

Response to the Consultation Panels and Final Recommendations from PPAN

At its meeting of 19/20 May 2008, PPAN received reports and presentations containing the advice of the seven consultation panels which had been asked to look at the recommendations of the STFC Programmatic Review.

Contained below are PPAN's responses to the recommendations from each of the panels.

For each of the projects in the review, PPAN has agreed a final alpha grade. Projects received a ranking ranging from alpha 5 to alpha 1 where alpha 5 is the highest ranking. These rankings are given in the feedback, and summarised in Table 1 at the end of this document.

While recognising that all projects in the programmatic review were fundable, the resource available is not sufficient to support all projects. In order to introduce high priority new projects into the programme, economies have had to be made elsewhere. It is expected that the majority of the projects graded alpha 1 will not be funded. PPAN recognises that it is not practical to stop all funding immediately for these projects and recommends that STFC ramp down the funding for these projects as quickly as is reasonable. We expect that the strategy for the ramp down will be undertaken in consultation with the PIs/stakeholders, where possible looking for ways to obtain some limited return on previous investments.

A number of other comments and suggestions from the panels are noted, and where appropriate, will be taken forward in future discussions with the standing advisory panels that will shortly be established.

Astroparticle Physics

PPAN is grateful to the Astroparticle Physics consultation panel for their work on both assessing the community feedback submitted during the consultation process and providing considered advice on the results of the Programmatic Review in this STFC science area.

PPAN is pleased to note that the consultation panel confirmed PPAN's prioritisation order of particle astrophysics projects. Guided by the panel's input and further detail on the funding situation, PPAN was able to place all but one of the current facilities on the consultation panel's list within the planned funding envelope. Notes on the individual projects are given below.

The highest priority astroparticle projects, **Advanced LIGO/GEO600**, were confirmed by the consultation panel in this status. A grading of alpha 5 was assigned by PPAN, which noted that the consultation panel concurred with the assessment that UK involvement in the gravitational wave area deserves full support.

PPAN and the consultation panel also concur on the priority given to **Clover, Inverse Square Law** experiments and the **Zeplin III** experiment. They were graded alpha 4 by PPAN reflecting this confirmation of their high importance within the programme.

PPAN and the consultation panel agree on the priority of the **Auger** project, focusing on the continuing exploitation of the recently acquired data from Auger south, with this being graded alpha 3.

The value of the science carried out by **HESS** despite the relatively small UK participation, was recognized by both PPAN and the consultation panel. HESS was graded alpha 2.

VERITAS was graded alpha 1 and remains in the unfunded band.

Astrophysics Theory, High Performance Computing and Astronomical Data Handling

PPAN thanks the consultation panel for their hard work and useful input. PPAN is aware of the importance and high profile of astrophysics theory, and recognises its key role in the overall programme. We note that both PPAN and Science Board have theoretical physics representation, and assure the community that all theory grant allocations will be, or have been, carefully scrutinised in relation to the program.

To comment specifically on the consultation panel input on the individual projects:

HPC: PPAN noted and accepted the consultation panel's request to apply a finer grading to the ranking of the various HPC projects and re-assessed the HPC program, using the categories provided by the PPRP report. Three HPC lines now appear in the programme. PPAN also used the revised financial planning figures as indicated by the consultation panel.

The top band of HPC projects (**Exeter, MIRACLE, UKMHD, UKQCD (1), and Virgo**) was judged to be producing world leading research in a strategically important area, and was graded an alpha 4. The second band of projects, **HORIZON** and **UKQCD (2)** were judged to be of high priority and graded alpha 3. The final band of fundable projects, **COSMOS** and **Leicester** were also judged to be of good quality and graded alpha 1. Although currently below the funding line, we recommend some negotiation within the overall financial envelope to attempt to fund these projects.

Astrogrid, CASU/WFAU: PPAN noted the consultation panel's comments, and reviewed their ranking in the Programmatic Review. In the case of Astrogrid, PPAN noted the consultation panel's input, but after discussion agreed that the project was nonetheless correctly ranked in relation to the rest of the programme. We also reviewed the ranking of CASU/WFAU, and agreed the science elements of these programmes should be reviewed by the grants panel. These projects were ranked alpha 1.

Ground-Based Astronomy

PPAN is grateful to the Ground-Based Astronomy consultation panel for the work it had undertaken in such a short period of time. PPAN also noted that the number of community inputs in this area was very high and the consultation panel had dealt very carefully with these. Having heard the consultation panel's input, and taking into account the decisions taken by STFC Council, we make the following recommendations:

KMOS and **JCMT/SCUBA II** were ranked very highly by PPAN and the panel. Both projects were thus graded alpha 5.

We noted that the consultation panel agreed with PPAN that both **ELT R&D** and **SKA R&D** were of high priority, and we agreed that in relation to other priorities, some reduction or re-phasing to these programmes should occur. Both were graded alpha 4, with a reduction in guideline planned spend over the next 3 years of 25%.

As noted by the consultation panel, the **Dark Energy Survey** is well underway and set to produce important results in a strategically important area. PPAN remained of the opinion that DES should be ranked relatively highly, and thus assigned it a grade of alpha 4.

Although PPAN was mindful of some of the consultation panel's concerns about the **ALMA Regional Centre**, we considered that changes recommended by PPRP should address these. Overall, we concluded that the ALMA project was so important that a UK support centre was essential. PPAN therefore did not change the relative ranking of this project and graded it alpha 3.

With regard to the **ING**, the WHT in particular was recognised to be a productive and valuable asset to the UK's ground-based programme in the medium term. PPAN therefore graded it as alpha 3.

PPAN agreed with the consultation panel that the **Liverpool Telescope** had largely fulfilled its role in Knowledge Exchange, however we remain convinced of the quality of the science produced, and it was therefore graded alpha 3.

We noted the consultation panel's belief that **e-MERLIN** offered great scientific potential, but we were still concerned in particular over the breadth of the user-base and the impact of the science from this facility, and **JIVE** in particular. We were very pleased however that STFC is in discussions with other stakeholders including The University of Manchester to seek ways to secure operational funding through the CSR period and thus give e-MERLIN the chance to prove itself. e-MERLIN/JIVE were graded alpha 2.

For **Gemini**, PPAN shared some of the consultation panel's ongoing concerns and agreed that the most important aim was to retain access to Gemini N through the sale of 50% of the UK's overall time. We also agreed with the consultation panel's relative ranking as being below that of ING and graded it alpha 2.

For **UKIRT** the panel emphasised the importance of completing UKIDSS. Although PPAN were mindful of the scientific competition that the VISTA surveys will provide, we support the ongoing efforts by STFC to secure international partners to help to ensure that UKIDSS is indeed completed. Overall we graded UKIRT somewhat lower than the consultation panel at alpha 2.

Particle Physics

PPAN was pleased to note that the consultation panel broadly confirmed the prioritisation order of particle physics projects within the overall programme, and noted that the consultation panel had made several helpful suggestions for optimisation of limited funds.

The top priority projects (**ATLAS, CMS, nEDM**) were confirmed in this status and were graded alpha 5. The 5% reduction on GridPP was confirmed and, after this reduction, the project was also graded alpha 5, reflecting its critical role in exploitation of the LHC.

The suggested reprofiling of the **SuperNEMO** project was accepted. PPAN and the consultation panel agree that since this is an R&D project, funding after the current R&D phase is dependent upon the outcome. However, PPAN is of the opinion that there is likely only to be sufficient funding for a credible UK role in a single neutrinoless double beta decay experiment on this timescale, and SuperNEMO is the current baseline UK project. The project was graded alpha 4.

The priority given to **T2K** was reconfirmed. The project was graded alpha 4. The suggested reprofiling of the LHC upgrade projects was accepted, though the panel noticed this increased the funding risk in the third year. **LHC detector upgrades** as a planning line were graded alpha 4.

LHCb was graded alpha 4, reflecting its importance to the Particle Physics programme. PPAN was persuaded that the proposed level of reduction to LHCb (25%) would do unacceptable damage to the physics output of the experiment, and therefore we recommend a reduced cut level of 5% in the first year and 10% in the subsequent years, noting that the final year and a half of the project will be subject to review by the PPGP.

The status of **CDF, D0 and eEDM** was reconfirmed, and they were graded alpha 3.

PPAN noted the planned extension of **MINOS** running in the US, and also the fact that in the initial prioritisation by PPAN, MINOS had dropped into the “lower priority” category late in the review due to funding constraints. It was therefore very happy to take advantage of the savings allowed by other suggestions from the consultation panel, and restore funding to MINOS at the 50% level to allow the UK groups to participate in the experiment over the next few years, albeit at a sub-optimal level. MINOS was graded alpha 2.

PPAN noted the huge impact of the sudden termination of **LCFI** and **CALICE**. Expert teams had been built up in these projects with detector development skills with applications well beyond the ILC. It was therefore agreed that, given the savings identified elsewhere, it would be possible and desirable to explicitly introduce a detector R&D line as suggested by the consultation panel, to protect some of the investment made in building up the CALICE and LCFI teams. This planning line was assigned a grade of

alpha 3, reflecting the strategic importance attached to this activity. Some extension of the CALICE and LCFI ramp down was also agreed, motivated by similar considerations.

Regarding **Babar**, the project was graded alpha 1, and the panel could not, in competition with other more highly rated projects, justify restoring resources to the collaboration as suggested by the consultation panel, and reluctantly had to leave the project terminating rather abruptly, recognizing the loss of science this would incur.

On other issues mentioned in the consultation panel report, the impending theory grant round, and the potential for damage reflected in the 25% proposed reduction in grant funding, greatly concerns PPAN and was a factor in the tight financial constraints imposed on the project line. Responsibility for **ALICE** has been transferred to the nuclear physics grants panel, and **ALICE** did indeed benefit from a coherent prioritisation as part of the nuclear physics program, being graded by PPAN as alpha 3. High performance computing was dealt with by the Astrophysics Theory, HPC and Astronomical Data Handling consultation, but it should be noted here that the tranche of HPC projects involving the two highest priority **UKQCD** areas had their operations elements graded alpha 4 and alpha 3 respectively and are recommended for funding, subject to negotiations with the universities involved.

Solar Physics & Solar Terrestrial Physics

PPAN was pleased to note that the consultation panel broadly confirmed the prioritisation order of Solar Physics & Solar Terrestrial Physics projects within the overall programme. The consultation panel agreed on all rankings which affected the funding of projects, and made a number of comments on the relative ordering of funded projects.

PPAN still regards **Solar Orbiter** to have a higher priority than STEREO and Hinode, rather than an equal priority as the consultation panel suggested. PPAN agreed a grading of alpha 4 for Solar Orbiter.

PPAN was willing to accept the consultation panel's advice of moving **STEREO** above SOHO and Cluster. PPAN agreed a grading of alpha 4 for STEREO.

Since the original PPAN ranking of **Hinode**, new information has become available, namely publication numbers and calibration status. As a consequence, PPAN raised the priority of Hinode over SOHO and assigned it a grade of alpha 4.

For **Cluster**, **SOHO** and **UKSSDC**, PPAN agreed that each project should receive a grading of alpha 3.

The consultation panel recommend an STFC-wide review of data-curation across all science areas with the aim of identifying synergies and economies of scale. PPAN agreed with this recommendation.

The consultation panel recommended that **BiSON Operations** be removed from the Programmatic Review and its funding/future should be left for the Astronomy Grants Panel (AGP) to decide. PPAN could not accept this recommendation as it believes all projects should be considered in the Programmatic Review. PPAN graded Bison Operations alpha 1.

The consultation panel accepted the inevitability of UK withdrawal from the **EISCAT** subscription in 2011, but wanted the AGP to be advised that this did not imply ALL ground-based STP research should not be funded. PPAN accepted this comment and agreed to advise the AGP that ground-based STP grants should be considered on their individual scientific merits. PPAN confirmed that reduced support was appropriate in line with the continued subscription and this was graded alpha 1.

Space Science & Exploration

PPAN were pleased to note that the consultation panel broadly confirmed the prioritisation order of space projects within the overall programme. The consultation panel agreed on all rankings which affected the funding of projects, and made some comments on the relative ordering of funded projects.

The consultation panel commented on the projects which they felt should be at the highest priority. The consultation panel argued that support for these upcoming, very high profile missions in which the UK had important roles should be at the highest priority. PPAN agreed with this and graded **JWST/MIRI**, **Planck PLS** and **Herschel PLS** alpha 5 recognising the future potential of the science from these missions.

The consultation panel argued that **VENUS Express** should be prioritised below JWST/MIRI and Planck PLS. While recognising the excellent science return from this mission, the consultation panel felt that the future science return would have less impact. PPAN accepted this argument and graded the mission PLS alpha 4.

The consultation panel also argued that future science return from **SWIFT PLS** was potentially lower impact than its previous output, and suggested a lower ranking for SWIFT. PPAN assigned a grade of alpha 4 for SWIFT PLS.

The consultation panel agreed the high priority assigned to **LISA/LISA Pathfinder** which was graded alpha 4.

PPAN and the consultation panel both agreed the strategic importance of investment in the **ExoMars** programme, and the programme was graded alpha 4. PPAN had recommended a reduction of 25% to the planned spending line for ExoMars and, after receiving no strong arguments against this from the consultation process, this reduction was confirmed. PPAN and the consultation panel agreed the priority for the **GAIA** mission which was graded alpha 4.

The consultation panel confirmed PPAN's assessment that support for PLS of the **XMM Newton** mission should be continued as there are still important science returns expected from the mission. The XMM Newton PLS was graded alpha 3.

The consultation panel confirmed PPAN's assessment that support for PLS on the **Cassini** mission should be continued as there are still important science returns expected from the mission. The Cassini PLS was graded alpha 3.

The consultation panel concurred with the importance of support for **Roadmap to XEUS**. PPAN assigned a grade of alpha 3 for this project, and noted that in future it would be considered together with funding for the ESA Cosmic Vision programme.

The priority given to **BepiColombo** was confirmed by both the consultation panel and PPAN, and the project was graded alpha 1.

The consultation panel agreed the priority for **Integral**, and PPAN confirmed that the project remained in the unfunded band with a grade of alpha 1.

The consultation panel recommended that a review of all Post Launch Support should be undertaken in order to identify savings in the programme. PPAN considered this, and agreed that it is important to monitor the spending on PLS. However, it was felt that the regular bi-annual review of PLS which is current STFC practice was sufficient.

Nuclear Physics

PPAN thanked the Nuclear Physics consultation panel for their work in assessing the community feedback and providing advice on the programme priorities.

Because Nuclear Physics had just joined STFC at the time of the Programmatic Review there were no established programme grants and the review concentrated on the facilities. PPAN shared with the consultation panel the wish to move to a process which assessed physics programmes. PPAN also shared the view that a first step towards this was the establishment of an STFC Nuclear Physics Strategy, which will be developed over the next year. As a consequence, PPAN was happy to accept the consultation panel's recommendation that for this round the Nuclear Physics Grants Panel uses the quality of the physics case as the overriding factor.

PPAN was pleased to note that the consultation panel's assessments of priorities matched closely with that of PPAN. In particular the panel confirmed the top ranking given to the current facilities at **GSI, SPIRAL** and **J-LAB**. These were graded alpha 5 by PPAN reflecting this confirmation of their high importance for the future of the programme. The panel confirmed PPAN's view of the importance of the **ISOLDE** facility, noting also that the planned HIE-ISOLDE upgrade will considerably improve the capabilities and so PPAN graded ISOLDE as alpha 3. The other mid-ranked facilities, **Argonne, Jyvaskyla** and **TRIUMF**, were also graded alpha 3. The **AGATA** project was graded by PPAN using the same Programmatic Review criteria and PPAN is satisfied that it warranted funding. It was also ranked as Alpha 3. The lower priority for the UK programme of **Legnaro, Maxlab, HERMES** and **Louvain-la-Neuve** was confirmed by the consultation panel and PPAN graded these as alpha 1.

The consultation panel made particular comment on two facilities, **ALICE** and **MAMI**, which had been the subject of the most community input. On **ALICE**, the case was made that this had suffered as a consequence of timing. The switch of the nuclear group at Birmingham from STAR to ALICE had greatly enhanced the already strong UK effort, but had happened after the nuclear physics community had generated its community strategy. PPAN had in fact already recognised this issue and were pleased that the consultation panel was able to give a strong recommendation for the importance of this science to the nuclear physics programme. This was reflected in the PPAN grading of alpha 3. The consultation panel also commented that the MAMI facility provided a crucial, complementary aspect to the highly rated science programme at J-Lab, and that this should be reflected in the assessment process. PPAN was persuaded of this and graded the UK involvement at MAMI as alpha 2.

PPAN was supportive of the suggestion that the profile of capital investment for FAIR be examined to try and free up additional funds in the grant line at this crucial start-up point.

PPAN SUMMARY 19/20 MAY 2008

Table 1

Prioritised PPAN Programme (alphabetical within alpha grade)	ALPHA
Advanced LIGO	5
ATLAS	5
CMS	5
GEO 600	5
GridPP	5
Herschel PLS	5
JCMT/SCUBA2	5
Jefferson Lab	5
JWST MIRI	5
KMOS	5
nEDM	5
Planck PLS	5
RISING/GSI	5
SPIRAL	5
CLOVER	4
Dark Energy Survey	4
ELT R&D	4
ExoMars	4
GAIA	4
Hinode	4
HPC Band 1	4
LHC-b	4
LHC upgrades	4
LISA & LISA Pathfinder	4
SKA R&D	4
Solar Orbiter	4
Stereo	4
SuperNEMO	4
SWIFT	4
T2K accelerator	4
T2K ECAL	4
Venus Express	4
Zeplin III	4
AGATA	3
ALICE	3
ALMA Regional Centre	3
Argonne	3
Auger	3
Cassini	3
CDF including Rolling Grants	3
Cluster	3
Detector R&D for Future Colliders	3
D0 including Rolling Grants	3

eEDM	3
HPC Band 2	3
ING	3
Inverse Square Law	3
ISOLDE	3
Jyvaskla	3
Liverpool Telescope	3
Roadmap to XEUS	3
SOHO	3
TRIUMF	3
UKSSDC	3
XMM Newton	3
e-MERLIN/JIVE	2
Gemini	2
HESS	2
MAMI	2
MINOS	2
UKIRT	2
Astrogrid	1
BaBar	1
Bepi-Colombo	1
BISON Operations	1
CALICE	1
CASU/WFAU (exc ESO committed)	1
EISCAT Support	1
HERMES	1
HPC Band 3	1
Integral	1
LCFI	1
Legnaro	1
Louvain-La-Neuve	1
Maxlab	1
VERITAS	1