assist participants when determining their exploration expenditure deductions. This information may identify the character or nature of any expenditure for the project, or enable the relevant factual analysis to enable the JV participants to relevantly characterise the expenditure.<sup>5</sup> Equally, a participant's own internal processes will be useful in understanding the nature of the expense to apply a correct tax treatment to the expenditure.

## **Part B: Substantiating your claims**

### **Contemporaneous documentation**

44. Documentation and analysis supporting the characterisation of expenditure should be prepared in real-time, or as contemporaneously as possible to when the activity occurred and expenditure incurred. In our view, the longer the period of time between the relevant activity and the preparation of substantiating documents, the greater the risk that the expenditure may be inappropriately characterised.

45. Your analysis should extend beyond an examination of titles or labels and include a thorough analysis of the activities actually undertaken. Your analysis should also be supported by evidence in the form of primary documents as opposed to narratives.

46. The ATO is aware of practices where analysis is undertaken and documentation is prepared retrospectively either after the project is approved (or some other time in the future), or when the ATO commences review activity. In these circumstances the ATO considers that there is a greater risk that you may have incorrectly characterised your claims and therefore we may seek to review a larger cross-section of your exploration expenditure deductions and may not limit our inquiries to the governance and high risk areas. In these circumstances, the ATO may also seek to conduct more intensive review activity, either before or following an initial review (for example an audit).

### **Preparing your supporting analysis**

47. As discussed above, your processes should include a documented analysis of your exploration claims which explains the basis of your tax treatment and whether you have applied section 8-1 or section 40-730 of the ITAA 1997, or both if one is considered in the alternative. If costs are not directly allocable, they may be apportioned under section 8-1 if they can be dissected on a reasonable arithmetic or rateable basis. In the absence of such

<sup>4</sup> Similar systems include, but are not limited to, authorisation for expenditures, business units, JV expenditure / cost codes, and cost breakdown structures.

<sup>5</sup> These documents may include tax packs and any jointly commissioned or prepared tax advice.

a basis for dissecting costs, it will be the essential nature of the totality of the costs which will determine the nature of the expense.

48. The level of analysis and evidence required to support your claims will vary according to the level of risk associated with the particular claim. In our view, generally the closer a project is to being developed or commencing construction the higher the risk that costs may not be on exploration or prospecting and may be directed towards securing an enduring benefit. Therefore, we generally expect that the intensity of your analysis and level of supporting documentation will increase the closer you are to commencing your project that is, developing and commencing construction.

49. Conversely, where expenditure relates to activities which are readily identifiable as exploration or prospecting we would expect minimal supporting analysis (however, we would still expect you to be able to substantiate these claims with primary source documents).

### ***Determining whether section 8-1 or 40-730 applies***

50. Exploration expenditure may be immediately deducted under either the general deduction provision (section 8-1) or under subsection 40-730(1) of the ITAA 1997.

51. Section 8-1 and subsection 40-730(1) of the ITAA 1997 provide alternative bases for deductions on their terms, but more than one deduction for the same amount cannot be obtained. In the event that both provisions apply, and one provision provides a larger deduction, that provision is the more appropriate for the purposes of section 8-10 of the ITAA 1997. This is consistent with the provisions being true alternatives and the concessional nature of the deduction. Circumstances may arise where expenditure relating to exploration or prospecting is denied deductibility under section 8-1 to some extent because it is in the nature of capital. In such circumstances the expenditure on exploration or prospecting may be deductible as calculated under subsection 40-730(1) (even if for example the deductible amount is greater than the section 8-1 amount).

52. However, only one deduction is available for any one amount because:

- (a) deductible expenditure (for example, under section 8-1) cannot form part of the cost of a depreciating asset which might be deductible via section 40-80 and section 40-25, and
- (b) a double deduction cannot be obtained for the same amount (section 8-10).

53. If there is a likelihood or it is possible that some of your costs may form part of the cost of a depreciating asset you will need to consider whether your costs are deductible under section 8-1, as the cost of a depreciating asset does not include amounts that are deductible under another provision<sup>6</sup> or amounts that are not capital in nature.

54. In practical terms, it will often not matter whether the deduction can be claimed under section 8-1 or under Division 40 of the ITAA 1997 as both will often allow an immediate deduction. However, in some circumstances section 40-80 deductions (for example for mining quarrying or prospecting information) are not immediately deductible, so it will be significant whether the expenditure is within section 8-1 or not.

55. As a matter of practical tax administration, we will accept a reasonable approach that considers section 8-1 of the ITAA 1997 first, and gives subsection 40-730(1) of the ITAA 1997 essentially a backstop role to section 8-1. For example, where a business has not yet commenced, or a new line of business is being opened up, or where, though expended within the framework of an existing business, the expenditure is capital in nature.

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<sup>6</sup> Outside of Division 40, Division 41 or Division 328 of the ITAA 1997.

56. The ATO does not accept there is a 'bright line test' and that all expenditure up to a decision to mine - that is in the absence of a decision to commence a project at the time the expenditure is incurred - is to be treated as exploration expenditure irrespective of its nature or purpose.

### **No bright lines**

57. The fact that expenditure is incurred in the absence of a decision to commence a project, often referred to in mining projects as a decision to mine, will not, of itself, determine whether that expenditure is exploratory (an obvious example is the cost of long-lead assets). Similarly expenditure can by nature be exploratory after a project has commenced, for example if the cost is incurred on exploring previously unexplored or undeveloped parts of the same mining property. However, when (in a temporal sense) an activity is carried out and whether the cost is incurred before or after a decision to commence a project or to mine has long been regarded as of assistance in understanding the nature of the expenditure.

58. Although a decision to mine is not determinative it is relevant to understanding the real object of the expenditure and nonetheless remains a question of objective fact whether a definitive commitment to proceed has been made in the individual circumstances of each case.

59. We expect and acknowledge that a definitive commitment to proceed will differ between miners and may be subject to certain contingencies, such as obtaining necessary approvals or finance on acceptable terms, which would operate as 'conditions subsequent' to a decision. This is distinguishable from a situation where a miner defers a decision until such contingencies are satisfied.

60. In terms of what the 'decision to mine' point is in any given circumstance, we do not consider that a FID will necessarily accurately depict or reflect the point at which a definitive commitment is made to proceed with a mining project, although in many instances they will coincide. Factually speaking a decision to mine is made when it is actually made, and not when it is formally recorded as made. We also understand that more often than not the actual decision and formal recognition of it will go hand in hand, and we would not, in the absence of strong evidence to the contrary generally be seeking to 'second guess' representations to this effect.

61. Whether a decision to mine has been made requires a detailed consideration of the facts and the application of judgement to reach a conclusion. The relative risk of the specific project is also a relevant factor. For example, offshore LNG projects are likely to require a high level of certainty as to the viability of a project before participants will make a decision to proceed with the project.

62. While there is no 'point in time' test and the actual decision to mine does not provide a 'bright line' for determining the character or nature of expenditure, or whether expenditure is on EFS, it may provide a useful indicator to ease compliance and administration burdens in circumstances where the facts and evidence corroborate the exploratory nature of the expenditure.

### **Focus questions**

63. The following questions are intended to assist you when demonstrating that you meet the governance indicators and in substantiating your exploration expenditure deductions. These questions outline the areas of focus for the ATO, and the types of documents the ATO would be likely to request in the event of a review.

- (a) Do you have governance procedures covering the progression through the stages of a project, and investment decisions?

- (i) Has your project been conducted in accordance with these procedures, and are there processes and controls to ensure adherence to these procedures?
  - (ii) Do your governance documents include an outline of the activities expected to be completed at each stage of the project, in particular, during a feasibility study? Do they outline the requirements for a DSP in relation to a FID and the level of certainty required prior to seeking approval to proceed with the project?
  - (iii) Do you have copies of the relevant field development plan, or life of mine plan, and the relevant approval of the decision to mine or definitive commitment to commence a project?
  - (iv) Do you have copies of reports submitted to the appropriate Commonwealth or State Government authorities for exploration activities and applications for mining/petroleum licences?
- (b) Do you have accounting policies and procedures for the recording of expenditure?
- (i) Do all project accountants receive training in order to understand the policies and procedures governing the recording of expenditure?
  - (ii) Do you have controls and processes to ensure adherence with your internal accounting policies and procedures?
- (c) Do you have tax governance policies and procedures, and in particular, a documented approach as to how expenditure recorded in the accounts is identified as exploration expenditure and treated for tax purposes?
- (i) Do your internal tax policies and procedures consider the principles in the Ruling?
  - (ii) Do you have controls and processes to ensure adherence with your tax governance policies and procedures?
  - (iii) Have you prepared your tax returns, in particular, claims for exploration expenditure deductions, in accordance with your internal policies and procedures?
- (d) Have you documented the analysis you have undertaken in claiming your exploration expenditure deductions?
- (i) Have you considered the Ruling and documented how you have applied the principles outlined in the Ruling?
  - (ii) Have you characterised expenditure in accordance with the Ruling, in particular removing expenditure relating to the cost of long lead assets, detailed engineering and design, and other early development expenditure, from your exploration expenditure deductions?
- (e) In relation to your EFS, have you recorded and considered the following:
- (i) Detailed descriptions of items in the WBS?
  - (ii) Approval documents associated with various WBS being utilised in the project?
  - (iii) Have you identified activities, and their associated costs, undertaken as part of your EFS, which relate to items (a) to (d) of paragraph 80 of this draft Guideline?

- (iv) If you have claimed exploration expenditure deductions for the costs referred to in (iii) above, do you have supporting technical analysis and evidence?
- (f) If your project relates to a brownfield expansion (that is, an extension, expansion or augmentation) have you considered the questions in paragraph 47 of the Ruling (to the extent they are relevant to your circumstances)?
  - (i) Do you have supporting evidence to support your analysis in relation to those questions (for example, original mine or field development plans, and the DSP supporting previous decisions to mine)?

## **Part C: High Risk Areas**

64. The ATO recognises that the closer a project is to developing or commencing construction the higher the degree of complexity in correctly characterising your expenditure. Part C of this draft Guideline identifies the areas that the ATO considers are less likely to result in costs that are by nature exploration expenditure. We have included indicators that you can use to test your claims in these areas and assess the likelihood that the ATO will consider there is a high risk you have mischaracterised costs as exploration expenditure.

65. We think it is helpful if we highlight the types of expenditure we consider as ‘at risk’ of being incorrectly claimed as exploration expenditure. These high risk areas are as follows:

- (a) expenditure that is incurred ‘too soon’ or goes ‘too far’
- (b) the cost of long lead assets and early works, and
- (c) certain costs related to EFS.

66. We will generally scrutinise exploration expenditure claims that fall into these categories. If you satisfy the governance indicators discussed above, we will generally seek to sample check your tax treatment of expenditure in the high risk areas as an initial first step. The high risk areas are discussed in further detail below.

### **Expenditure that is incurred ‘too soon’ or goes ‘too far’**

67. The ATO is concerned that expenditure which is incurred ‘too soon’ or goes ‘too far’ may be incorrectly claimed under section 8-1 of the ITAA 1997. Consideration should be given to whether the purpose of the activity or EFS is to open up a new venture or business, especially for less diversified miners.

68. Additionally there should be no presumption, for the purposes of section 8-1 of the ITAA 1997, that simply because expenditure is incurred in the absence of a decision to develop or commence construction that it is revenue in nature, based on timing alone. We expect to see evidence of a more sophisticated analysis having been undertaken. Amongst other things, you are required to consider the nature of the advantage sought and whether the activities constituting the EFS go ‘too far’ that is, were the costs directed towards securing an enduring benefit? For example, early works and advanced design which go to establishing, replacing or enlarging your profit yielding structure or the formation of a future asset, irrespective of whether or not the future asset eventuates, will be in the nature of capital costs.

69. It is very much a question of fact as to whether exploration expenditure is deductible under section 8-1 of the ITAA 1997 in any particular case. For the purposes of the positive limbs the ATO will take into account the nature and scope of the business being conducted and the relationship of the expenditure to that business in determining

whether the relevant nexus exists. The more diversified the business, the less likely the activity would be seeking to open up a new venture or new line of business.

70. An EFS that informs a decision by a large mining company not to proceed to mine the discovered resource may in the circumstances be an integral part of the income earning process, even though the expenditure does not directly generate assessable income. This is because deductibility does not depend on the outcome of the expenditure in the sense of the success or failure of what the outlay was intended to achieve.

71. For example, the ATO is less concerned that the relevant nexus may not exist where a large mining company undertakes exploration or prospecting and related evaluative activities as part of its ordinary business activities in search of new possibilities which are aligned with existing operations.

72. For the purposes of the capital limb, in the context of an existing business, the more remote expenditure is from advancing, commencing or expanding a project, the less likely the ATO will review the claim.

73. For example, it is less likely the ATO will seek to review the following expenditure if, having regard to all of the facts and circumstances, the expenditure is:

- (a) incurred on evaluative studies that are not directed towards developing or commencing a mining project; or
- (b) so preliminary it can be properly characterised as a working expense that is part and parcel of the ongoing way the business operates 'to obtain regular returns by regular outlays', rather than expenditure on establishing, replacing or enlarging a profit-yielding structure.

74. It is also less likely that the ATO will seek to review exploration expenditure that is clearly connected with an exploration business carried on with a view to generating a profit directly from that effort (for example, by selling exploration tenements and information). Or, less commonly, as in *Ampol Exploration*<sup>7</sup>, where there is a connection to assessable income and no lasting advantage is obtained (for example, expenditure directed to a specific project or to the advancement or commencement of such a project).

### **Long lead assets & early works**

75. The cost of long lead assets and early work activities should not be immediately deducted as exploration expenditure under section 40-730 or section 8-1 of the ITAA 1997. Instead, this expenditure should generally be capitalised to the cost of the relevant asset and deducted over the effective life of the asset. The cost of the depreciating asset may be immediately deductible, where the depreciating asset is first used for exploration or prospecting. The ATO may seek to review whether you have appropriately identified and dealt with these costs.

76. The costs for long lead assets occur in relation to certain project assets that have long-lead times and are ordered while commercial feasibility is still being assessed in anticipation of a decision to proceed. You should have processes and procedures in place that allow you to identify the cost of long lead assets and gain assurance that these costs have not been claimed as an immediate deduction. Any work associated with the detailed design of long lead assets, and the preparation of requests for approval to purchase long lead assets, are also not immediately deductible as exploration expenditure.<sup>8</sup> Early commitments for the acquisition or construction of assets or components (that is, pre-FID)

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<sup>7</sup> *Commissioner of Taxation v Ampol Exploration Limited* (1986) 13 FCR 545; 86 ATC 4859; (1986) 18 ATR 102.

<sup>8</sup> Paragraph 13 – 15 of Taxation Determination TD 2014/15 *Income tax: when is Design Expenditure incurred by an R&D entity included in the first element of the cost of a tangible depreciating asset for the purposes of paragraph 355-225(1)(b) of the Income Tax Assessment Act 1997 (and therefore not able to be deducted under section 355-205)?*

may be identified by long lead asset DSPs and separate Board approvals, and may be recorded in specific AFEs. These costs may become regret costs if the project does not proceed.

77. Further, early works activities that progress commencement of a project or which go beyond what is necessary in the exploration phase of a project are also not deductible as exploration expenditure, or apportionment of the costs relating to these activities may be necessary. For example, construction of a 700 room accommodation facility in anticipation of development approval may be beyond what is necessary to facilitate exploration activities, if it is identified that a 30 room facility would suffice for the purposes of the exploration activity. Other early works activities that are not deductible may include detailed development engineering and design work, execution planning, preliminary site works or mobilising supply bases.

### **Feasibility studies**

78. The ATO has accepted that a broad range of project evaluation expenditure (including feasibility studies [both technical and economic/commercial], pilot plant, and relevant environmental impact studies or heritage studies) can come within the concept of exploration or prospecting.

79. These studies are directed at answering for a miner the question of ‘whether to mine’, and will often involve considerations of ‘how to mine’ that can include expenditure on engineering and design work that is required in order to specify the project to a point where the cost, project schedule and risks can be understood with sufficient definition for project participants to assess the economic or commercial feasibility of the project. This is in contrast to activities which are directed to the development or construction of the project itself such as detailed executable engineering and design drawings.

80. The ATO considers that certain costs related to EFS may be ‘at risk’ of being mischaracterised as exploration expenditure. It is the ATO view that EFS expenditure will be high risk if it relates to:

- (a) activities that go beyond answering the question of ‘whether to mine’<sup>9</sup>
- (b) determining project funding or financing feasibility in circumstances where this is not integral to a decision to develop or to mine
- (c) activities that are conducted after a decision to develop or to mine, or
- (d) project management costs related to construction activities.

Further details about each of these risks are provided below.

### ***Determining if activities contribute to an EFS***

81. Feasibility studies consist of a series of studies which, in combination, will allow a taxpayer to decide whether or not it proceeds with a project. Feasibility studies demonstrate and document the commercial and technical viability of investments/projects. The work during a feasibility study is about defining and understanding the risks and uncertainties associated with a project through a variety of activities to create a robust business case upon which a decision to proceed can be made. Feasibility studies define to an appropriate level of detail the scope, quality, costs and schedule of the project.

82. Not all costs incurred in the absence of a decision to mine will be exploration expenditure, or be related to activities that form part of an EFS. The Ruling provides that

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<sup>9</sup> Paragraph 34 of the Ruling.

the costs of activities that go beyond evaluation of economic feasibility cannot be claimed as exploration expenditure.<sup>10</sup>

83. We will not accept claims for expenditure that relate to activities of the various business units that go beyond what is required by internal guidelines in order to make a decision to mine. We understand that in some (limited) circumstances it may be necessary to undertake additional activities to assess the feasibility of a project notwithstanding that they are not required by your internal guidelines. In these circumstances, we would encourage you to discuss your activities with the ATO to explain why they are required for your EFS and to gain confidence that your claims are correct.

84. The expenses associated with each team conducting the individual studies will cease being exploration expenditure under paragraph 40-730(4)(c) of the ITAA 1997 at the point when the relevant team's contribution to the EFS is finalised. For example, where teams have finished their contribution to the EFS and are awaiting the approval of the decision to mine they may commence some detailed design activity so as to avoid downtime whilst awaiting the decision to mine to be made. Whilst the decision to mine has yet to be made, the team's contribution to the EFS has been finalised. As such any expenditure associated with the detailed design activities should be identified, and excluded from your exploration claims (regardless of whether claimed under either section 8-1 or section 40-730 of the ITAA 1997).

85. We will also not accept claims for expenditure on activities that go beyond the level of detail required to evaluate economic feasibility, even if the activities are required by your internal project guidelines.

86. As an initial risk assessment, the ATO considers both quantitative and qualitative indicators to assess the potential that activities have gone beyond what is required to determine the economic feasibility of the project. These indicators are applied at the EFS level as a whole, as well as at the level of the particular studies making up the EFS.

87. The indicators are as follows:

- (a) the level of certainty and accuracy of cost estimates required for your EFS is not more than +/- 10%<sup>11</sup>
- (b) the specific studies included as part of your EFS are of the type and nature of those listed in Appendix 1 and/or Appendix 2 of this draft Guideline (as relevant)
- (c) personnel working on your specific studies are consistent with the types listed in Appendix 1 and/or Appendix 2 of this draft Guideline for the applicable study, and
- (d) your engineering activities do not exceed the engineering definition levels listed in Appendix 3 of this draft Guideline.

88. Appendices 1 and 2 of this draft Guideline outline activities that we would generally expect to form part of an EFS for a mining, and oil and gas project respectively. If your exploration activities in relation to your EFS do not go beyond those described in the appendices, you will satisfy the indicator in paragraph 87(b) and (c) above.

89. Appendix 3 of this draft Guideline sets out the levels of engineering definition that we would expect to see in relation to an EFS. Where engineering activities do not extend beyond these ranges you will satisfy the indicator in paragraph 87(d) above.

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<sup>10</sup> Paragraph 10 and paragraph 200 of the Ruling.

<sup>11</sup> See: White, ME and Harrington, I; Feasibility Studies – Scope and Accuracy; Mineral Resource and Ore Reserve Estimation – the AusIMM guide to good practice; 2nd ed monograph 30. West; Preliminary, Prefeasibility and Feasibility Studies; Australian Mineral Economics – A survey of important issues; monograph 24. Morgan, Fawcet, Whitehouse; Feasibility Studies – Australasian Coal Mining Practice (AusIMM) Monograph Series No 12, 2009. AusIMM Mine Manager's Handbook, monograph 26, chapter 6.2.

90. If your arrangements fall outside or are materially inconsistent with any of these indicators, and you have claimed exploration expenditure deductions in relation to these activities, the ATO considers that those claims are high risk and we may seek to review them.

91. It is important to note that being outside of the indicators does not of itself mean that your expenditure deductions do not meet the legislative requirements. It also does not mean that the activities being conducted are not exploration or for EFS. What it means is that your expenditure claims are seen as high risk by the ATO and we will seek to understand why your arrangements fall outside of what we understand to be standard practice and risk tolerance levels.

92. In these circumstances the starting point for the ATO's analysis will generally be to understand your underlying policies and requirements for your feasibility study. In particular, the ATO will also seek to understand what contribution the activities make to your feasibility study and why this may extend beyond what we ordinarily observe in the industry.

93. Similarly, there is no presumption that expenditure related to the activities outlined in the appendices will be deductible as exploration expenditure and meeting the indicators does not relieve you of your obligation to properly assess and substantiate your claims. That is, you will still need to conduct the necessary factual and legal analysis discussed in Part B of this draft Guideline.

94. If you have expenditure claims that do not meet the indicators, or you are unsure how the indicators apply to your arrangement, you can discuss your arrangements with the ATO and seek further certainty where necessary. If you do nothing, the ATO may initiate compliance activity.

### ***Financing feasibility***

95. The EFS may also contain sufficient detail to enable the decision to fund the project to be made where funding is fundamental to the decision to mine and forms part of the project sanction criteria. If you seek to treat the costs of determining the feasibility of the project funding or financing as exploration expenditure under paragraph 40-730(4)(c) of the ITAA 1997 you should clearly demonstrate how financing feasibility is an integral part of your EFS.

96. In typical financing arrangements for large scale resources projects, the ATO would consider that activities which do not go beyond the following indicators to be within the scope of what is integral to your EFS (where the completion of these are essential elements of the project sanction criteria):

- (a) work done to demonstrate the project is 'bankable' to a level that it can be submitted to potential lenders and project financiers to consider and express an interest in funding the project
- (b) definition of key base case debt parameters (including the debt/equity ratio, the funding amount, currency, tenure, pricing, cashflow waterfall, covenants and serviceability and risk mitigation such as security, collateral or guarantee and hedging requirements) to enable the identification and qualification of suitable potential lenders and project financiers, and
- (c) work done to obtain funding pre-approval, funding commitment letters, provisional funding offer letters or indicative financing offers that are conditional on FID.

97. In some circumstances, a project may proceed to be developed initially using funding entirely sourced from equity or internal/related party/associate funding sources, which serves to de-risk and increase the chances of securing future debt funding that will be drawn down at a later stage in the project for the remainder of the project capital

requirements. In these circumstances, investigating the feasibility of the debt financing is no longer integral to the EFS for the project. This is an example of where the financing feasibility does not contribute to, and is a condition subsequent to, the making of a decision as to whether to mine. The fact the project may not be completed in the event of failure to secure the debt financing in the amount and on terms acceptable to the participants does not make evaluating the financing feasibility in this circumstance an integral part of the project EFS.

### **Activities conducted after a decision to mine**

98. We consider that a decision to mine, although not determinative, is an important indicator in assessing whether or not activities relate to assessing the economic feasibility of a project. For the purposes of paragraph 40-730(4)(c) of the ITAA 1997, activities undertaken to determine the economic feasibility of the project can ordinarily only occur before the decision to mine has been made.<sup>12</sup>

99. Accordingly, exploration expenditure deductions said to be for economic feasibility that relate to activities that have occurred after the decision to mine has been made, are considered to be high risk and may be reviewed by the ATO. At risk are activities undertaken to determine how best to develop and recover a resource or to improve operational productivity of existing wells or mines if the activities occur after a decision to mine has been made.

100. We recognise that in some limited circumstances activities after the decision to mine may be undertaken for an EFS to assess the ongoing economic viability of continuing to mine. In particular this may arise in circumstances where there has been a significant change in relevant market conditions, which may require you to substantially refine or redo your EFS after a decision to mine. This may include a circumstance where you are reconsidering the decision and whether it is commercially viable to proceed (for example due to a change in economic conditions).<sup>13</sup> In these circumstances, we will likely seek to understand your claims and supporting evidence.

101. As discussed in Part B of this draft Guideline, the question of when a decision to mine or definitive commitment to progress a project has been made is determined having regard to the objective facts as to when a definitive commitment to proceed has been made. The definitive commitment to proceed will not always be when the FID is made.

102. There are circumstances in which decisions have been made to progress the project to development notwithstanding formal Board approval or similar mandated governance approvals are yet to be obtained. This will ordinarily require a detailed consideration of the facts and difficult judgement calls. Indicators of the circumstances that **may** indicate a decision to mine include the following (either individually or collectively):

- (a) where commodity offtake agreements are signed and fully enforceable, and not contingent on FID
- (b) where engineering designs are finalised or close to finalisation, or have reached a stage sufficient to form the basis upon which to obtain licensing or other regulatory/government approvals stated in (c) and (d) below, or to award contracts or construction/work packages to contractors
- (c) licensing requirements, including negotiating land access and native title compensation, or where port and rail licences are granted, where these are only granted once the project is ready to commence
- (d) State development approval being granted – we understand that before the State development approval is finalised and issued, the proponent must

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<sup>12</sup> Paragraph 34(g) of the Ruling.

<sup>13</sup> Paragraph 34(e) of the Ruling.

demonstrate to the government in detail the technical, economic, financing and marketing feasibility of the project. We acknowledge that the timing of state applications and other aspects of the feasibility are not linear, and that feasibility studies and government approvals may occur concurrently. However, completed state development approvals may be an indication that a project has proceeded to development

- (e) the awarding of a fixed price EPC contract may be indicative that a decision to mine has been made and the fact that there may not be executable designs at that stage is not determinative, as it does not influence the decision of whether to mine (since the taxpayer has gained certainty by fixing the cost to itself of that workstream)
- (f) conversion or upgrading of prototype or pilot plants or pilot wells and other temporary facilities into demonstration-scale or permanent, fully fledged, commercial/operating-scale facilities, and
- (g) where a fully-termed debt financing package is finalised, signed/executed and fully enforceable and not contingent on FID.

103. This list is not exhaustive, but provides examples of circumstances which suggest that the decision to mine may have been made despite the lack of formal recording of a decision. We note also, that not all indicators will be relevant to all taxpayers in all circumstances. If your circumstances reflect any of the above or other factors where the decision to mine may be inferred by the activities being conducted and you intend to make exploration claims for EFS activities after this point, you are encouraged to discuss your circumstances with the ATO to gain further certainty.

### ***Project management costs***

104. The treatment of project management costs is based on the characterisation of the underlying activities being managed. If what you or your contractor(s) are project managing are genuinely EFS activities, then the project management cost will be similarly characterised, but if you or your contractor(s) are project managing construction, then the project management cost will be part of the cost of the asset being constructed.

105. Where there is project management of activities performed by different business units, some of which have finalised their contribution to the FID/DSP but some are still in that process, or where they have gone past the stage of EFS and are entering the long lead asset planning and regrettable costs / early execution phase, we expect to see more rigorous evidence of governance and controls to ensure the appropriate and reasonable apportionment of expenditure.

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**Commissioner of Taxation**

14 November 2016

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## **Your comments**

106. You are invited to comment on this draft Practical Compliance Guideline including the proposed date of effect. Please forward your comments to the contact officer by the due date.

**Due date:** 9 December 2016  
**Contact officer:** Daniel Lee  
**Email address:** EnergyResources@ato.gov.au  
**Telephone:** (03) 9215 3907  
**Address:** Australian Taxation Office  
GPO Box 9977  
Melbourne VIC 3001

## References

ATOlaw topic(s)	
Legislative references	ITAA 1997 ITAA 1997 8-1 ITAA 1997 8-10 ITAA 1997 Div 40 ITAA 1997 40-25 ITAA 1997 40-730 ITAA 1997 40-730(1) ITAA 1997 40-730(4)(c) ITAA 1997 40-80 ITAA 1997 Div 41 ITAA 1997 Div 328
Related Rulings/Determinations	TD 2014/15 TR 2015/D4
Case references	<i>Commissioner of Taxation v Ampol Exploration Limited</i> (1986) 13 FCR 545; 86 ATC 4859; (1986) 18 ATR 102
ATO references	1-9XCEM3R
BSL	PGI

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## APPENDIX 1 – Mining

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
<b>Strategic Assessment</b>		
Industry Assessment	Final	In house business and commercial staff.
Project Position	Final. Project's position on the relevant commodity cost curve analysed and the internal rate of return assessed.	In house business and commercial staff.
Project Fit (Strategic Fit)	Final. Assessment of all aspects of the project, and a Risk Management Plan developed.	In house business and commercial staff.
Development Alternatives	Documented, with rationale for the proposed approach.	In house business and commercial staff.
Scenario Analysis	Identify interaction with any other mines in the area, whether owned, or owned by a third-party, and identify any synergies, or risks associated with this.	In house business and commercial staff.
<b>Market Analysis</b>		
Product specifications	Assessment and justification of the cut-off grade and production capacity.	Study manager, various specialists.
Demand requirements, trends	Identify existing demand, growth profiling and future demand due to exhaustion of other projects.	Market specialists.
Supply analysis, trends	Analysis of short term and long term supply and demand; and identification of committed and uncommitted supply.	Market specialists.
Marketing Assessment	Consider market share, diversity and number of customers, competitor reaction to the new project, linkage of the project to particular customers and customer reliability. Identify and consider marketing arrangements such as type of contracts, period, pricing formulas, and quantity options.	Market specialists.
Competitors	Identify competitors (existing and future), competing projects, and project capacities.	Market specialists.
Pricing Development	Well developed, with any assumptions noted (for example, current day pricing, or expected pricing), including any discounts to similar products.	Market specialists.
Major Customers	Identified and volumes assigned/targeted; discussions may be underway.	Market specialists.
Revenue Forecast	Outline the forecast revenue, and assumptions supporting the forecast.	Study manager, commercial specialists, business analysts.

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
Marketing Arrangements	Quantities to be mined matched to reserves, product specifications and sale prices.	Study manager, mining engineers, metallurgists, commercial specialists, business analysts.
<b>Project Risk Management</b>		
Risk Assessment	Identify key risks including country risk, political stability, potential and adverse changes in the regulatory, tax or ownership status of the project once in operation.	Study specialists.
Risk Management Process	Identify manageable and unmanageable risks. Outcomes of workshop using Australian Standards as basis.	Study specialists.
Risk Register and Control Action Plan	Detailed plant control system specification based on plant functional specification and operational philosophy, P&IDs, equipment lists, I/O lists and required expansion capacity.  Early and continuous operational input to design is essential to optimise reliability and operability.	IT Systems Engineers Design/drafting specialists Cost estimators
<b>Orebody Knowledge</b>		
Tenure	Ownership of land, or access, confirmed, ML application status, ownership of EP, overlapping petroleum tenements, any tenement issues identified, land ownership, easements identified and negotiations commenced, Native Title issues considered.	Legal advisers, environmental specialists, tenure specialists.
Geology	Geological modelling, and an outline of the basis of evaluation.	Geologists.
Regional Geology	Regional and detailed deposit geology and deposit mineralogy, together with supporting diagrams and maps.	Geologists.
Local Geology (Deposit geology)	Identify significant features relevant to mine planning; identify major geotechnical and mining geology inputs.	Geologists, mine planning engineers, geotechnical engineers.
Exploration Program: Historical, Future	Brief history of previous exploration and production in the immediate project area, and an outline of any further exploration that may be necessary.	Geologists.
Information (Data) Acquisition Methodology	Summarise data acquired, quality, methodology used and any information deficits.	Geologists.

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
Sampling and Analysis	Sampling and testing program including drilling program, with type and spacing of drill holes, core recovery and logging procedures, sampling and assaying methodology, mineralogical study and definition of rock types. Regional, stratigraphic and structural geological assessment, mapping programs, definition of ore type and variability of these ore types within the deposit.	Geologists.
Hydrology	Conduct hydrology studies for both the surface and subsurface.	Surface water specialists, groundwater specialists.
Geotechnical	Investigative studies and analysis reports providing input to mine planning design assumptions. Learnings from mining in similar areas.	Geotechnical engineers.
Mineral Specific Technical Studies (for example, Gas, Geochemistry, etcetera.)	Studies including summary of the evaluation methodology, potential for the discovery of additional mineral resources within the tenements, and summary of mineralogy of the ore.	Study area specialists for example, ventilation, gas, etcetera.
Mineral/Coal Resource Statement (if not a stand-alone document)	Competent Person's Report available. Final – proved and probable reserves established, including precise description of the ore resource calculation methodology and classification into requisite categories of the JORC Code. Independent audit reports of resources statement.	Competent Person as defined by the JORC Code, geologists.
<b>Mining</b>		
Mining Methods and Operations	Brief mining overview; mining conditions and methods; mine design criteria including recovery and dilution; production capacity and future capacity identified.	Mining engineers, metallurgists, processing engineers.
Mine Development	Mine plan and general layout diagrams.	Mining engineers.
Mine Design and Scheduling	Develop mine design specification for competitive bidding of mine design, construction, and development work. Preparation and development of the final mine plan.  Develop scope of work and schedule necessary for conducting final mine evaluation study.	Mining engineers, study manager.
Test mining	Completion of the necessary test work to establish design criteria including	Appointed test mining manager, other mine

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
	such issues as mine geotechnical testing for pit slope angles or drill and blast properties.	specialists, study manager.
Equipment Selection	Plant, equipment and infrastructure requirements and capacities defined, including support for selection and availability.	Study manager, mining engineers, business analyst, maintenance engineers.
Mineral/Coal Reserve Statement (if not a stand-alone document)	Competent Person's Report available. Final – proved and probable reserves established, including precise description of the ore resource/reserve calculation methodology and classification into requisite categories of the JORC Code. Independent audit reports of reserves statement.	Competent Person as defined by the JORC Code assisted by discipline specialists.
<b>Materials Handling and Metallurgical Processing</b>		
Ore Deposit Characterisation	Samples analysed to develop a detailed understanding of the composition and physical properties of the ore deposit.	Geologists Metallurgists Process engineers
Metallurgical Testing and Analysis	Procure metallurgical samples and conduct metallurgical testing.	Metallurgists, process engineers.
Simulations and Modelling	Execution of the requisite test work at bench and pilot scale to define the process flowsheet and ore variability to the extent necessary for the required study.	Process Engineers Metallurgists.
Process Selection	General process description, immediate capacity and future capacity requirements, life of processing plant, equipment sizes and specifications, and configuration fully optimised and detailed.	Metallurgists, process engineers.
Design Criteria	<p>Details from previous similar developments and early engagement of design and construct construction contractors and OEMs working in alliance can be used to reduce engineering levels required and provide firm pricing with allowance for variation during subsequent FEL4 study. Early and continuous operational input to design is essential to optimise reliability and operability.</p> <p>GA drawings compiled in conjunction with other disciplines.</p> <p>Foundation and structural concepts, mechanical design criteria, and equipment calculations complete, with</p>	Process Engineers, Metallurgists, mechanical engineers, civil engineers, electrical engineers, design/drafting specialists, study specialists.

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
	<p>equipment list finalised and MTOs definitive.</p> <p>Development of process flowsheet and design criteria including assessment of alternative flowsheet concepts necessary to optimise the design.</p> <p>Preparation of the requisite mechanical, piping, electrical, civil and structural engineering by way of drawings, equipment lists and material take-offs to the required level of accuracy.</p>	
<b>On Site Infrastructure (supporting infrastructure)</b>	Critical infrastructure identified; service providers identified; discussions commenced.	
Sewage	Determine location of any sewage pipes.	Design engineers, civil engineers.
General Waste	Determine location of general waste disposal areas.	Design engineers, civil engineers.
Tailings	Determine location of tailings facilities and pipelines.	Process engineers, civil engineers.
Utilities	Finalise utilities required for project construction, development and operation, including location of powerlines and pipes.	Design engineers, civil engineers.
Stormwater	Determine location of stormwater drains and disposal facilities.	Design engineers, civil engineers.
Roads, rail, etcetera	Assessment of transportation requirements, including access to the site and the material and personnel transport requirements into and out of the site, adequacy of internal road/rail/air or other required transport facilities as well as port and dock facilities for handling and securing material flow during construction and operations.	Civil engineers.
Stockpiles, Laydown areas, etcetera	Determine the final location of stockpiles and construction lay-down areas.	Mining engineers, civil engineers.
Communications and IT	Determine the requirements and specifications for communications and IT infrastructure.	Communications/IT specialists, study specialists.
Security, Fire Protection/Fighting	Determine security and fire protection/fighting requirements.	Specialist design engineers.
Construction Requirements	Finalise warehouse requirements, general surface facilities arrangement, develop surface building design	Specialist design engineers.

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
	specifications, surface transportation design specifications.	
Other	Assessment of temporary site support needs such as site access, camp facilities, accommodation, communications, upgrading existing facilities.	Study manager, specialist design engineers.
<b>Off Site Infrastructure and Services (supporting infrastructure)</b>		
Water	Determination of the water requirements for each component of the operations along with provisions for obtaining or generating the quantities required.	Study specialists.
Fuel	Determination of the fuel and power requirement for each component of the operations along with provisions for obtaining or generating the quantities required.	Study specialists.
Power	Requirements identified, supply identified, any modifications to existing network to meet demand identified, negotiations relating to modifications likely to have commenced but unlikely to be finalised.	Study specialists, electrical engineers.
Other	Other studies not highlighted above.	Study specialists.
Roads, etcetera	Finalise access road requirements and costs, capital and operating costs, personnel and equipment requirements, and other costs associated with transportation system.	Study specialists, civil engineers.
Rail & port	Consideration of transport / infrastructure requirements, capacity and risks. Identify projects competing for capacity; considerations of building own infrastructure.	Study specialists, rail and port specialists.
<b>Engineering Development</b>		
Geotechnical Studies	Geotechnical design parameters definitive from field evaluation including borehole drilling, material sampling and testing, cone penetrometer tests.  Combined with infill information gained from geophysical investigations such as seismic surveys or ground penetrating radar, which increases coverage and reduces overall cost.	Geotechnical Engineers, Drilling companies, Geotechnical testing providers, Geophysical, seismic survey providers.  Independent verification.
Location Study	Digital and terrestrial terrain models with ground survey confirmation,	Civil Engineers, Design/drafting

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
	hydrology model, civil design criteria and specifications complete.	specialists, Cost estimators.
Facilities Layouts & general arrangement drawings	Layouts and general arrangements compiled in conjunction with other disciplines, including services and utilities corridors.	Civil Engineers, Design/drafting specialists Cost estimators.
Designs for major earthworks structures	Bulk earthworks, waste dumps, infrastructure earthworks design including drainage structures (drains, culverts, bridges, dams, creek diversions), airports, roads, pavement designs and raw materials sources detailed with MTOs definitive.  Operational input combined with involvement of earthworks contractors before and during design is essential to optimise operability of the final facility design and the civil schedule and budget outcomes.	Civil Engineers, Design/drafting specialists Cost estimators.
Building layouts	Offices, camp and housing floor layouts and specifications complete, with hydraulic, electrical and mechanical schedules detailed.  Early involvement of operations, suppliers and construction contractors including design and construct, and local and international prefabrication specialists is essential.	Civil Engineers Design/drafting specialists Cost estimators.
Processes	Detailed process design package with process design basis, plant capacity analysis, process design criteria, block flow diagram, process flow diagrams, P&IDs, process equipment calculations, and equipment list complete and frozen, with firm pricing from OEMs including an allowance for price variation during subsequent FEL 4 level study.  Design based on large diameter drilling cores, preferably combined with bulk sample(s), with a whole of resource and life of mine approach to process design, combined with early and continuous operational input to design in order to maximise and optimise reliability, operability and return on investment.	Process engineers, metallurgists, mechanical engineers, electrical engineers, design/drafting specialists.
Process description		
Process flow diagrams		
Process and instrumentation diagrams for main processes		
Process control functional description, specification		
Laboratory and pilot plant program test results	Detailed studies including laboratory and pilot plant tests required to be	Process Engineers, Metallurgists, Mechanical Engineers,

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
	undertaken.	Electrical Engineers, Design/drafting specialists.
Equipment	Details from previous similar developments and early engagement of construction contractors and OEMs can be used to reduce engineering levels required and provide firm pricing with allowance for variation during subsequent FEL4 study. Early and continuous operational input to design is essential to optimise reliability and operability.	Mechanical engineers, Electrical Engineers, Design/drafting specialists, Cost estimators.
Equipment lists for mechanical, electrical, instrumentation, etcetera		
Specifications and data sheets for major equipment		
Preliminary equipment selection		
Electrical single line drawings		
	Layouts compiled in conjunction with other disciplines to allow accurate MTOs.	
	Design criteria, electrical calculations, datasheets, specifications, equipment lists and technical bid evaluations complete.	
	Schematic diagrams, single line diagrams, load list and cable schedules firm.	
Identification of long lead assets	Long lead asset requirements identified, approvals obtained, orders placed.	
<b>Human Resources</b>		
Organisational Philosophy	Defining the commissioning of the project, recruiting and training of the management team and crew and hand over at the conclusion of construction.	HR specialists, study specialists.
Organisational Structure	Update organisation charts, refine labour plan, refine labour-related cost estimates.	HR specialists, study specialists.
Employee Relations Approach	Definition of and planning for the manpower requirements, skills levels, labour relations requirements.	HR specialists, study specialists.
Workforce Productivity	Benchmark project productivity assumptions against typical industry competitors.	HR specialists, study specialists.
Recruitment and Training Plans	Recruitment and training plans outlined.	HR specialists, study specialists.
Performance Management Programs	Structure, workforce – size, type and source; rosters; employee relations; recruitment and selection; administration; accommodation; training; availability and cost rates.	HR specialists, study specialists.

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<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
Compensation Plans	Expatriate and local compensation structures, benchmarked with industry.	HR specialists, study specialists.
Statutory Requirements	Cultural and local content requirements.	Study specialists.
<b>Project Execution</b>		
Scope	PEP or Project Charter, and subordinate plans, developed for next phase; scope of work and delivery defined.	In-house (central project team).
Schedule	Prepare design, construction, and development schedule and budget, construction sequence, including consideration of delays and mitigation strategies.	Project manager, project specialists.
Criteria	Determination of the requirements for completion of the engineering, procurement, construction, commissioning and maintenance of operations.  Assessment of the alternate methodologies by which project implementation can be achieved and resolve the appropriate methodology for the defined project.	Project manager, project specialists.
Work Breakdown Structure	WBS for project execution stage defined.	Project manager, project specialists.
Delivery Plan, Schedule	Delivery plan, project deliverables and KPIs are defined; project timetable developed and key milestones identified.	Project manager, project specialists.
Risk Management Program	Risk register developed and updated, workshopping.	Project manager, project specialists.
Project Organisation	EPCM partner likely to have been selected and ready to award subject to FID.	Project manager, project specialists.
Procurement	Arrangements in place, identification of conflicts, identification of work packages to be implemented; Procurement and Contracts Management Plan in place.	Project manager, project specialists.
Personnel/Staffing	Organisation structure and staffing plan defined for owner and EPCM teams with clear role descriptions and responsibilities. Supported by organisation charts, and responsibility and approvals matrices.	Project manager, project specialists.
<b>Operational Readiness</b>	Operational Readiness Plan / Project Execution Plan outlining principles, approaches and systems to be used;	Project manager, project specialists.

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
	alignment with business principles; consider risks associated with supply of personnel, equipment and resources.	
<b>Information Systems</b>		
IS Planning	Business requirements defined in detail with systems and process control system architecture requirements and detailed system specification complete.	IT Systems Engineers Design/drafting specialists Cost estimators.
IT Infrastructure Planning	Firm supplier estimates for hardware, software, program development and user licencing requirements.	
Business System, Communications System Design Briefs	Early and continuous operational input to design is essential to optimise functionality.	
<b>Health and Safety</b>		
Health and Safety Risk Assessment	Identify significant risks; conduct HAZOP on designs used in tender documents; develop risk register and mitigation plans.  Develop HSEC requirements for the tender process to ensure contractors are aware of minimum requirements.	Project specialists.
Management Plan	Develop plans to mitigate risks.	Project specialists.
<b>Environment</b>	Develop general environmental plan for protecting quality of water, land ecology, cultural resources and socioeconomics of project area during construction and operation. Determine costs, if applicable, to prevent or mitigate environmental damages and return area to near original condition at project end.	Environmental specialists.
Environment Risk Assessment	Consider Land Management, Water Management, Ground Water Monitoring; Rehabilitation and Offset Management Plan, Environmental Monitoring Program, Air Quality MP, Noise MP, Blast MP, Aboriginal Cultural Heritage MP, Visual Impact Mitigation Report, Traffic Construction MP.	Environmental specialists.
Environment Impact Assessment/Study Outcomes	Develop scope of work and schedule necessary for environmental impact analyses and environmental control plans required for project analysis and costs.  Develop environmental monitoring	Technical specialists in Community Consultation, Subsidence, Geochemistry, Water Issues, Rehabilitation, Air Quality, Noise, Biodiversity,

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
	plan(s) for proposed operation, define cost of EMP.	Economics, Waste and Cultural Heritage.  Technical review of EIS.
Statutory Approvals Process, Status	Identify completed steps, and future steps (for example, requirements for Mining Lease); identify necessary plans, timing and status; prepare permit applications, procure construction and operating permits.	Tenure specialists.
Closure Planning	Rehabilitation planning and costing.	Environmental specialists, mining engineers, business analysts, commercial specialists.
<b>Community/Social</b>		
Social Impact Assessment	See stakeholders (below).	Project specialists.
Community Consultation	Conduct consultation and develop Social Involvement Plan.	Project specialists.
Agreements and Approvals	Identify any agreements entered into, any contingent agreements, and any that will be entered into following FID.	Project specialists.
<b>External Relations</b>		
Stakeholders	Commercial and Regulatory Structure; Identify MOUs and agreements already in place, and any to be finalised; identification of regulatory matters.  Identify stakeholders, assess impacts on stakeholders, consult with stakeholders, identify management required.	Socio Economic Assessment, Stakeholder Engagement Strategy, Draft Environmental Management Plans.
<b>Capital Expenditure</b>		
Basis of Estimate	The degree of definition and the level of effort expended to determine the cost estimates will be subject to the accuracy of estimate required which in turn will define the level of detail needed to prepare such estimates. Usually based on non-detailed site layout and engineering drawings and specifications.	Business analysts, study specialists.
Data Sources	Estimates may be based on supplier quotations and past experience.	Business analysts, study specialists.
Estimate Structure	Estimate basis should be clearly defined and commercial factors (for example, pricing base dates, pricing	Business analysts, study specialists.

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
	source, unit rates, escalation, foreign exchange rates) stated.	
Owner's Costs, Pre-Production Costs	Estimated to required level of accuracy.	Business analysts, study specialists.
Escalation, Exchange Rates	Outlined	Business analysts, study specialists.
Working Capital	Estimated to required level of accuracy.	Business analysts, study specialists.
Capital Schedules: Project, Replacement	For detailed estimates, estimates to be subdivided in accordance with WBS established for project implementation.	Business analysts, study specialists.
Accuracy	Capital expenditure estimates should be made to the required level of accuracy.	Business analysts, study specialists Independent verification.
Contingency	Contingency levels and basis should be stated.	Business analysts, study specialists.
<b>Operating Costs</b>		Independent verification.
Basis of Estimate	Estimate basis should be clearly defined and commercial factors (for example, pricing base dates, pricing source, unit rates, escalation, foreign exchange rates) stated.	Business analysts, study specialists.
Data Sources	Estimates based on a combination of first principles, firm quotes, engineering estimates and MTOs.	Business analysts, study specialists.
Fixed, Variable Operating Costs	Estimated to required level of accuracy.	Business analysts, study specialists.
Escalation, Exchange Rates	Outlined.	Business analysts, study specialists.
Operating Cost Schedules	For detailed estimates, estimates to be subdivided in accordance with WBS established for project implementation.	Business analysts, study specialists.
Accuracy	Operating expenditure estimates should be made to the required level of accuracy.	Business analysts, study specialists.
Contingency	Contingency levels and basis should be stated.	Business analysts, study specialists.
Ownership, Legal, and Contractual Issues	Identification of permits / tenements that have been granted, or are likely to be granted; land ownership.  Other permits identified, and status recorded.	Project team.
<b>Economic Evaluation</b>		
Revenue Assumptions	Pricing and necessary adjustments, production forecasts and mine life,	Business analysts,

<b>Feasibility Report Indicative Table of Contents for Mining Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS / RESOURCES</b>
	capex and opex assumptions.	study specialists.
Other Assumptions	FX, tax, NPV, payback periods.	Business analysts, study specialists.
Cash Flow Analysis	Hurdle rates, annual undiscounted, and discounted real bias, capital expenditures, operating expenditure, royalties, revenue, taxation, currency considerations.	Business analysts, study specialists.
Valuation Results	Final.	Business analysts, study specialists.
Variables and Range Analysis	Final, or significantly progressed, Sensitivity analysis (pricing, FX, capex, opex).	Business analysts, study specialists.
Optionality	Modelling showing cash flows, sales revenues, capital and operating costs, proposed project gearing, revenues, loan servicing and payback and project sensitivity to financial and operating sensitive areas.	Business analysts, study specialists.
<b>Project Reviews</b>		
Peer Reviews and Tollgate Assessments		
<b>Future Work Plan</b>		

## APPENDIX 2 – Oil & Gas

<b>Feasibility Report Indicative Table of Contents for Oil &amp; Gas Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS/RESOURCES</b>
<b>Strategy and Strategic Fit</b>		
Business Logic- compatibility, materiality, business case	Final.	In house business and commercial staff.
Strategic alternatives	Final. Documented, with rationale for the proposed approach.	In house business and commercial staff.
Monetisation and exit strategy	Final. Options developed, with trigger points identified.	In house business and commercial staff.
Country Risk Analysis	Final, up to date. Risk profile and management strategy. Identify unmanageable risks. Set investment and exposure thresholds.	In house business and commercial staff. External country risk consultant support may be required.
Stakeholder Issues	Identify key stakeholders and impact of the project on them. Outline management approach and resources required.	In house business and commercial staff.
<b>Commercial: Joint Ventures, Markets and Contracts</b>		
JV strategy	Outline desired JV structure and	In house business and

<b>Feasibility Report Indicative Table of Contents for Oil &amp; Gas Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS/RESOURCES</b>
	work plan and approvals to implement.	commercial staff.
JV selection criteria	Financial, commercial, cultural, and technical analysis of any proposed participants.	In house business and commercial staff.
Commercial structure	Proposed structure and rationale.	In house business, legal, and commercial staff.
Governance and control	Draft JV agreement, or Heads of Agreement.	In house business, legal, and commercial staff.
Market supply & demand	Supply/demand projections for the project's major products (oil, condensate, gas, LNG, etcetera.). Competitive position, product specifications.	Often provided by external specialist consultant.
Pricing forecasts and structures, quality issues	Crude assay, gas compositional analysis, pricing consequences, shipping costs, point of sale identified, pricing forecasts, volatility, and ranges. Domestic Market Obligations and pricing.	Often provided by external specialist consultant to advise on quality and transport discounts. Price scenarios usually generated in house.
Customer analysis	Potential buyers identified, financial strength, credit analysis.	Often provided by external specialist consultant, supplemented with in house experience.
Contracts- GSA, crude sales agreement, joint marketing agreements	Gas Sales Agreements usually required to be fully termed, and signed - subject to FID.  Other agreements generally acceptable at HoA or Term Sheet level.  Document all required material contracts and forward plan to implement these.	In house and external legal staff. In house commercial and business staff.
<b>Reserves and Resources</b>		
Reserves (and resources) assessment	Final, and up to date. May also require independent third party assessment.	Independent in-house or external third party reserves assessors.
Field Development Plan	Final, approved.	Usually in-house, multi-discipline team. Smaller operators may contract out FDP preparation.
Pilot Project Results	Enhanced recovery projects, for example, waterflood, chemical flood, production stimulation (fracking) will generally require pilot implementation prior to FID at full scale.	Full implementation and monitoring team.

**Feasibility Report Indicative Table of Contents for Oil & Gas Projects**

<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS/RESOURCES</b>
Supporting documentation and studies	Geology & Geophysical(2D/3D, reprocessing, static modelling, field studies, reservoir architecture, depositional environment, etcetera), petrophysical (logs, core analysis, PVT, etcetera), reservoir engineering (dynamic modelling, analogue studies, well test analysis, etcetera), petroleum engineering (completions, artificial lift, production technology), and facilities development documentation- generally subject to a review and challenge process documented in a DSP to the FID.	In house team: geologist, geophysicists, seismic interpretation, petrophysicists, reservoir engineer, production technologist, facilities engineering, operations support. Supported by specialist, external service providers, for example, seismic processing, core studies, PVT analysis, log analysis, analogue studies, static and dynamic model build, independent reviewers. Review and approval process often involves external or head office staff billed to the project.
Title	Due diligence as to the status of PSC, licence, tenement, or concession under which hydrocarbons are to be produced. Confirm “bookability” of reserves.	Reserves assessor, occasionally legal support.
<b>Project Management</b>		
CAPEX estimate	Estimated to required level of accuracy with risk analysis and independent review.	In house. Sometimes with benchmarking and risk review consultants.
Schedule	Level 1 and level 2 networked schedule for the full project.  Detailed schedule and resources for the next phase. Risk analysis and Independent review.	In house, sometimes with benchmarking and risk review consultants.
Project Execution Plan	Document project planning basis, management, control, reporting, HSE plan, commissioning and handover plan for the Execution phase.	In house.
Key Regulatory approval plan	Identify all permits, regulatory, and participant approvals required and current status. Integrate key approvals into the overall project plan.	In house government affairs staff plus project staff.
Project Organization	Project organization chart with key in house and contracted staff identified.	In house.
Contracting plan	Contract matrix identifying key contracts, workscope and interfaces. Document the proposed structure of major contracts (EPC, lumpsum, reimbursable, etcetera).	In house project management staff.

**Feasibility Report Indicative Table of Contents for Oil & Gas Projects**

<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS/RESOURCES</b>
	Document all implementation contracts required, timing, and current status.	
Basis For Design	Firm BFD with reservoir fluid properties, metocean data, topographical, geotechnical, applicable standards, etcetera.	Usually compiled by external engineering contractor.
Project Risk Assessment	Implementation risks, consequences and mitigation/management plan.	Independent in-house, or external risk assessment consultant.
QA/QC plan	Identify key QA/QC requirements and exposures. Document the assurance plan, with resources and hold points.	In house QA/QC staff, or external consultant.
<b>Engineering Definition</b>		
Option selection definition	Document the range of options considered, evaluation, and rationale for the selected option.	In house conceptual engineering group, often supported by conceptual engineering consultants.
New Technologies	Identify any new technologies, or technologies new to the company. Detail vendor experience and any technology qualification that will be required. Identify specialist support required during implementation or operation.	In house conceptual engineering group, except where extensive new technology trials are required-then full team.
Commissioning strategy	Preliminary commissioning start up, and handover plan. Spare parts and inventory requirements. Operations review.	In house or consultant commissioning engineers.
Value Improving Practises	Conduct VIP reviews as appropriate. VIP's include- Team Building, Lessons Learned, Classes of Plant Quality, Customized Standards and Specs, Waste Minimization, Design to Capacity, Process Simplification, Reliability Modelling, Predictive Maintenance, Constructability, Value Engineering, Project Incentives.	In house staff, sometimes with consultant support to workshops.
Facilities Engineering FEED package	Final: Process Flow Diagrams, Process & Instrumentation Diagrams, Utilities Flow Diagrams, HAZOP, Heat and Mass balances, Electrical one-line diagrams, Major equipment specs. Hazardous area diagrams, plot plans and elevations, pipeline routing general arrangement, weight	Usually compiled by external engineering contractor.

<b>Feasibility Report Indicative Table of Contents for Oil &amp; Gas Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS/RESOURCES</b>
	control list, instrumentation and control philosophy, logic diagrams, major piping layouts, corrosion and materials study, flow assurance work, Basis for Design package, Project Specification package, CAD model studies.	
Well engineering	Draft: Drilling and completion designs, torque and drag studies, rock mechanics, rig requirements and rig market study, offset wells review, technical limit drilling review, drilling schedules, drilling rig and services contracting plan.	In house staff or consultant drilling engineers, with external specialist consultant studies. Sometimes well engineering work is fully contracted out to specialist consultants.
Key contracts	Major project implementation contracts (for example, EPC) tendered, evaluated, and ready for award subject to FID.	In house contracts engineering plus legal commercial and procurement staff.
Key procurement contracts	Major long-lead and high value procurement contracts tendered, evaluated, and ready for award subject to FID.	In house contracts engineering plus legal, commercial and procurement staff.
<b>Operations</b>		
Operations strategy	Logistics and manning strategy, reviewed by Operations group.	In house operations representative.
OPEX estimate	Activity-based cost estimate over the project life.	In house operations representative, sometimes with consultant support.
Data gathering and metering	Identify point of sale and fiscal metering requirements. Identify other data gathering requirements (for example, for reservoir monitoring, or regulatory reporting). Data integration (with existing) and retention plan.	In house operations representative.
Reliability and Availability	Target reliability and uptime assumptions. Planned shutdowns and production outages. SIMOPS plan. Maintenance and reliability studies.	In house engineering staff with input from operations and support from specialist reliability modelling contractors. SIMOPS plan together with operations and drilling.
Abandonment cost estimate	+/- 30% level estimate of abandonment cost to current, or currently forecast, standards.	In house, sometimes with independent consultant study.
<b>Health, Safety and Environment</b>		
Environmental Impact Statement	Prepared, submitted, or approved- depending upon regulatory requirements and	Usually prepared by external environmental consultancy.

<b>Feasibility Report Indicative Table of Contents for Oil &amp; Gas Projects</b>		
<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS/RESOURCES</b>
	risks.	
Safety management system	Preliminary Safety Case, HAZOP completed to P&ID's, Quantitative Risk Assessment (if required). Documented safety management system in place.	In-house, supported by specialist safety consultants for Safety Case, HAZOP and QRA work.
Environmental management system	Documented environmental management plan in place identifying key regulatory requirements, company policy, monitoring and reporting requirements.	In house.
<b>HR and Knowledge Management</b>		
Staffing plan	Local/expatriate staffing requirements and recruitment plan.	In house.
Cultural and local content	Local content requirements. Identify issues related to language, work practises, business ethics, safety culture and outline plans to address these.	In house, in some cases with specialist HR consultant support.
Skills and skills development	Recruitment and training strategy.	In house, in some cases with external recruitment support.
Performance & reward	Expatriate and local compensation structures, benchmarked with industry. Outline performance management system.	In house, in some cases with specialist HR consultant support.
Employee relations approach	Outline the current environment and strategy to improve where require. Discuss union impact.	In house.
IT and data management plan	Data gathering and retention. IT infrastructure requirements.	In house.
<b>Finance and Economics</b>		
Project cash flows	Estimated to required accuracy level on key cost estimates.	In house.
Reference Oil Price Forecast(s)	Final. Price forecast (generally Brent), agreed internally that forms the basis for economic evaluation.	In house, with input from external forecasters.
Economic model	Fully termed and independently reviewed.	In house, often with head office and external consultant review.
Economic runs and sensitivities	IRR, NPV, cash flow analysis with sensitivities. For higher value projects, full Monte Carlo analysis.	In house. Sometimes with consultant support for risk analysis work.
Financing plan	Proposed debt/equity mix,	In house with Investment Bank

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<b>ISSUE</b>	<b>STATUS AT FID</b>	<b>SKILLS/RESOURCES</b>
	sources of finance, and proposed structure.	support.
Tax structuring and tax plan	Define the taxation plan, any pending tax changes, limitations on repatriation of funds, dividend laws, use of special purpose entities, etcetera.	In house, with external accounting firm support.
Accounting standards	Accounting policy review.	In house, with external accounting firm support.
Foreign Exchange impact	Identify the major currencies of cost and revenue and potential FOREX exposure and any hedging required.	In house finance department.
Parent Company (or other) guarantees	Describe any parent company or other external guarantees required.	In house finance department.
<b>Project Risk Assessment</b>		
Overall risk assessment	Detail the methodology of risk identification. Address financial, economic, political, currency, project, operating, market risks. Identify likelihood of occurrence and severity. Discuss insurance cover, and uninsured exposures.	In house, sometimes facilitated by an external risk management consultant. May also require insurance broker support.
Management and mitigation plan	Document risk allocation between parties and contractual treatment.	In house.

**APPENDIX 3 – Engineering Definition**

<b>Discipline</b>	<b>Engineering Definition<sup>14</sup></b>
Process Design	40% to 75%
Geotechnical/Metoccean	30% to 40%
Mechanical	20% to 40%
Electrical	15% to 40%
Structural	15% to 40%
Materials Handling	15% to 40%
Civil	15% to 30%
Architectural	10% to 20%
Instrumentation, Controls, and Monitoring	10% to 15%
IT	5% to 15%

<sup>14</sup> Level of engineering definition expressed as a percentage of complete engineering definition (that is, 100% definition represents completed designs). These may be linked to FEED deliverables for each discipline to facilitate accurate capital cost estimation and operating cost estimation for the EFS.

