

AGMTAC comments on the Australian GMT Project Office submission to ANSOC

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Introduction

AGMTAC welcomes the ANSOC submission on the GMT. Since several members of the committee were involved in working with the AGMTPO to draft the submission, and the whole committee was actively engaged in reviewing the document at several iterations prior to submission, *this document represents the considered view of AGMTAC*. We wholeheartedly endorse this document and believe that investment in the GMT DDP is vital for the future of Australian optical astronomy. We note that the science overview and the science/facilities matrix (Table 2.1-1) addressing the Decadal Plan science priorities were specifically the creation of this committee in an attempt to put the GMT project into the Decadal perspective.

Because of the way AGMTAC and AGMTPO have approached this review process our subsequent comments on the submission are necessarily brief, focussing on a few issues and developments.

Budget Facts about GMT

This committee thought it desirable that the current budget commitments to the GMT project be made known to the committee to show the financial viability of the project. The GMT Board endorsed the provision of information to ANSOC shortly after the deadline for the AGMTPO submission. The numbers are provided in the accompanying document, which ANSOC should treat as **confidential** (as requested by the GMT Organization).

State of ELT projects

The submission addresses the state of the various ELT projects (specifically GMT, TMT and E-ELT) and examines why GMT is the logical choice of Australia.

It is from time to time argued that one ELT project is ahead of another, either financially or technically. ANSOC will know that the funding of major international

projects is subject to political and economic vagaries. All of the current ELT projects need to address these issues. None of these matters are “show stoppers”, and much will be clarified once the projects have proceeded through their detailed design and development phases.

There remains of course the question as to whether the time is right for Australia to invest in ELT development now, with all the current projects subject to a variety of uncertainties, or should Australia wait until the projects are more mature? AGMTAC believes that Australia cannot afford to wait for the various funding process to become fully clarified before staking a position in an ELT project. We consider that it is critical for us to be involved in the early stages of ELT design and development and so **strongly urge taking a 10% share in GMT now.**

Although we acknowledge that the political and technical uncertainties could well mean that when ELT observing actually starts, Australia may have ended up a project other than GMT, it nonetheless remains vital that we invest now in GMT design and development. Australia must engage with one of these projects, and do so via direct investment. The ELT expertise garnered from such investment is critical for the future development of our astronomical community and our industrial and technological capacity. The correct strategy at the present time is to commit fully to the GMT DDP and to re-evaluate Australia’s ELT strategy at the end of that phase, by which time the position of all the ELT projects will be substantially clearer but still fluid enough to allow re-alignment if necessary.

Investment in Chile

One issue with any large facility is the site selection. The facility should go where it will do the best science. We note that one attraction of the SKA project for Australia is the proposed excellent Western Australian site. For the same science reasons GMT would be located in Chile. We argue that this should not be a significant political issue for the GMT project. In the modern era the location of the asset is irrelevant – it is the location of the scientific and engineering effort and resulting intellectual property that is important. This is in line with the conclusions of almost all other leading astronomical nations. The poster-child for this argument is of course the Hubble Space Telescope, but we note that the ESO E-ELT will certainly not be in Europe and that TMT are also giving serious consideration to a site in Chile.

We note also that the Australian government has invested substantially in recent years in the international Gemini Observatory (\$35M in total to date) and in the European Molecular Biology Laboratory. Finally we draw ANSOC’s attention to the recent bilateral treaties between Australia and Chile (p.9 of the submission), which focus on industrial and educational partnerships.

Australian companies have made substantial investments in Chile over the past decade, demonstrating the level of commitment and appreciation of the change in global markets in recent decades. Australia’s investment in the global astronomical market will provide a synergistic link to the Australian business community commitment to the international market.

Australia and ESO

The issue of whether Australia should join ESO has been raised in the community in the last six months. We expect ANSOC will hear this argument and so we will comment directly on it.

There are two underlying reasons why this issue is current. Firstly it would provide access to greater amounts of 8m time through VLT (about twice the time currently available to Australia through its 6.3% share of Gemini). Secondly there is the suggestion that ESO may possibly become the managing organization for the SKA. In this case it is argued that ESO membership may positively influence site selection in Australia's favour and would strategically couple the fortunes of optical and radio astronomy.

AGMTAC considers that the perception that Australian membership of ESO is a panacea that will solve all 8m and SKA problems immediately is very unrealistic. While joining ESO is superficially attractive, politically it is a highly uncertain possibility and would take some years to realize. Any possible future relation between ESO and SKA is uncertain. Nor do we know whether it could be politically and financially feasible to join all of ESO or only one part of the ESO program, such as the SKA. In any case, the cost would be roughly about twice that for GMT, while resulting in approximately half the share (<6%) of E-ELT.

What is clear is that the possibility of Australian ESO membership at some point in the future, is not a good reason to stop the commencement of *actual* ELT design work in Australia through the GMT DDP. The AGMTAC will follow its remit to keep other ELT activities under a watching brief, and re-evaluate the situation at the end of the DDP.

In sum, Australian ELT work needs to proceed immediately, and the current proposed investment in the GMT DDP is the best way to achieve this.