PanAust – On the Fast Track to Success

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ABSTRACT

In fewer than ten years, Brisbane-based PanAust Limited has grown from a grass roots exploration company to being in the S&P/ASX top 100 index. This rapid growth has occurred through the successful development of projects such as Phu Kham Copper/Gold and Ban Houayxai Gold/Silver in Laos during periods of major uncertainty and volatility arising from the Global Financial Crisis and the recent woes of the Eurozone economies. While the macro-economic backdrop has led to increased funding challenges for some new projects, perhaps the larger challenge that faces all new projects is the competition for capable technical skills. Lessons learned from these challenges are progressively being applied to strengthen PanAust's approach to project development in the future. In particular, a dedicated project development business unit was formed to progress project studies and project implementation.

Minimising the time taken from exploration's discovery of mining potential, to its realisation as an operating mine, is a primary driver for PanAust to increase its market value for shareholders. PanAust is accelerating project development timelines by integrating and overlapping the functions of resource definition, technical studies and project implementation. Critical to this approach is to assume success from the outset and to ensure consistency of approach and resources through each phase. While appropriate review or gating processes still avoid pursuing a project development beyond a point that is warranted by results, the fast track approach will nonetheless result in some additional expenditure in these circumstances. Ultimately, the value at risk is minimal in comparison with the value generated by bringing a project into operation substantially earlier.

INTRODUCTION

PanAust recognises that its future business success will be intimately linked to its capacity to deliver a pipeline of growth projects. Each project must be delivered on schedule, within its budget and ramp-up quickly to achieve reliable operation at its nameplate capacity and operating cost. PanAust has already developed in Laos the 2 Mt/a Phu Kham Gold Heap Leach and the 12 Mt/a Phu Kham Copper/Gold Operations (Figure 1). It will commission the 4 Mt/a Ban Houayxai Gold-Silver Operation and an upgrade to 16 Mt/a at Phu Kham in the first half of 2012. PanAust is currently undertaking studies for the 12 Mt/a Inca de Oro Copper/Gold Project in Chile (feasibility), the 6 - 10 Mt/a Phonsavan Copper/Gold Project in Laos (prefeasibility) and has completed studies on the 12 Mt/a Puthep Copper/Gold Project in Thailand.

Traditional project development activities commonly start with exploration and progressively move through structured study phases such as scoping, prefeasibility and feasibility before finally reaching implementation (detailed design, procurement, construction, commissioning) and then operations. Gate reviews to approve further expenditure to advance the project occur at the completion of each phase. This approach ensures that increasing project expenditures are linked to decreasing exposure to project technical risk, at least in theory.

Shareholders look for market valuation growth. For explorers making the transition to producer, market valuation initially tends to be driven by the net present value (NPV) of the project. Once in production, NPV becomes a lesser consideration and the underlying basis for market valuation of producers usually transitions to a measure of near term cash flow potential (eg price to operating cash flow or earnings outlook). It follows therefore that the undeveloped projects of producers do not have much impact on market valuation.

For a small resources company seeking to grow, time represents one of the largest destroyers of project value and this can be exacerbated in times of external volatility. A development schedule focused on minimising technical risk (say five to ten years between exploration success and project approval) can therefore increase exposure to other risks that can destroy project value or otherwise threaten financial viability or success, despite the technical merits.

Typical risks that are exacerbated by the long time frames associated with the traditional project development approach include:

- *Commodity prices* – commodity price risk increases significantly as price forecasts are extended well into the future. Compensation for such exposure usually results in conservative (mean price reversion) forecasts. In times of high volatility (which is now more often), this is more likely to kill often potentially attractive projects.
- *Market assumptions* – as with commodity prices, market assumptions for exchange rates and inflation become more uncertain the further out they are forecast.

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FIG 1 - Phu Kham Copper/Gold Project.

- *Escalation* – in recent years, projects have been faced with significant capital cost escalation arising from increased business activity driving up demand for resources available in limited supply (eg labour, fabrication facilities). Shortening the time period for project development helps to manage the escalation of capital costs, in particular through limiting the period between when capital costs are estimated versus when the money is spent.
- *Political environments* – the political and/or legislative landscape can change significantly in the time period between exploration success and ultimate project approval.
- *Resourcing* – keeping key members of a project team together (including contractors and consultants) for up to five years is difficult and with people turnover, significant project intellectual property and momentum are lost.
- *Cost of capital* – the opportunity cost of delayed project execution (particularly in a boom market) as well as the cost of capital associated with the sunk costs can be significant.
- *Financing/market focus* – companies relying on third party financing can find it difficult to fund project activities in which the ultimate development is many years away and value does not necessarily accrue in their share price until the project is at least in the execution phase.

Whilst some of the risks detailed above can be mitigated to a certain extent by targeted action, it is not possible to address them all. For example, while hedging can be used to limit commodity price and foreign exchange rate exposures, it invariably comes at increasing cost the further out it is sought, and, it will not address exposure to other factors like higher operating costs or new taxes, which can exacerbate hedge risk via margin squeeze.

While PanAust recognises the merits of the traditional, sequential approach to project development with distinct study phases followed by project approval and implementation, it has, as a result of prevailing external circumstances in conjunction with the imperative to crystallise increased market value sooner rather than later, eschewed this path to project development. In its place, PanAust has embraced a fast track approach that necessarily increases at risk, short-term financial commitments, albeit only modestly, but has as its reward, substantially greater value generation for the business. This approach still essentially conforms to the traditional stage gate philosophy but seeks to commence key technical studies at much earlier points in the development life of a project.

Early project development activities traditionally focus on the resource or geological risk associated with the size and grade of the potential mineral deposit. Expenditure on resource delineation and definition progressively increase to quantify the size (value) of the prize. This risk is acknowledged to be significant enough that standards such as the JORC Code define how this information should be determined and communicated to stakeholders. No less significant however to the ultimate success in developing a new mining project are such key elements as:

- metallurgy characteristics and the processing route to metal production
- acid rock drainage characteristics of the likely pit waste and tailings stream
- supply chain logistics for moving potential products such as concentrate
- availability of existing infrastructure including transport, electricity, water and sites for major facilities (eg processing plant, tailings dams and waste dumps)
- understanding the topography in relation to the plant and related site layout – of particular importance to PanAust in the rugged terrain of Laos.

Many of these elements can be investigated at minor incremental cost during the exploration phase particularly once exploration success has been achieved and early phase resource drilling is being undertaken. Early answers to these questions not only help to focus subsequent exploration/

resource drilling but also provide early identification of potential opportunities or threats that need to be managed proactively during the ensuing development phases. This is particularly important where government and/or community engagement might be required. Early recognition of these factors can lead to a shortening of the time frame required to complete prefeasibility and feasibility studies, particularly where the duration for resolution might be long. Ultimately, the value at risk of this fast track approach is the incremental cost for completing these studies either earlier and/or to perhaps a greater level of detail. The value is only lost if the project does not proceed. In comparison with the expenditure usually required for exploration, this additional at risk expenditure is not considered excessive.

This approach, however, does require technical and study management expertise to be brought into the project earlier and close collaboration between the exploration, study management and project implementation teams.

PANAUST'S APPROACH

PanAust's first project development was the Phu Kham Gold Heap Leach, which is located in the southern part of PanAust's 2600 km^2 contract area in Laos (Figure 2). The project started production in 2005. PanAust's approach to project development has changed considerably since that time. As the company has grown so has the size of its investments. Along with greater financial risk, the technical risk has also increased. The approach to project development has adapted to address these risks and still maintain trade mark implementation speed.

When PanAust undertook the development of the Phu Kham Gold Heap Leach, it had one employee overseeing project development and almost all other services were contracted out. Project execution was undertaken as EPCM. Building on this experience and the resources of the Gold Heap Leach Project for Phu Kham Copper/Gold, PanAust had recruited an owner's team headed by a project manager and embraced EPCM for the processing plant and self-perform of CM for the supporting infrastructure (roads, HV power line, tailings storage facility, plant site bulk earthworks, administration buildings and camp). For Ban Houayxai Copper/Gold, the approach was EP for the processing plant and largely self-performing of construction at site. The drivers for progressively embracing greater direct responsibility for project implementation outcomes, particularly at site, were the disappointment with both the performance and approach adopted by external project engineering companies.

Ramping up internal resources to undertake project studies was slower by comparison to that adopted for project implementation. This shortcoming has now been corrected and PanAust's current approach is to start with the appointment of a single full-time study manager to oversee a scoping study. Because these are more detailed than traditional desktop studies, this extravagance is considered to be warranted. For prefeasibility and feasibility studies, the aim is to recruit a study team (headed by the same study manager from the scoping study) consisting as a minimum of full-time mining, metallurgy, project engineering and sustainability resources.

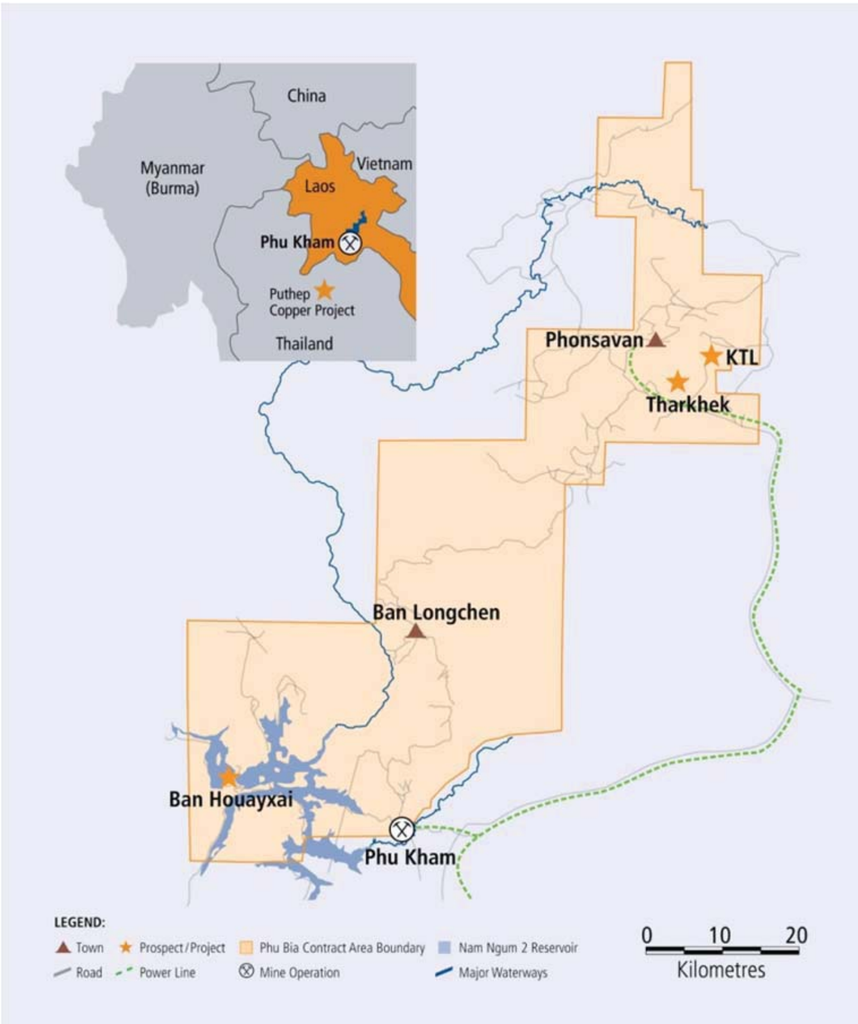

FIG 2 - Contract area in Laos.

With a more detailed scoping study completed initially, PanAust's aim is to use the prefeasibility study to largely resolve all key design options and trade-offs to allow a definitive scope of work to be produced for the feasibility study. By the time the prefeasibility study is completed, PanAust aims to have completed much of the preparation required to support submission of an environmental and social impact assessment (ESIA) that is demanded by government before site development can commence. While this necessitates making a number of assumptions at the outset about how the various investigations and test work will unfold to shape the project, in practice it is not difficult to refine execute progressively any changes to the EISA scope.

The focus in the first half of the feasibility study is on deriving in sufficient detail the key parameters that demonstrate the project's robustness (eg production schedules, capex, opex, environmental impacts). This affirmation of project viability is used to support approval for further at risk expenditure on a program of early works activities (eg critical path front end engineering and design, long lead item procurement, tendering of major supply contracts, operation's management team recruitment and preparatory bulk earth works if environmental approvals are in place). In practice, the more substantive financial risks can be managed with appropriate bail out clauses in contracts that limit exposure in the event that subsequent board approval of the completed feasibility study is not forthcoming.

Phonsavan Copper/Gold Project

Phonsavan Copper/Gold Project is located in the northern part of PanAust's 2600 km^2 contract area in Laos (Figure 2). The Phonsavan project area footprint consists of a semi-circle of distinct deposits centred on the provincial capital of Phonsavan at a radius of some 10 - 15 km. The deposits include KTL (copper), Tharkhek (copper), and Tharkhek (gold). The objective of the scoping study was to evaluate options for exploiting these deposits should subsequent exploration drilling prove successful – either wholly or in part. In conjunction with the commencement of the scoping study, it was decided to immediately commence baseline environmental monitoring and community engagement activities in order to ensure that the project approvals process remained off the critical path for subsequent project development.

Key elements investigated during the scoping study were:

- unexploded ordinance (UXO) clearance – the region was heavily bombed during the 1960s war
- water supply
- siting of key infrastructure including plant, tailings storage facility, water reservoir
- standalone economics of each deposit and any potential synergies
- project scale assessments with feedback into exploration
- metallurgical test work on selected deposits (those having more drilling)
- acid rock drainage assessment and test work
- pit geotechnical and hydrology assessments
- logistics assessment – concentrate haulage
- baseline environmental monitoring
- development of a project risk register.

A dedicated study manager was recruited to oversee the scoping study and, if successful, move it forward to a prefeasibility study. No lead external project engineering involvement was sought to assist with the execution of the study though specific discipline consultants were approached where appropriate. Capex and opex costs were derived by reference to recent experiences at both Phu Kham and Ban Houayxai project developments.

A number of key findings have arisen as a result of the approach:

- Value drivers (potential destroyers and makers) have been defined and understood very early. In doing this technical aspects have been combined with a commercial flavour. This has started to shape the project scope as the exploration continues to mature and provides a much more defined lead in to the next phase of development work.
- The dedicated study manager has liaised closely with the exploration team. The exploration phase has become more of a provider of data for the development of the project rather than just for the purposes of definition of a mineral resource. Several key areas have been improved upon. More importantly the early understanding of the project drivers has provided direction to the exploration priorities avoiding wasted effort and valuable exploration (read project development) definition time.
- The key technical drivers of metallurgy, geotechnics and water management are much better understood although this work will continue throughout the project. The key learning is to carry out actual test work and field investigations rather than making assumptions or using data from another project which might not be sufficiently similar. Advancing this work in preference to (prematurely) starting engineering avoids engineering the wrong scope. Preparation of engineering deliverables is sometimes done for the sake of being seen to be putting something on paper.
- Look at all of the strategic technical options as early as possible, seen as optimisation or step change opportunities. Examples are the possible application of ore preconcentration and alternatives for water recovery from tailings and therefore disposal methods. These are desktop studies but carried out with local knowledge and some data. They are therefore much more relevant and can be built upon as more data becomes available. If the findings are interesting they will drive site investigation work.
- Early establishment of a sustainability team and strong interaction with the technical team has ensured a consistent understanding of the potential project scope focusing environmental assessment and community engagement strategy. The key technical inputs to the impact assessments are developed early. This will avoid the traditional lag associated with completion of the impact assessments and associated documentation at the end of the feasibility study.
- Appointing a dedicated study manager has resulted in many aspects of the project being advanced in parallel.

In summary, the appointment of a dedicated study manager coupled with the general approach taken should ensure that the study can advance more efficiently (the inference being more rapidly and with a clearer understanding of the project risks) through the subsequent study phases to the point of the investment decision.

Inca de Oro Copper/Gold Project

PanAust purchased a controlling interest in Inca de Oro (IDO) Project from Codelco (retaining 33.4 per cent) in February 2011. Inca de Oro is a copper/gold resource in Region III of Chile (Figure 3) and hosts a mineral resource of 334 t grading 0.47 per cent Cu, inclusive of oxide and sulfide resources.

Codelco had completed a prefeasibility study of the project in 2010 and PanAust is currently completing a feasibility study to develop a 12 Mt/a concentrator. The project is adjacent to a township, necessitating an appropriate level of community consideration for advancing the development proposal.

PanAust has elected to run the key design elements for the study from Australia while engaging Chilean consultants for country specific tasks (eg infrastructure issues – electricity, port access, roads, environmental). A study team headed by a study manager was recruited with specialist in the disciplines of mining, metallurgy and project engineering and controls.

In developing the project scope and the execution plan, PanAust will build on its in-house knowledge. The IDO project has similar metrics to the Phu Kham project. The mining rates are similar and the processing rate is the same as the original Phu Kham nameplate. Phu Kham is a very efficient design and where applicable this design will be used at IDO. This is relevant to the concentrator design (grinding, flotation, concentrate handling and services) and to the on-site infrastructure.

While there are some very positive take outs from Phu Kham, some aspects can be improved upon. One example of this is to design fully integrated support facilities encompassing all functions for support of both the mine and the plant including administration, laboratory, a combined control centre, stores and workshops. This will limit vehicle and personnel movements, duplication of facilities and crucially provide an integration of mine and plant functions improving operational control. PanAust is thus designing facilities not just for efficient implementation but also for efficient operation.

IDO does differ from Phu Kham in two aspects both of which are major project drivers.

Raw water for the IDO project is not available within the local region. Seawater will be used and pumped approximately 100 km to the project site which is at an elevation of 1650 m. The installation of the pipe and pumping systems represents a significant proportion of the preproduction cost and the operating cost. The corrosivity of seawater requires special consideration into the materials of construction used for the pipe line and pumping systems and the surface protection standards used in the concentrator.

Desalination of the seawater has been considered but discounted at this stage. Metallurgical test work indicates that there is no discernible benefit when processing in desalinated water and the practice and experience in Chile is well established. It is an aspect that PanAust will continue to re-visit to ensure that the project remains optimised.

The other aspect is material competency. The Phu Kham orebody mainly consists of highly altered schist with relatively low competency values when related to SAG mill energy requirements. The IDO resource is andesite hosted tonalite porphyry with considerably higher SAG mill energy requirements. Total comminution circuit specific energy requirements at IDO could be twice those at Phu Kham for a similar throughput and similar grind size. The replacement of the SAG mill with a secondary crusher/high pressure

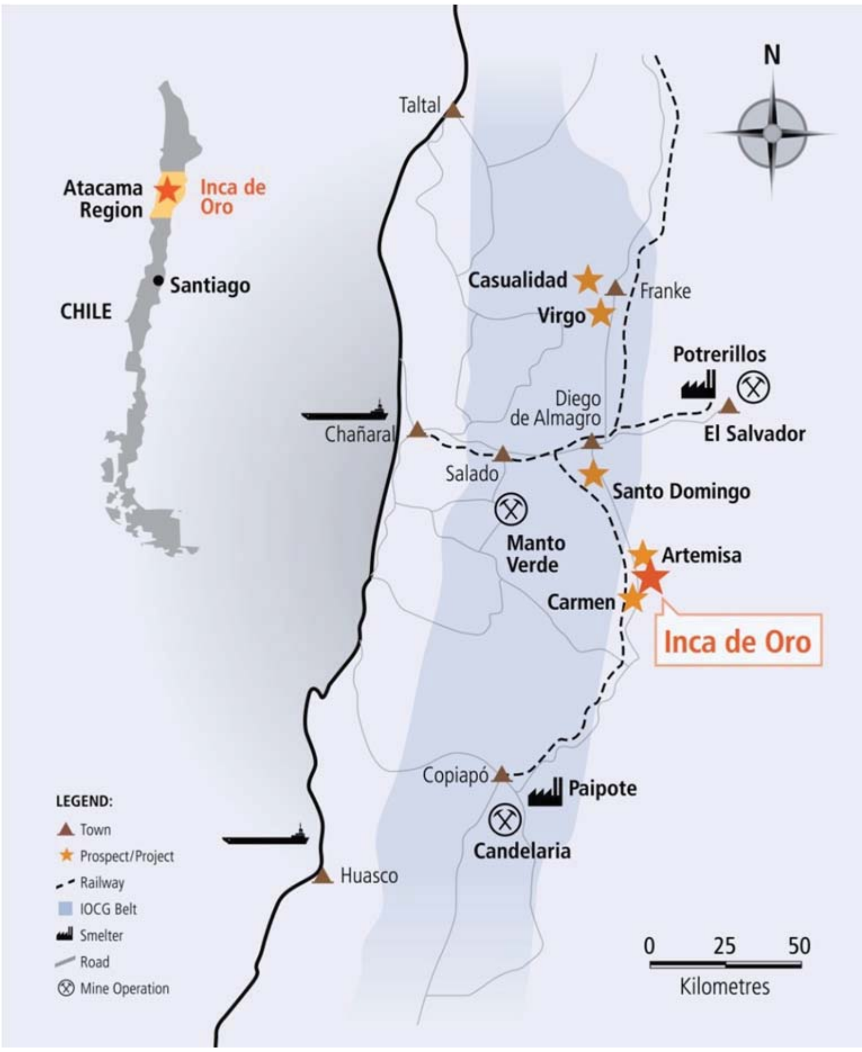

FIG 3 - Inca de Oro Project location.

grinding roll combination is therefore being considered. This approach should result in a significant reduction in power requirements and grinding media requirements somewhat offset by increased maintenance costs. Process and engineering investigations into this option have now commenced.

This is a good example where key data (that is SAG milling energy requirements) was assumed during the prefeasibility study and the acquisition of actual data has led to a late and significant change in the scope of the project.

Ban Houayxai Gold/Silver Project

The 4 Mt/a Ban Houayxai Project was advanced rapidly from completion of scoping study to project operation in just over four years. That this time frame spanned the Global Financial Crisis serves to emphasise PanAust's commitment towards fast tracking its projects. Because of the intensive wet (May to September) and dry (October to April) seasons in Laos, the site preparation and access road development could only be effectively undertaken during the dry season. With the feasibility study submission and subsequent Board approval expected just before the start of the wet season in April 2010, it was proposed to undertake site early works valued at almost $20 million at the start of dry season in October 2009. By the time the feasibility study was submitted and approved, the majority of the site bulk earthworks were completed, paving the way for construction to commence at the start of the dry season in October 2010.

When the feasibility study was submitted in April 2010, exploration drilling (also restricted to the dry seasons) had yielded a mineral resource that supported a mine life of nearly seven years (based on ore reserves at $900/oz gold and $13/oz silver). In the investment case submitted for Board approval, a further 15 months of potential mine life was derived from the inclusion of inferred resources that occurred inside the pit shell. These inferred resources however were not scheduled to be mined until the end of mine life. The exploration team had expressed, as they always will, confidence in both increasing the mineral resources overall and converting the inferred resources into measured and/or indicated through a program of further drilling. The investment case was further bolstered by an assumption that gold could be hedged at the then prevailing spot price of $1150/oz for the first three years of production.

The investment decisions for early works and the subsequent project overall contained elevated levels of risk that would not normally be contemplated. The Ban Houayxai Project, however, was being funded from internal cash flows and therefore there was no need to submit to any limitations that might have been imposed by much more risk averse external suppliers of finance. In early 2011, a new ore reserve based on additional drilling had yielded a mine life of nine years. At the end of December 2011, immediately prior to commissioning and initial production, the gold price had risen to $1600 - $1800 range, further emphasising the value generation potential of fast tracking (NB: While the investment case had contemplated gold hedging, this was not undertaken).

Key decisions undertaken at Ban Houayxai development were:

- the need to undertake early works activities prior to feasibility study completion in order to keep project development on the tightest possible schedule
- proceeding with full project development whilst having only a limited ore reserve tail post capital payback, but

FIG 4 - Ban Houayxai project under construction January 2012.

with potential to upgrade inferred resources and expand the pit

- funding the project from internal cash flow and sidelining any potential third party restrictions
- using hedging to 'lock in' higher spot prices into the financial evaluation.

CONCLUSIONS

PanAust's approach to project development has changed since its first project; the Phu Kham Gold Heap Leach was commissioned in 2005. Since then the Phu Kham Copper/Gold Project has been completed successfully in 2008, followed by the Ban Houayxai Gold/Silver Project in 2012. Currently PanAust is undertaking development studies on two greenfield copper/gold projects; the Phonsavan Project in northern Laos and the Inca de Oro Project in Chile.

Throughout all of these developments, opportunities to fast track the projects have been investigated and implemented where appropriate. Whilst the level of complexity and investment have continued to increase PanAust's counter has been to apply greater resources at an earlier point in the project to ensure that the key financial and technical drivers are well understood in order to manage risk and increase confidence but at the same time still maintaining the development momentum.

Fast tracking projects can add significant value. It is obviously not for everyone, nor is it without financial risk. With an appropriate combination of optimism and a sound technical basis for advancement, project development schedules can be compressed. PanAust has never sought to embrace technical risk. It has however been prepared to advance projects on the fast track when it had a high degree of confidence about the future outcome as a result of investing more heavily in the earlier study stages. The key tenet is to pursue further information when you can – not when you have to.

The Ban Houayxai Project development characterises the PanAust approach. An underlying confidence in the technical fundamentals of the project, combined with the capacity to fund development through internal cash flows, allowed an initially marginal project on paper to be fast tracked such that by the time it will commence production it will be highly successful.

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