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**PROPOSED RELOCATION OF  
MARIBYRNONG  
EXPLOSIVE ORDNANCE COMPLEX  
TO GRAYTOWN**

**BY**

**KATHERINE REID**

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Proposed Relocation of Maribyrnong Explosives Ordnance Complex to Graytown

by
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ATEA Publication Number 5/97

ABSTRACT

This report identifies and compares the sites at P&EE Graytown that are available for use as ATEA's new Explosives Ordnance facility. The costs of each option have been examined. The necessary upgrades for the preferred option have been detailed. The recommendation is that Building 21 and Building 22 should be used by Mechanical Armaments Unit for Explosives related tasks. The report sets out what decisions are required to be made and by whom, in order to effect the relocation to Graytown.

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Proposed Relocation of Maribyrnong Explosives Ordnance Complex to Graytown

EXECUTIVE SUMMARY

- 1) ATEA Maribyrnong's Explosive Ordnance facility is to be relocated to Graytown. The aim of this report was to provide ATEA management with solutions for the relocation. It examines how existing conditions at P&EE Graytown can be modified to accommodate MAU's EO Facility, including information on licensing requirements, cost estimates and what further action should be taken.
- 2) The report has four main sections.
 - **Choice of Buildings at Graytown.** This report initially examines the buildings at Graytown in which an explosives facility, similar to the one currently in use at Maribyrnong, could be replicated. Four options have been identified and evaluated. The best option was found to be relocating the EO facility to Building 21 and Building 22.
 - **Initial Planning for the Relocation.** Equipment currently in Building 24 at Maribyrnong will be moved to Graytown and this report examines the optimum siting of this equipment. The upgrades in Building 22 that are required for compliance with Safety, Fire Protection, Security and OH&S standards have been listed. The cost of these upgrades has been estimated.
 - **Licensing Requirements** Building 22 is required to be licensed as an Ammunition Processing Building. If this occurs, the licenses of other nearby explosive storehouses which contain ammunition necessary for the operation of the Graytown Proof Range will be affected. Finally, this report identifies what key licensing decisions need to be made so that ATEA's EO facilities can be relocated to Graytown. It recommends courses of action depending on the outcome of these decisions.
 - **Further Action** As the implementation of the main recommendation of this report depends on the resolution of the licensing requirements at Graytown, the final section examines possible likely outcomes to the licensing problem. Various courses of action are then recommended

The Author

Katherine Reid is currently studying for Bachelor degrees in Chemical Engineering and Commerce at the University of Melbourne. She was employed by ATEA for three months during the 96/97 summer vacation period. A major part of Katherine's work at ATEA was to undertake an important task which required in depth research into the relocation of an explosive ordnance facility used in design and development work.



Proposed Relocation of Maribyrnong Explosives Ordnance Complex to Graytown

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Proposed Relocation of Maribyrnong Explosives Ordnance Complex to Graytown

REFERENCES

- A. 1300-Y1-143 Explosive Facilities for ATEA (P96094) by Mr. A. J. Scolaro
- B. UK ETSC Leaflets 5-10
- C. FACMAN 2 - Manual of Fire Protection Engineering
- D. LOG 07-1 Safety Principles for the Storage of Ammunition and Explosives
- E. Manual of NATO Safety Principles for the Storage of Military Ammunition and Explosives.
- F. Occupational Health and Safety Act 1985 - Code of Practice for Workplaces
- G. OPSMAN 3 - Defence Explosives Safety Manual.
- H. SECMAN 4 - Physical Security Manual
- I. SECMAN 7 - Defence Security Design and Construction Guides

BACKGROUND

1. This report is the outcome of an investigation of the available options for relocating Mechanical Armaments Unit (MAU) Explosive Ordnance (EO) Design and Development Test Facility from Maribyrnong to Graytown. It has been undertaken as the first step to completing Project Number 96255: Relocation of ATEA (Maribyrnong) EO Facility to Graytown.

2. **The Maribyrnong Problem.** It is Defence policy that the Maribyrnong site will be free of explosives. Resulting from recommendations made in the ATEA Maribyrnong Master Plan and an ATEA Senior Management directive, it has been decided that the EO facilities located at ATEA Maribyrnong shall be moved. No timetable has yet been set for the relocation for ATEA's EO facilities. When the Weapons System Division (WSD) of AMRL moves to Salisbury during FY 97/98, ATEA's EO testing facility will be the last remaining place where explosives are stored and processed on the Maribyrnong site.

3. **The Scolaro report.** Mr. A. J. Scolaro wrote a report (Reference A) examining the options for a relocation of the Maribyrnong EO site. The report found that:

- a. P&EE Graytown is the best option that is compatible with the policy of explosives-free Maribyrnong.
- b. Upgrading facilities currently in use at Maribyrnong, while convenient, would be inconsistent with the ATEA Maribyrnong Master plan which requires an explosive free site.

- c. "Two Buildings at P&EE Graytown can jointly house, at minor cost, ample facilities for expected ammunition processes with scope for future expansion depending on requirement....."
4. **Why Graytown?** The relocation of Maribyrnong's EO facility to Graytown has the following advantages:
- a. Graytown is one and a half hours drive from ATEA Maribyrnong which minimises travel time and hence task time for Mechanical Armaments staff compared to other relocation options.
 - b. Graytown is close to major highways, the Puckapunyal Logistic Battalion (PLB) Ammunition Depot and the Mangalore Airfield which avoids lengthy transportation times and the associated costs.
 - c. Because Graytown is part of ATEA the problems that arise in a shared facility situation are minimised. (ie. Benalla)
 - d. Graytown currently has a well appointed Ammunition Laboratory (Building 22) which requires only minor upgrading. It is currently licensed as an Explosives Store House (ESH).
5. **P&EE tasks at Graytown:** Graytown is one of two proof and experimental ranges operating under direction from the Proof and Experimental Organisation (PEO). The PEO was part of HQ Log Comd-A until mid 1996 but has subsequently become a subdivision of ATEA. ATEA was a customer of Proof and Experimental Establishment (P&EE) at Graytown before this change and remains a customer now. The PEO's primary function is to provide static and dynamic testing facilities and a test analysis capability as a support to Defence. In particular, it tests new weapons systems and does proof testing of in-service ammunition.

AIM

6. The EO facility in use at ATEA Maribyrnong is of a fine standard. In order that the quality of work done by MA staff is maintained, any new EO complex must provide an equal or better standard of facilities. The aim of this report is to determine what are the minimum modifications to the existing conditions at Graytown that are necessary in order to carry out EO design and development tasks there. It aims to give a preliminary indication as to the cost of the relocation.

METHODOLOGY

7. In order to satisfy the aims of this investigation the following steps were taken:
- a. Previous reports have been examined to determine what are the ATEA EO testing requirements.
 - b. Site inspections have been carried out and relevant maps and maintenance reports have been examined to determine the state of existing facilities.
 - c. The following people were consulted:
 - (1) SATO SR Maj. Andrew Morrison - licensing requirements
 - (2) OC Graytown Maj. Jane Spalding - P&EE requirements
 - (3) ATEA Mr. Les Opie - MAU requirements
 - (4) ATEA Mr. Andrew Campbell - MAU requirements
 - (5) AISS-M Cpl. Justin Coote - Security requirements
 - (6) Puckapunyal Logistics Battalion Regional Engineer Maj. Foote.
 - (7) PLB - WO2 R. J. Heath - Fire Protection Requirements.
 - d. Relevant Standards Manuals have been consulted to ensure that any recommendations made are in accordance with the current regulations and codes of practice.
 - e. Two meetings were held with representatives from MAU, PEO, P&EE Graytown, SATO SR's office in order to discuss arrangements for the relocation of MAU EO complex to Graytown. Minutes to these meetings are attached at Annex A

DISCUSSION

8. The Mechanical Armaments Unit at ATEA is an important component in the life cycle of ammunition development for Defence. It contributes significantly to the high technological standard of equipment employed by the Australian Army. In order for MAU to continue providing this vital design and development link between research and production, it requires access to an ammunition process building.

9. **What does MAU need?** The estimated average workload for MAU tasks in the ammunition process building is 100 working days a year. The MA projects currently underway are Affray, Birrana, 12 gauge SF ammunition, MOE, Raked, Stump, Wattle, and Explosives Demolition system study. In order to satisfy the requirements for these projects the following tasks need to be done:

- a. Cutting of lead encased charges
- b. Cutting of copper or aluminium encased charges
- c. Cutting and shaping of explosive train elements
- d. Assembly of explosive charges.
- e. Breakdown of explosive items
- f. Assembly of pyrotechnic and propellant charges
- g. Mixing of pyrotechnic charge
- h. Testing of small pyrotechnic charges and propellant charges made by a contractor.
- i. Testing of small charges in the open to measure output
- j. Mixing, processing and testing of chemical agents (CS, capsicum)

10. The following have been identified as the minimum facilities required to undertake these tasks:
- a. an expense magazine or storage for NEQ 15kg HD 1.1
 - b. an ammunition processing room/rooms with electrostatic charge protection and appropriate electrical fittings for Processing, Fabrication and Breakdown processes with remote control and viewing capability.
 - c. charge assembly facility.
 - d. test facility for small EO charges.
 - e. a room with ample space for sundry test equipment and special purpose set-ups
 - f. a facility to fire explosive charges
 - g. a facility to fire pyrotechnic charges
 - h. an equipment storage room
 - i. a toilet/wash room
 - j. a safety shower
 - k. ample space for the accommodation of the following pieces of equipment: Jumble, Vibration, Conditioning Chamber, Power Hacksaw with remote viewing capability.

Existing Facilities:

11. Once MAU's requirements had been determined, an inspection of the existing facilities at P&EE Graytown was conducted. This inspection was carried out on Tuesday 3rd December by Katherine Reid, Les Opie and Andrew Campbell. The aim of the inspection was to examine all the available options at Graytown for MAU's EO complex not only the relocation to Building 22 as recommended in Mr. A. Scolaro's report (Reference A).

12. The then ATO, Leo Monkivitch, at Graytown advised that although Building 22 was the obvious choice for relocation of MAU facilities, if it were licensed as an Ammunition Process Building (APB), the licences of other explosive storehouses in the vicinity would be affected. This is discussed in more detail below.

13. While at Graytown, copies of building plans and maps were obtained, photographs and measurements of the buildings were taken by the inspection team. Having completed the inspection of the site and discussed the current use of various buildings with P&EE staff, the following options for the continuation of MAU tasks at Graytown were considered:

- a. Option 1: Share existing APB with P&EE staff
- b. Option 2: Build a new APB
- c. Option 3: Occupy the Small Arms Battery
- d. Option 4: Occupy Building 22.

14. In order to decide which of these option was the best the following criteria were used:

Table 1: Evaluation of options according to specific criteria.

Criteria	Option 1	Option 2	Option 3	Option 4
With the appropriate alterations made, does this option have the capability to physically accommodate MAU requirements?	✓	✓	✓	✓
Both MAU and P&EE tasks are important, an optimal outcome for the relocation would involve the least possible disruption to either organisations work schedule.				✓
Will this option be "inexpensive" compared to the others?	✓			✓
Does this option provide appropriate security and confidentiality to MAU work?		✓	✓	✓

15. **Option 1: Share existing APB¹:** Building 39, also known as the New APB was built in 1986. It is used daily by P&EE staff for the preparation of Ammunition for Proof and Experimental work. The physical attributes of the building render it suitable for MAU tasks. The estimated workload for MAU tasks is 100 working days a year. For this amount of work it has been suggested that MAU tasks could be undertaken in Building 39 alongside the P&EE staff who currently work there. While this may prove to be an interim solution it is by no means a long term solution. The reason why this option is untenable is:

- a. The design and development work which is necessary for MAU to complete its projects requires a level of security. MA staff are required to restrict knowledge of their work to as few other people as possible. This option is considered to be an untenable long term solution because in order to maintain a level of security, MA staff must be provided with an area in which to work without disruption. In order for this to occur, it will be difficult for MAU and P&EE tasks to occur simultaneously. Time-sharing will put undue constraints on the capacity of Building 39 as a facility for P&EE and MAU tasks. The option to share Building 39 between P&EE and MAU is considered not to be feasible.

16. **Option 2: Build a new APB for MAU tasks:** The obstacles associated with this option became apparent early in the project. Due to the current layout of other buildings at Graytown finding a feasible site for a new APB may prove difficult. Due to licensing and safeguarding considerations, and the position of the firing ranges, the options are limited. If this option were chosen it would require a siting board to be convened to consult with SATO SR's office in order to discover if a feasible position for a new APB exists.

17. The cost of building a new APB renders this option an undesirable one if less costly alternatives can be found. As a rough estimate, the expected cost of a new APB has been based on the adjusted construction cost of Building 39 which was built in 1986 at Graytown. In today's dollars a new APB would cost approximately \$1.3million to build.

18. The conclusion that has been reached then is that this option is viable provided that:

¹ For clarity throughout this report the buildings at Graytown will be referred to according to the names given to them on the adjoining map of the establishment at Annex B

- a. a site for the new building can be found which complies with the current safety standards and safeguarding policy
- b. funds for the design and construction of the building can be found.

19. **Option 3: Use Small Arms Battery for MAU tasks.** The Small Arms Battery at Graytown has not been used for some time and is in a state of disrepair. It would need considerable refurbishment. As the floor space is only approximately 60m², an extension will need to be built to accommodate MAU equipment. It is estimated that the cost of this renovation would approach that of Option 2. The licensing of this site has been considered in Annex B by SATO SR and it has been found that no HD 1.2 may be used in this building which means that the types of tasks that MA staff would be permitted to do in this building would be limited. The high cost of refurbishment and licensing restrictions are the primary reasons why the Small Arms Battery is undesirable as a site for a MAU EO facility.

20. **Option 4: Use Buildings 21 & 22 for MAU tasks.** Building 21 is a light frangible structure with brick walls. It has a large rollerdoor at the front and is currently licensed as an ESH. It has been identified as an ideal location to set-up and use a remotely operated power hacksaw and jigs to cut and form Aluminium and Copper sheathed explosive.

21. Building 22 (also known as the Old APB) was used as an ammunition processing building by P&EE staff until Building 39 was built at Graytown in 1986. The last major renovation work that was done on Building 22 was carried out in 1988. At present the interior is in excellent condition with well appointed bays fitted out for explosives work. However since PEO/Army adopted the NATO standards for the storage and transport of explosives in 1981, the new IBD distances meant that Building 22 could no longer be licensed as an APB. This was the reason that the P&EE tasks were transferred to the newly built APB. At present, Building 22 is licensed as an explosive storehouse. This licensing situation appears wasteful and under-utilises a very fine and modern laboratory that would amply satisfy MAU's requirements.

22. The use of Buildings 21 and 22 for MAU work is clearly the preferred option according to the criteria set out above. It is for this reason that the bulk of the remainder of this report concentrates on what modifications to Buildings 21 & 22 need to be made in order to accommodate MAU requirements.

Current Condition of Building 22

23. Annex C shows the floor plan of the building. Annex D shows a table of features and dimensions of each room in Building 22.
24. The following photographs of Building 22 were taken on 3rd December 1996.

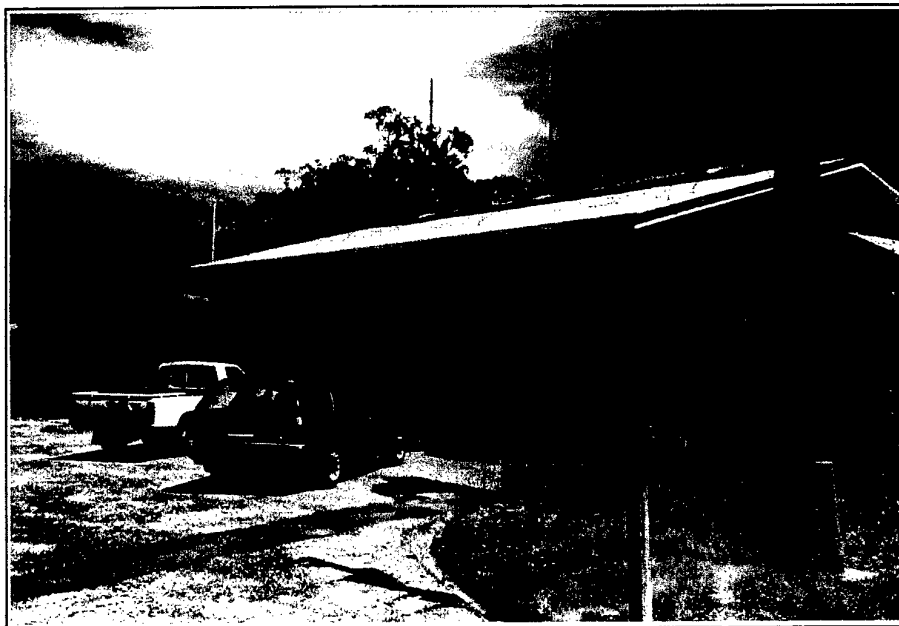


Figure 1: Exterior of Building 22

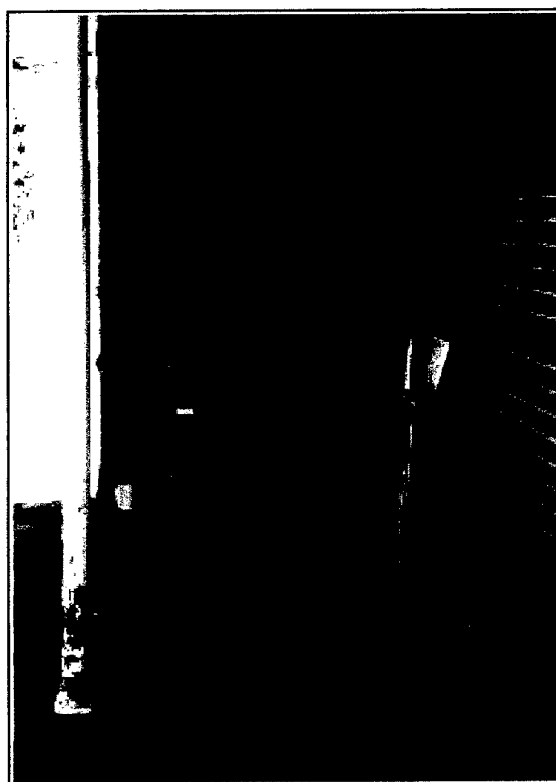


Figure 2: Switchboard & Washroom

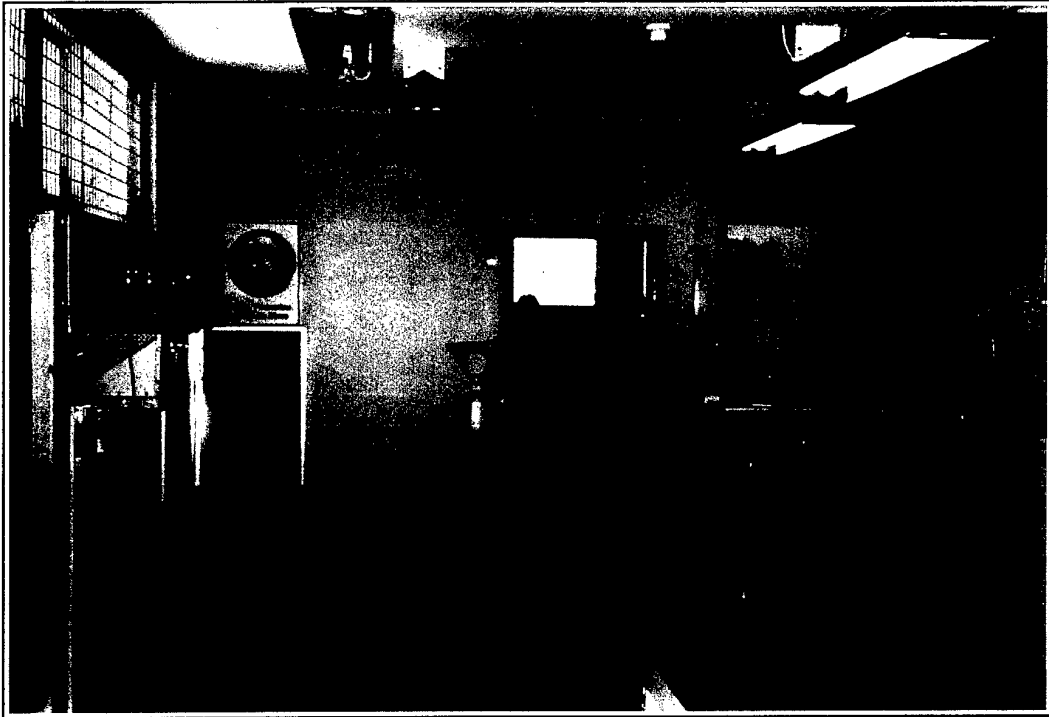


Figure 3: Tool Room

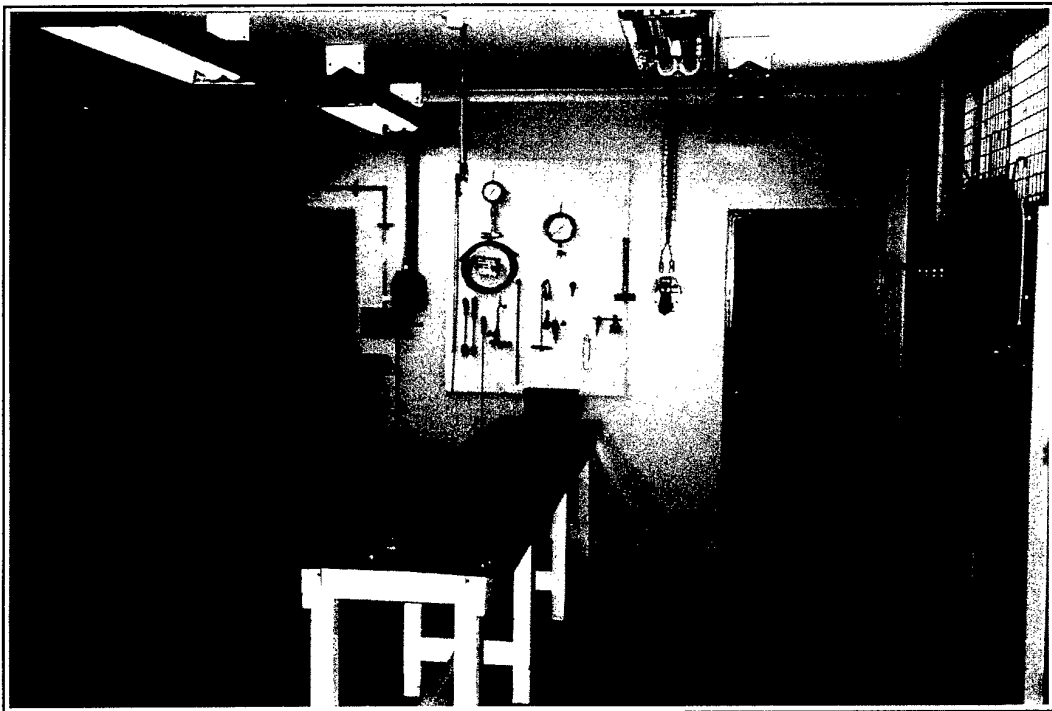


Figure 4: Tool Room

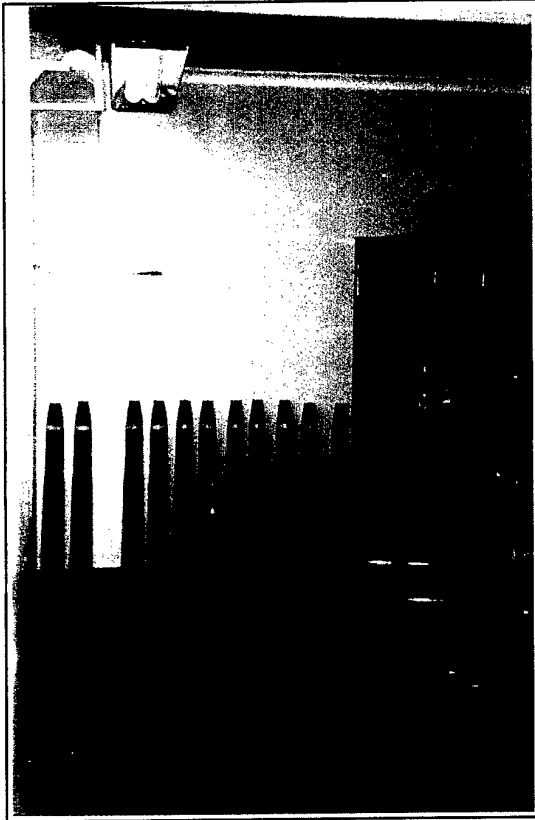


Figure 5: Conditioning Room

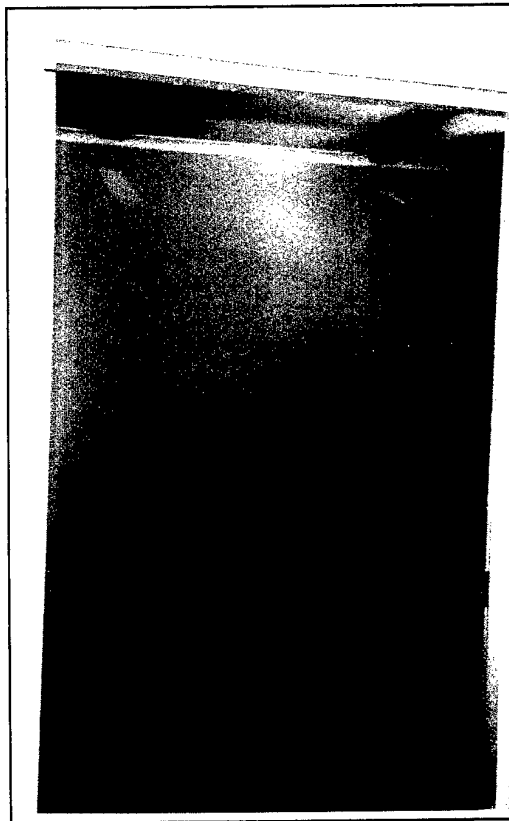


Figure 6: Office

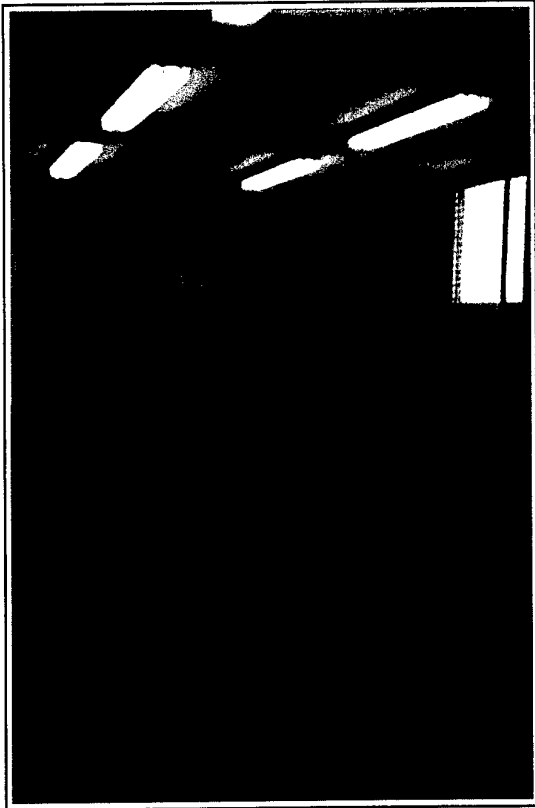


Figure 7: Open Plan Office

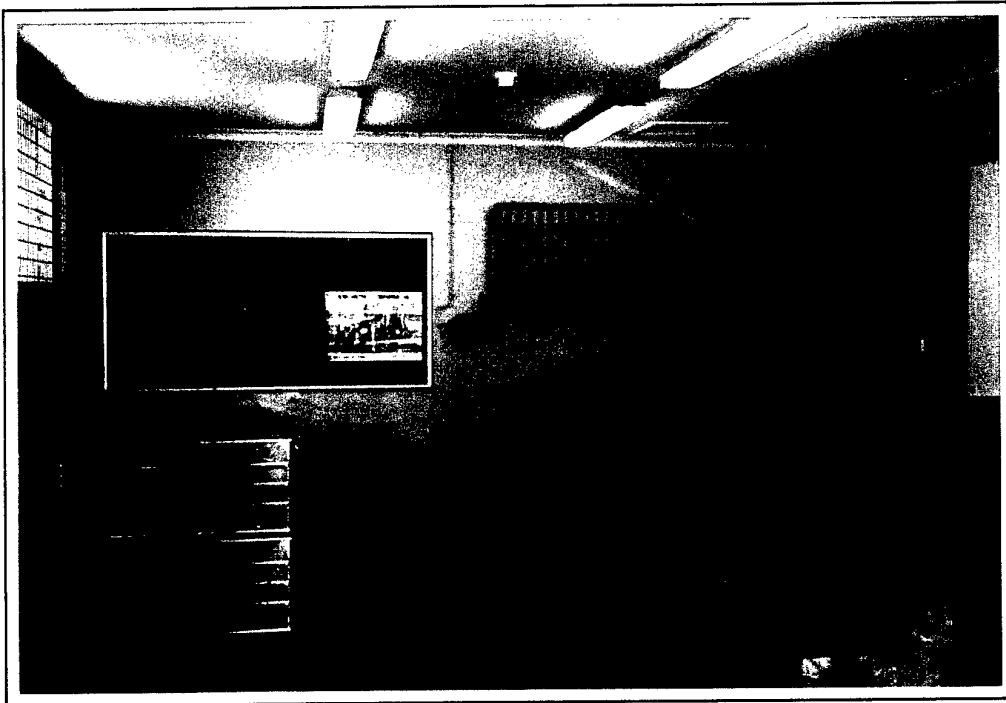


Figure 8: Open Plan Office



Figure 9: Preparation Room

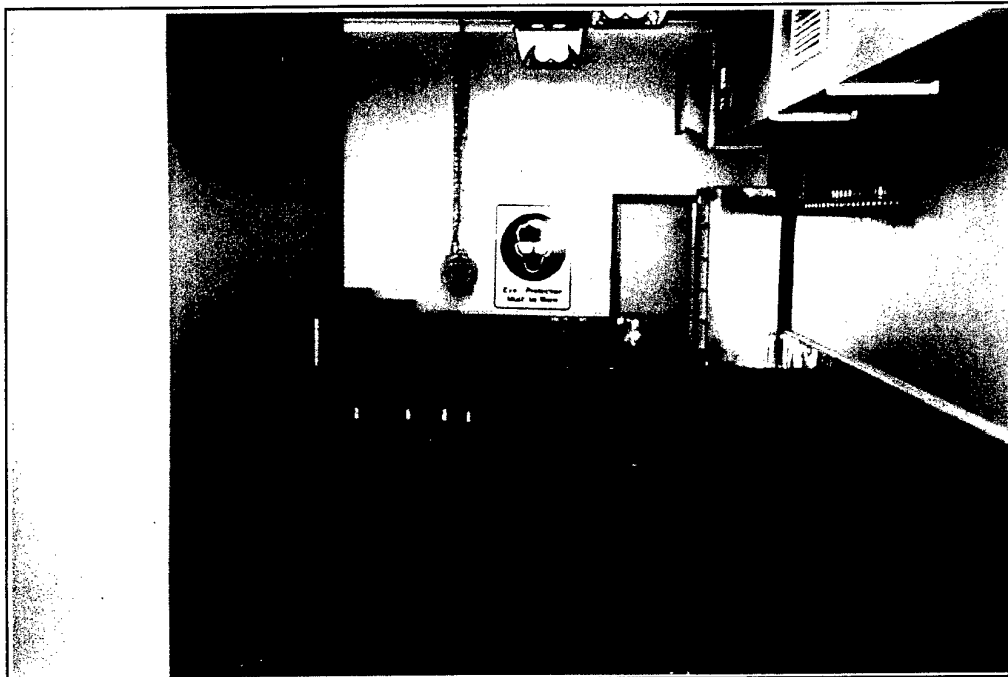


Figure 10: Preparation Room

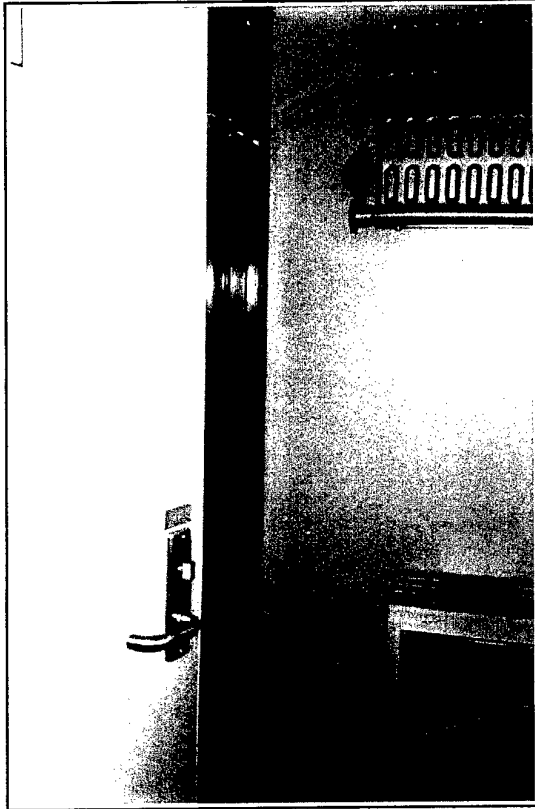


Figure 11: Shifting Lobby

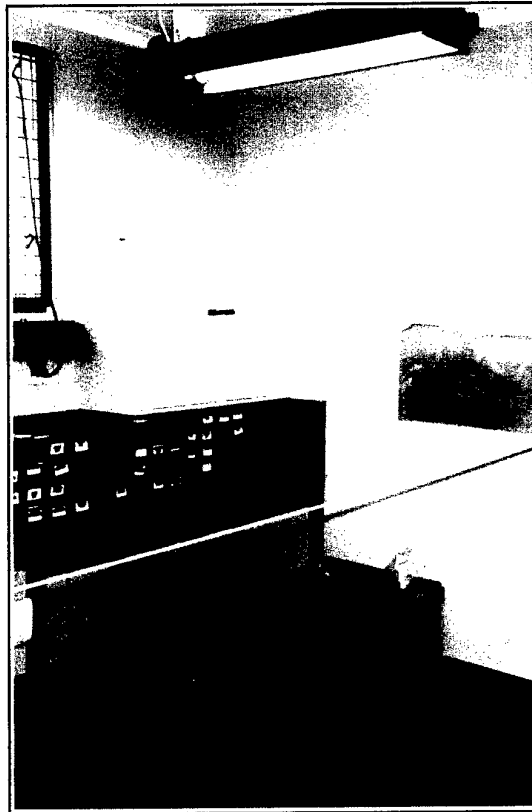


Figure 12: Gauge Room

23. Building 22 has the following features:
- a. Currently used as a Storehouse for 1.1 HD. A summary of the current licence is provided at Annex B.
 - b. There is no connection to mains water, fire hoses or pumps available.
 - c. There are two larger rain water tanks adjacent to the building which provide non-potable (asbestos roofing material) water to building 22 via a tap in Gauge room.
 - d. The nearest overhead wires are 10 metres from the building.
 - e. There is deep 6 asbestos sheeting on the roof.
 - f. There are compressor air outlets in the building which are connected to and Air Compressor Plant Servex 505 which is and Air Receiver Type with a maximum operating pressure of 120 psi.
 - g. A Fume cupboard is installed in the processing room.

25. Building 22 has the following features:
- a. Currently used as a Storehouse for 1.1 HD. A summary of the current licence is provided at Annex B
 - b. There is no connection to mains water, fire hoses or pumps available.
 - c. There are two large rain water tanks adjacent to the building which provide non-potable (asbestos roofing material) water to Building 22 via a tap in Gauge room.
 - d. The nearest overhead wires are 10 metres from the building.
 - e. There is deep 6 asbestos sheeting on the roof. The walls are Double Brick construction and the floor is concrete.
 - f. There are compressed air outlets in the building which are connected to an Air Compressor Plant Servex 505 which is an Air Receiver Type with a maximum operating pressure of 120 psi.
 - g. A Fume Cupboard is installed in the processing room.

26. **ATEA's requirements for Explosive Ordnance testing.** The Tasks listed in the first column of the following table have been identified in Reference A as essential to projects currently being carried out by MA unit. This table allocates various rooms of Buildings 21 and 22 to tasks which are most appropriately undertaken there.

Table 2 - Recommended location for specific tasks

TASKS	EQUIPMENT REQUIRED	PLANNED POSITION IN NEW FACILITY
Cutting of lead encased charges	hacksaw, single phase power point, remote viewing	Building 21
Cutting of charges with copper of aluminium elements	hacksaw, video, single phase power point, remote viewing	Building 21
Cutting and shaping of explosive train elements	hand press	Building 22 - Open Plan office
Assembly of explosive charges	benchspace	Building 22 - Preparation Room
Breakdown of explosive items sometimes remotely	press, drill	Building 22 - Open Plan Office When this task is carried out remotely the equipment will be set up in Building 21 so as to minimise the risk of undue collateral damage
Assembly of pyrotechnic or propellant charges	press, scales	Building 22
Mixing of pyrotechnic charge remotely	video, mixer	Outside at an explosives range.
Testing of small pyrotechnic charges and propellant charges made by a contractor.		For smaller quantities the building down the hill may be used. The use of these building by MAU has yet to be negotiated. For larger quantities the testing will be carried out on the range.
Testing of small charges in the open to measure output		Access to one of the explosives ranges will be required.
Mixing, processing and testing of chemical agents (CS, capsicum)	Facility will be required which is remote from all other buildings and downwind to allow the safe dispersal of agents.	The suggested site is in the small arms battery which will require considerable refurbishment.

27. The requirements to support the tasks above have been allocated in the following table.

Table 3 - Recommended location for specific task support requirements

REQUIREMENTS	PLANNED POSITION IN NEW FACILITY
an expense magazine NEQ 15kg HD 1.1	Building 22 - Conditioning Room
a room with ample space for sundry test equipment and special purpose set-ups	Building 22 - Open Plan Office
an equipment storage room	Building 22 - Tool Room
a toilet/wash room	Building 22 - Outside Toilet and Wash Room
a safety shower	to be purchased and placed in the Tool Room.
space for Jumble, Vibration, Conditioning Chamber and Hacksaw machines which has remote control and viewing capability and minimises collateral damage	Building 21 - Light Frangible Building with Rollerdoor. and Building 22.
an office with telephone connection, desk and secure storage space for EWAI's and other documents	Small office in Building 22 with entrance to verandah.

Relevant Standards:

28. The next section of the report considers the relevant safety standards with regard to Buildings 21 and 22. It aims to explain which of the many published standards takes precedence, how MAU's plan to change the use of these two buildings will be affected by these standards and what specific regulations must be complied with in planning any relocation of MAU's EO complex to Buildings 21 and 22 at Graytown.

29. The overruling directive which ATEA is bound to follow is DI(G) Log 07-1 (Reference D) . This directive says that the over-riding standards for use in this report are :

- a. DI(G)Log 07-1 for licensing and quantity distances.
- b. NATO AASTP-1 (Reference E)
- c. For smaller quantities less than 500 kg NEQ, UK Explosives Storage and Transport Committee Series 10 leaflets (Reference B) may be used for Safety regulations.
- d. Physical Security of the buildings is to be in accordance with Physical Security Manual - SECMAN 4 (Reference H) and Defence Security Design and Construction Guides SECMAN 7 (Reference I)
- e. Fire protection of the buildings is to be in accordance with Manual of Fire Protection Engineering - FACMAN 2 chapter 17 (Reference D).

30. Electrical Considerations. The preparation Room is currently at CATEGORY A ZONE 2 standard (that is an area in which "a flammable gas or vapour and air mixture is not likely to occur in normal operation and if it occurs it will exist for only a short time). For the work that is planned by MAU to be undertaken in Building 22 this level of protection will only be required from time to time. Under normal working conditions will be CATEGORY B ZONE Z (that is an area in

which "the exposed explosives give rise to an atmosphere of explosive dusts" which is considered to be significant). Since Cat A and Cat B exist simultaneously the following information has been taken from both Category's requirements whichever is the more stringent.

31. Electrical Equipment: For Category A Zone 2 only certified intrinsically safe, flameproof equipment and non-sparking (type N) and increased safety (type E) equipment is permitted. Category B Zone Z: Equipment is to be dustproof and comply with ETSC Leaflet 7 Annex B². All equipment that is moved to Graytown must be checked to make sure that it meets the standards.

32. Overhead Powerlines: Regulation: Overhead power lines are to be situated at least 15 metres from the explosives building.³ Existing situation: At present the overhead powerlines terminate 10 metres from the building. Remedy: the power line should be removed to a distance greater than 15 metres from the building the remaining distance to the building should be covered by underground wiring.

33. Final Circuits: Regulation: Socket outlets are not to be provided in Cat A of Cat B Zone Z buildings⁴ Existing Situation: Open Plan Office has 2 normal electrical sockets. Remedy: The normal sockets need to be removed or if necessary replaced with intrinsically safe sockets.

34. Lighting: Regulation: Luminaries are to accord with the category of installations prescribed in Section 2, ETSC Leaflet No.7⁵ Existing Situation: Open Plan Office does not have light fittings in accordance with the regulation. Remedy: Replace the existing light fittings with intrinsically safe light fittings taken from Building 24 Maribyrnong.

35. Lightning Protection: Building 22 has a lightning protection system fitted in accordance with ETSC Leaflet No. 7, section 6 para 156. It was last tested by Regional Eng Office PLB on 28 August 1996 and it was found to be in sound condition. (see Annex G - Maintenance report.)

36. Anti-Static Precautions⁶: Anti-static flooring is fitted throughout building 22. ETSC Leaflet No. 7, section 6 paragraph 168 prefers the use of Conducting flooring, however it is not mandatory and as electrical equipment is to be used in Building 22 using conducting flooring increases the risk to personnel of electric shock. Therefore the anti-static flooring currently in place is considered to be adequate. It is installed in all the appropriate areas.

37. Earthing: The Bench Tops in copper and have earthing straps attached to clip to the equipment. The benchtop in the Tool Room is quite worn and will need to be replaced. The benchtops in the preparation room have some signs of corrosion and may require some minor maintenance. Otherwise the benchtops are in good condition. There are no earthing straps or ring this will have to be installed in the Open plan office. Earthing must be installed and tested.

38. Ventilation: The relative humidity of not less than 65% should be maintained. Temperatures should be maintained between 5 and 25 degrees Celsius.⁷ There is adequate air conditioning and heating equipment to control the temperature. A resistance test meter is located inside the main doors to the building and appears to be in good working order

Occupational Health & Safety

² ETSC Leaflet No. 7, section 2.

³ ETSC Leaflet No. 7, section 3 para 43

⁴ ETSC Leaflet No. 7, section 4 para 70

⁵ ETSC Leaflet No. 7, section 5 para 91

⁶ ETSC Leaflet No. 7, section 6 para 167

⁷ ETSC Leaflet No. 6, Part 2, paragraph 5.8.3

39. Relevant requirements for Building 22 and 21 have been taken from the Occupational Health and Safety Code of Practice -1988 (Reference F) and are as follows:
- a. Hand Washing Facilities are required so that workers can clean the process dirt from their hands.
 - b. Showers so that staff can undergo decontamination in the event of an emergency.
 - c. Eye Bath should be provided if there is likelihood of contacting corrosive material.
 - d. Drinking Water Facility which is separate to hand washing facilities and not more than 30m from workplace should be provided.
 - e. Toilets: If less than 6 people work in the Building then one appropriately fitted unisex Toilet is acceptable.
40. The changes that are required so that Building 21 and 22 complex complies with the code are as follows:
- a. Provision of drinking water. Currently there is no potable water available to Building 22 although there is a water tank, the water runs off the roof which contains asbestos. The drinking water requirement can be satisfied by having drinking water "provided by other means such as a flask, cooled drink dispenser or waterbag"⁸
 - b. Toilets: The toilet area needs to be cleaned and fitted out with appropriate items.
 - c. Storage of non contaminated clothes. A series of hooks and a shoe rack is located in the shifting lobby. The shifting lobby will separate the Preparation Room from the rest of the building so that the Preparation Room is kept as a clean area.
 - d. Installation of a Safety Shower. A safety shower which is an overhead deluge shower operated by standing on the platform would be installed in the Tool room so as to be accessible from all rooms in Building 22 in case of fire or corrosive liquid coming into contact with a staff member. An eye/face wash system would be attached.

Fire protection

41. This section details the physical equipment existing in Building 22 or currently lacking which requires installation rather than housekeeping and personnel procedures in an APB which are not within the scope of the report.
42. WO2 R. J. Heath - Inspector from Army Fire Service PLB has undertaken a survey of Building 22 at P&EE Graytown to investigate what fire protection would be required if the building became an APB for MAU purposes. The result of his inspection was reported to Katherine Reid on Friday 14th February 1997 and the relevant points are outlined below.
43. Building 22 is quite small with a floor area of approximately 160m² and so the standards do not require the installation of a sprinkler system.
44. There is no water supply in the vicinity. The nearest reticulated water supply terminates at the New APB. WO2 Heath is of the opinion that the cost involved in extending this reticulated water system to reach Building 22 would be exorbitant and far outweigh any benefit gained from having an unlimited water supply. This opinion is also supported by the fact that Graytown has fire fighting vehicles capable of attending the scene of a fire within 3 minutes of the alarm being

⁸Occupational Health and Safety Code of Practice. (1988)

raised with access to two large capacity dams for refilling the trucks nearby. It is unnecessary to have fire hydrants and hose reels installed at Building 22.

45. Building 22 is fitted with a thermal detection system comprising numerous thermally sensitive detector heads which operate automatically by a sudden increase in atmospheric temperature in the area of the detector. When activated, the following actions occur:

- a. an alarm is activated within the Building 22
- b. an alarm is activated at the main fire alarm panel at the Unit Administration HQ building. Connected in parallel to all fire detecting circuits at Graytown is a siren which is mounted on the Workshop roof, Building 6.
In addition there is a smoke detector located in the storeroom. The existing alarm panel and thermal detector system was checked on 12 February 1997 and found to be fully operational.

46. An extinguisher must be located next to the switchboard.(CO2 or NAF P III). J Heath recommends that in order to comply with the regulations contained in FACMAN 2, three additional thermal detectors should be fitted on the verandah of Building 22. There are two fire extinguishers in Building 22 at present both Dry Chemical Powder type. In addition to these, J Heath recommends that two 2.5 kg Dry Chemical Powder Extinguishers and three 10 litre water extinguishers should be installed in Building 22. The DCP extinguishers will come from Building 24, Maribyrnong.

Security Considerations

47. On 14 January 1997 Corporal Justin Coote of AISS-M conducted a Protective Security Advisory Visit in order to provide recommendations for the upgrade of security provisions at Building 22 in accordance with the requirements outlined in Secman 4. Cpl. Coote's report is in file 1300/Y1/148. Based on the inspection and resulting report prepared by J Coote, the author determined that minor upgrades would be required in order for ATEA to use Building 22 as an APB.

48. A quote was obtained from Melsteel Ltd. an a cost estimate of upgrading Building 22 to a suitable security standard is to be found in file 1300/Y1/148.

Table 5 - The Cost Of Upgrading Building 22 For MAU's EO Complex

ITEM	COST
Transportation and Installation of Equipment	internal
Refurbishment of Open Plan Office to Category A Zone 2 standard	
Installing copper earthing strips	internal
Rewiring and installation of intrinsically safe Electrical outlets	internal
Installation of Intrinsically Safe luminaries	internal
Installing 3 thermal sensors as required by fire safety regulations	\$1000
Purchase and installation of safety shower in Tool Room	\$2500
Purchase and installation of fire extinguishers	internal
Removal of shelves in Office	internal
Purchase of desk for Office	internal
Purchase and installation of Gridmesh over all the windows and Air conditioning outlets	commercial in confidence
TOTAL	Less than \$10,000

LICENSING CONSIDERATIONS

49. Building 21 and Building 22 are grouped together for licensing purposes. Together the two buildings are currently licensed as explosive storehouses with an allowable NEQ of 2500 kg HD 1.1. In order for MAU to occupy the buildings for explosive ordnance testing, the buildings will have to be relicensed as ammunition processing buildings.

50. The licensing system is based on quantity distances according to the regulations set out in Opsman 3 (Reference G). The amount of explosives a building can contain is dependant on

- a. the proximity of the building to other explosive storehouses, buildings where explosives are processed, inhabited buildings and public traffic routes etc.
- b. the building's construction.
- c. the type of explosive.
- d. the use of the building

51. In the case of Building 21 and Building 22, the nearest explosive storehouses are Buildings 23 and 24 which contain HD 1.3 and 1.2, and building 20 which contains HD 1.1. The distances between these buildings are such that under the current licensing system, if Building 22 were to be licensed as and APB, it would reduce the allowable NEQ for building 23/24 to zero HD1.2. This would be unsatisfactory arrangement for P&EE Graytown.

52. P&EE Graytown is required to store a wide variety of explosives which fall into various compatibility groups which cannot be stored together. In addition, Graytown stores the propellant standards. The explosives being stored fall into different compatibility groups and so are required to be stored separately. At present, there are 3 ESHs for HD 1.1 and 2 ESHs for 1.2 and 1.3 stores at Graytown. If Buildings 21 and 22 were occupied by MAU, it would leave one HD 1.1 ESH and one HD 1.3 ESH. Using the existing facilities and procedures it is not possible to rearrange the explosive stores at Graytown in such a way that would allow Building 21 and 22 to be licensed as APBs .

53. Two meetings were held at ATEA Maribyrnong to discuss solutions to these problems. Maj. J. Spalding (OC Graytown), Maj. A. Morrison (SATO SR), Capt. G Andrews (ATO), Geoff Thomson (PEO), Mr. T.L. Opie, Mr. A. Campbell and Ms. K Reid (all of MAU) were present. Maj J. Spalding suggested that the amounts of **some** types of explosives stored at Graytown may be able to be reduced. The decision to reduce stocks of explosives rests with PEO and depends on future ammunition requirements for P&EE work. Due to other unresolved issues which will impact on P&EE's future tasking, this decision had not been taken as yet. Maj. J Spalding intends to discuss ammunition storage requirements for Graytown with the PEO on Thursday 27th February 1997.

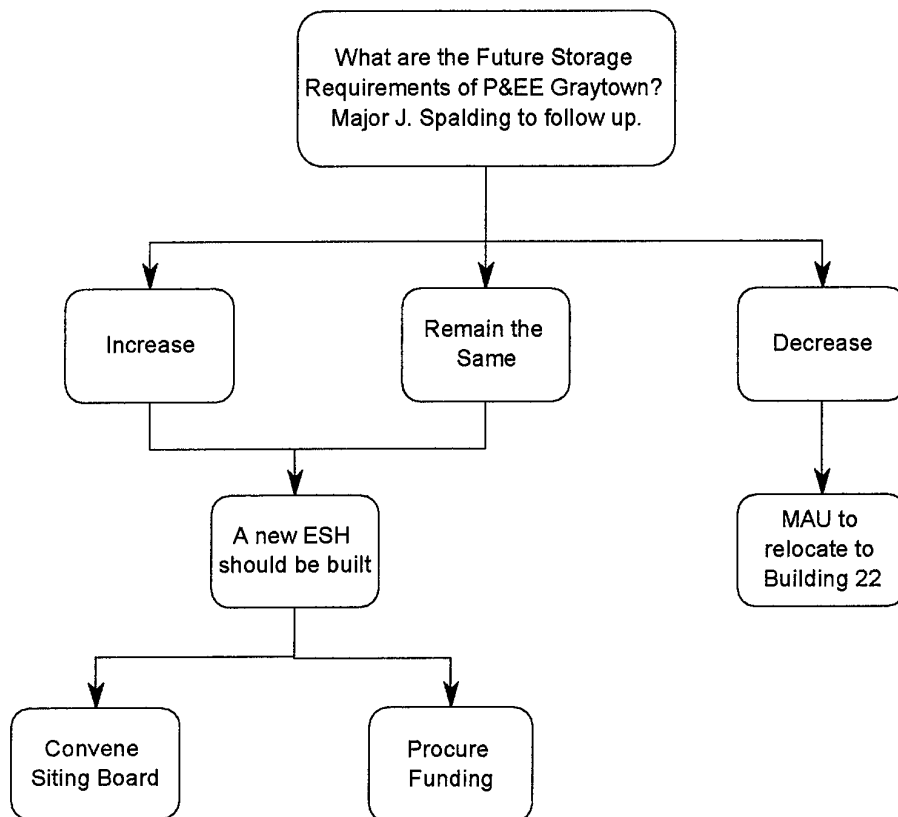
54. Some other relevant points which should be noted are:

- a. The NEQ required for MA work will not impact on the licensing requirements of Building 21 and 22. It is the fact that this building must be licensed as a workshop and not the NEQ which affects the storage ability of the other storehouses.
- b. The AOC may change to an "as needed" basis of licensing but until such time the current regulations based on quantity-distances apply,
- c. Assume Building 21 and 22 are no longer used for storage of P&EE ammunition but as APBs. The effect on P&EE will be to lose two HD 1.1 storehouses (21 & 22) and the use of one storehouse for HD 1.2 (Bldg 23).

55. Likely Outcomes.

In order to move forward to resolve ATEA's problem of where to relocate it's EO facility some questions need to be answered. At the time of this report they had not been answered and so I have examined possible scenarios depending on some likely answers to these questions.

Figure 1: How to Proceed.



56. The following information must be provided by the PEO and P&EE Graytown staff in order to continue planning the relocation of the EO Facility to Graytown:

- a. What are P&EE future storage requirements?
- b. What compatibility groups are there?
- c. How can these compatibility groups be accommodated in the current set up?
- d. Are the alternative sites either at Graytown or elsewhere which can be used for additional storage?
- e. How long will this information take to obtain?

CONCLUSION

57. In order for ATEA to relocate its Explosive Ordnance facility from Maribyrnong to Graytown the following things need to be done:

- a. Resolve licensing and storage difficulties. This will involve liaising with P&EE staff at Graytown.
- b. Relicense Building 21 and Building 22 as an APB.
- c. Make the following modifications to Building 22:
 - (1) Install Earthing clips, 6 intrinsically safe lights and intrinsically safe power points in the Open plan office. Remove telephone connection
 - (2) Install secure mesh over windows and air conditioning ducts.
 - (3) Conduct a general maintenance inspection to ensure that the compressor, heating, air conditioning, fume cupboard etc are in working order.
 - (4) Remove shelves in office and install compactus and desk.
 - (5) Install equipment
 - (6) Purchase and Install a safety shower.
 - (7) Relocate Overhead Power lines to a distance at least 15 metres from Building 22

BIBLIOGRAPHY

AS 2444 - Portable fire extinguishers and fire blankets - Selection and Location.
AS 3745 - Emergency control organisation and procedures for buildings
Building Code of Australia
Chapter 25 Fire Orders & Chapter 26 Fire Fighting Procedures - Graytown.
FACMAN 2 - Manual of Fire Protection Engineering
Fire Safety Service Report - P&EE Graytown Inspection date: 19 July 1996
Maps used: R754 1:25000 Map of Puckapunyal Area.
OSC (Explosives) - Standard Specifications Publication EE1 (1986)
OSC (Explosives) 81/1- Safety Conditions for Electrical Installations and Equipment for Explosives
Buildings and Areas

ACRONYMS AND ABBREVIATIONS

AISS-M	Army Intelligence and Security Services - Melbourne
AMRL	Aeronautical and Maritime Research Laboratories
APB	Ammunition Processing Building
DCP	Dry Chemical Powder Extinguisher
EO	Explosive Ordnance
ES	Exposed Site
ESH	Explosive Storehouse
ETSC	Explosive Storage and Transport Committee
FACMAN	Facilities Manual
GT	Graytown
HCC	Hazard Classification Code
HD	Hazard Division
IBD	Inhabited Building Distance
MAU	Mechanical Armaments Unit
NEQ	Net Explosive Quantity
OC	Officer in Charge
OH&S	Occupational Health and Safety
OPSMAN	Operations Manual
OSC(E)	Operational Safety Committee (Explosives)
P&EE	Proof and Experimental Establishment
PEO	Proof and Experimental Organisation
PES	Potential Explosion Site
PLB	Puckapunyal Logistical Battalion
SATO	Senior Ammunition Technical Officer
UK	United Kingdom
WSD	Weapon Systems Division



**ANNEX A to
ATEA REPORT 5/97**

MINUTES OF MEETINGS DISCUSSING RELOCATION TO GRAYTOWN



RELOCATION OF AU EO COMPLEX

10/1/97
10:00 to 12:20
Building 8, AU Conference Room

Meeting called by: Opie of AU ATEA
Note taker: K. Reid

Attendees:	ATEA Reps:	Maj J. Spalding	OC Graytown
		T.L. Opie	Project Leader AU
		A. Campbell	AU Member
		K. Reid	Research Officer AU/ Secretary
	LogCmd:	Maj A. Morrison	SATO SR
		Capt. G Andrews	ATO SR

Agenda

- | | | |
|---|-------------------------|-------------|
| 1. Meeting Purpose/Morning tea | T.L. Opie to lead | 10:00-10:25 |
| 2. Inspection of M'nong EO facility | A. Campbell | 10:25-10:55 |
| 3. AU QOP's & OHS Considerations | T.L. Opie | 11:00-11:15 |
| 4. Resource Requirements of G'town for EO storage | MAJ J. Spalding | 11:15-11:30 |
| 5. Licensing options | MAJ A. Morrison | 11:30-11:45 |
| 6. Control of facilities and processes at G'town | Maj J. Spalding to lead | 11:45-12:00 |
| 7. Way ahead | ALL | 12:00-12:20 |

Additional Information:



RELOCATION OF AU EO COMPLEX

10/1/97
10:00 to 12:20
Building 8, AU Conference Room

Meeting called by: T.L. Opie

Note taker: K. Reid

Attendees:	ATEA Reps	Maj J. Spalding	OC Graytown
		T.L. Opie	Project Leader AU
		A. Campbell	AU Member
		K. Reid	Research Officer AU/ Secretary
	LogCmd:	Maj A. Morrison	SATO SR
		Capt. G. Andrews	ATO SR

Minutes

Meeting Purpose/Morning tea

T.L. Opie to lead

10:00-10:25

Discussion:

Senior management has issued a directive that in order to comply with the current policy the Maribyrnong site should become benign. This involves relocating ATEA's EO facility but as yet no directive has been issued as to when or how this will be achieved. L. Opie, A. Campbell and K. Reid are currently considering the options available. Graytown has a number of clear advantages over other sites, importantly security, relative proximity to Maribyrnong & Mangalore Airfield and Storage depot, a processing building in excellent condition (Building 22 / Old APB) which is currently licensed and used as an explosive storehouse.

Maribyrnong's EO facility has quietly achieved a level of excellence in people, performance and principles. However the facility is stretched to its maximum capability as was seen in the inspection of the site. The attachment to these minutes shows the number of tasks conducted at the EO Facility and based on a conservative estimate of 2.5 days per task, a summary of days in use.

Conclusions:

The purpose of the meeting was to discuss possible solutions to the problem arising from the need to relocate ATEA's EO Facility. It was necessary to discuss the implications and effects of such a move with the OC Graytown to ensure that Graytown's current work schedule is not interrupted. The aim was to find a solution in which the priorities of Graytown and EO work can be achieved side by side. Specifically, it was aimed to clearly delineate responsibilities between Graytown and Maribyrnong staff if work is to be carried out at Graytown.



Inspection of M'nong EO facility

A. Campbell

10:25-10:55

Discussion:

The inspection showed the types of equipment and space requirements which are currently necessary for EO tasks. ATEA has been granted permissive occupancy by WSD next door of Building 24 (Processing Building). However WSD is moving out of Maribyrnong and so the continuation of this arrangement is uncertain.

Conclusions:

It was agreed that Building 22 at Graytown was the best existing option for relocation of tasks currently undertaken at Maribyrnong.

AU QOP's & OHS Considerations

T.L. Opie

11:00-11:15

Discussion:

Maribyrnong's Armaments Unit operates its testing and processing of explosives under strict guidelines (QOP's - Quality Operating Procedures). EWAI's (Explosives Work Area Instructions) must be written and approved before any explosives tasks are done. Because Safety is paramount, this audit process is most important and must be transferred to any tasks which are carried out at Graytown. In addition Graytown also has OH&S procedures which must be followed by anyone carrying out work on the site. Ultimately, the OC Graytown has the final responsibility for all work.

Conclusions:

If work is to be carried out at Graytown, the following procedures are to be followed:

EWAI's are to be prepared as usual and approved by Manager AU and by OC Graytown.

The OC will treat all work in the same way as any other trial

ATO must be involved.

It should be noted that the ability of Graytown to provide a Firing Officer for all EO tasks will have to be reviewed on an as required basis to take into consideration Graytown workloads and the posted strength of the Ammo Section.

Owing to the sensitive nature of some of the tasks, it is desirable that as far as possible the same Firing Officer be present to prevent the unnecessary dissemination of information. The OC and possibly other staff at Graytown will need to know.



**Resource Requirements of G'town
for EO storage**

MAJ J. Spalding

11:15-11:30

Discussion:

OC Graytown explained that while Building 22 appears to be a suitable site for EO a number of factors must be considered:

1. Any change in the licensing requirements of Building 22 will probably result in a significant reduction in Graytown's ability to store ammunition to support its own proof and trials tasks. Any change in storage capacity will have to be discussed with the PEO.
2. Graytown cannot rely upon Mangalore to store any excess ammunition. Mangalore is an Army Supply Depot and as such its primary role is to store training ammunition for the Army. This requirement will increase significantly in 1998 when the School of Artillery moves to Puckapunyal.
3. Graytown has a requirement to licence the AIT Battery which may have an effect on the ability to licence Building 22 as a processing area.
4. It is unlikely that Graytown will be able to fully meet the requirements of EO within its existing facilities. Serious consideration must be give to the need to build additional storage sites and/or a process building at Graytown.

Conclusions:

OC Graytown, in consultation with SATO SR, will conduct a licensing exercise to ascertain the exact capability to use Building 22 as an ammunition processing building. Mr Opie should begin to investigate the likelihood of funding for facilities work at Graytown.

Licensing options

MAJ A. Morrison

11:30-11:45

Discussion:

SATO SR was unable to comment specifically on the relicensing possibilities without conducting a formal analysis of the site.

It is suspected however that if Bldg 22 is relicensed as a processing building then that will significantly affect the permissible NEQ of the adjacent storage buildings.

Action items:

SATO SR will conduct a licensing study

Person responsible:

Maj. A Morrison

Deadline:

31 Jan
1997



Control of facilities and processes at G'town	Maj J. Spalding to lead	11:45-12:00
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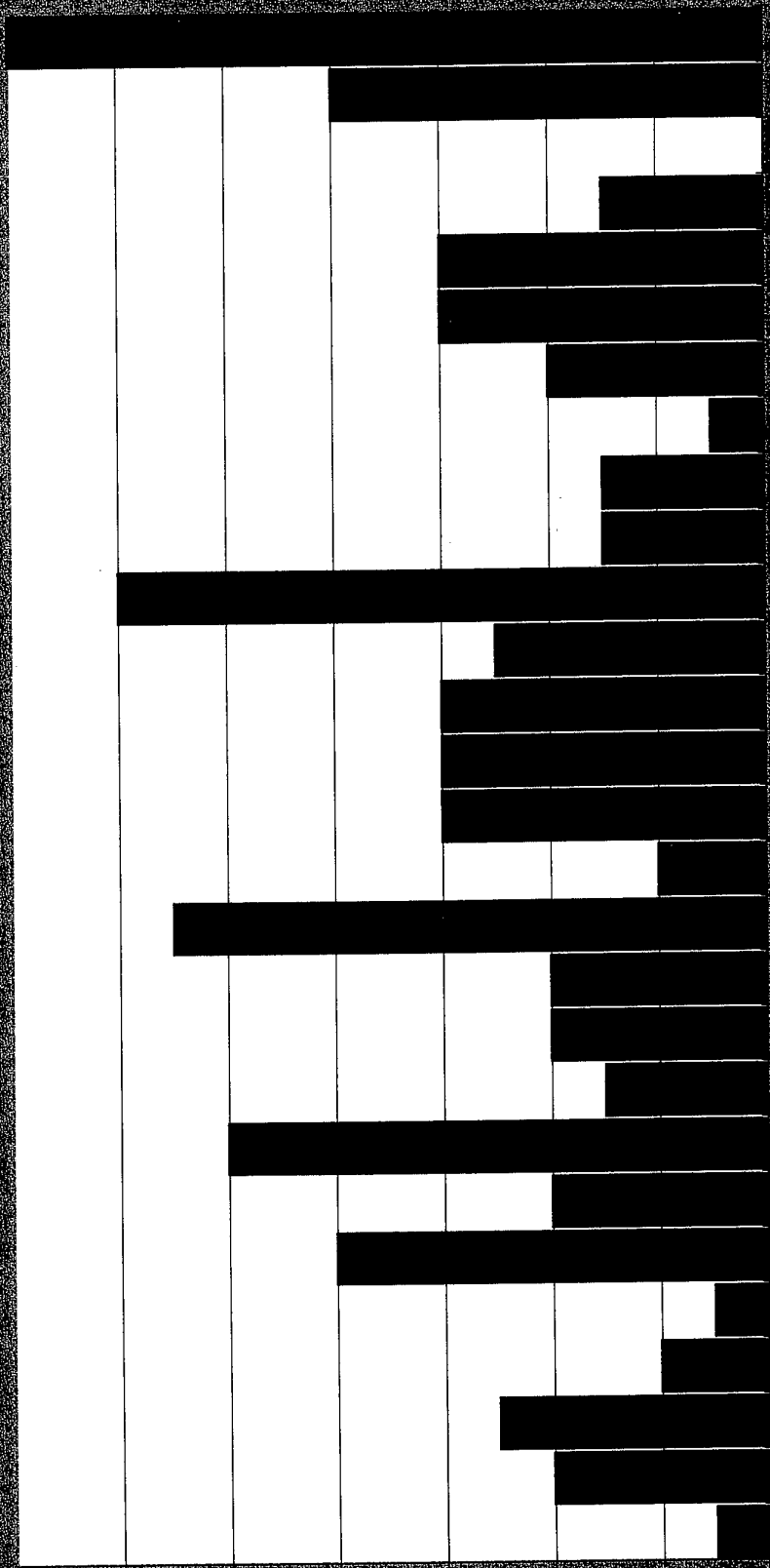
Discussion:

OC Graytown must have ultimate control over all activities that occur at that site (OH&S requirement). All working instructions would have to be reviewed by the OC prior to any work being undertaken. Additional staff (eg ATO, OPSO, Firing Officer) would have to be informed of each task on a need to know basis. OC and ATO must have complete knowledge of any items stored at Graytown.



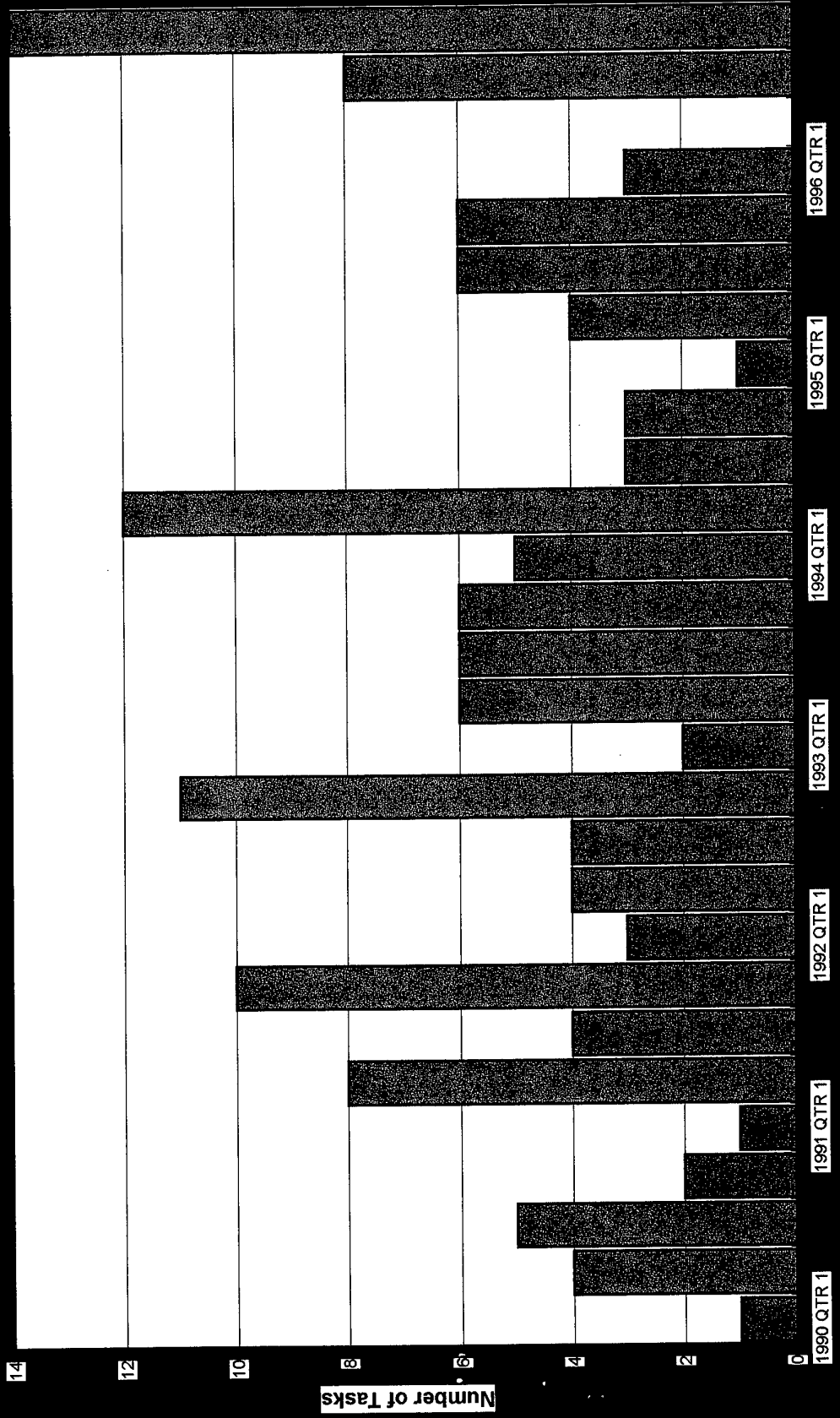
Way ahead	ALL	12:00-12:20
Discussion:		
More facts on licensing possibilities are needed before moving on. If a new spantech or other building needs to be built thought must be given to siting & funding.		
As a rough estimate, 12 months is seen as the length of time required to effect the move to Graytown.		
Conclusions:		
The next meeting will aim to make a concrete decision on the future path based on the specific information gathered between now and then. Once this has been taken more detailed planning and timetabling the move will commence.		
Action items:	Person responsible:	Deadline:
Next meeting Tuesday 11 Feb 1997 10 am.		
Additional Information		

Average Number of Working Days per Quarter spent on Explosive Tasks.



NUMBER OF LABOR DAYS

Number of Explosives Tasks Undertaken per Quarter 1990 - 1996





RELOCATION OF AU EO COMPLEX

11/2/97
10:00 to 12:00
Building 8, AU Conference Room

Meeting called by: Opie of AU ATEA
Note taker: K. Reid

Attendees:	ATEA Reps:	Maj J. Spalding	OC Graytown
		Mr. G. Thomson	PEO
		T.L. Opie	Project Leader AU
		A. Campbell	AU Member
		K. Reid	Research Officer AU/ Secretary
	LogCmd:	Maj A. Morrison	SATO SR
		Capt. G Andrews	ATO SR

Agenda

- | | | |
|--|--|---------------|
| 1. Meeting Purpose / Morning tea | T. L. Opie to lead | 10:00 - 10:15 |
| 2. Summary of report on Resource Requirements of G'town for EO storage | Maj. J Spalding | 10:15 - 10:35 |
| 3. Summary of report on Licensing options | Maj. A. Morrison | 10:35 - 10:55 |
| 4. Minimum Training level necessary for MA staff to undertake development work at Graytown | T. L. Opie to lead
ALL be prepared to speak | 10:55 - 11:05 |
| 5. Control of facilities and processes at G'town | T. L. Opie to lead | 11:05 - 11:20 |
| 6. Resolution of storage issue | ALL | 11:20 - 11:40 |
| 7. Relocation Schedule | ALL | 11:40 - 12:00 |

Additional Information:



RELOCATION OF AU EO COMPLEX

11/2/97
10:00 to 12:00
Building 8, AU Conference Room

Meeting called by: T.L. Opie

Note taker: K. Reid

Attendees:

ATEA Reps	Maj J. Spalding	OC Graytown
	Mr G. Thomson	PEO
	T.L. Opie	Project Leader AU
	A. Campbell	AU Member
	K. Reid	Research Officer AU/ Secretary
LogCmd:	Maj A. Morrison	SATO SR
	Capt. G. Andrews	ATO SR

Minutes

Meeting Purpose/Morning tea

T.L. Opie to lead

10:00-10:15

Discussion: During the last meeting on 10 January 1997 it was concluded that in order to arrange a suitable implementation plan and timetable for the relocation of ATEA's EO complex to Graytown, a more detailed analysis of the implications to P&EE's storage requirements must be done. The action items following from that meeting were:

- Maj. Spalding to complete a report on P&EE Graytown's storage requirements
- Maj Morrison to complete a licensing study outlining options for Building 22 and adjacent ESH's
- Mr. Opie to investigate the likelihood of obtaining funding for this project.

Conclusions:

The purpose of this meeting is to use the information gathered from the action items listed above to continue last meeting's discussions on the scheduling and implementation of the relocation to Building 22. The expected outcomes of the meeting are:

- A schedule for the relocation will be outlined.
- A plan for reallocating stores and tasks among the buildings at Graytown will be agreed upon.
- An agreement will be reached which sets out explicitly the conditions of use of facilities at Graytown.

Summary of report on resource requirements for EO storage for Graytown

Major Jane Spalding

10:15-10:35

Discussion:

Maj. Spalding explained that she had been unable to provide a comprehensive listing of Graytown's projected explosive storage requirements because she is currently undertaking negotiations with the PEO to reduce Graytown's holding of much of the obsolete stock. The issues that Maj. Spalding is pursuing are:

- Can the quantity of EO be reduced for the future? Depends on future workload.
- Can storage be better organised between Puckapunyal, Mangalore, Benalla & Graytown?

At present, the ESH's at Graytown are nowhere near their licensing limits. In fact the physical capacity of the ESH's is less than the allowable NEQ as specified by the licences. However because of the nature of the proof work undertaken at Graytown, a wide variety of Compatibility groups must be stored and therein lies the problem. It is quite likely that the quantity of EO may be reduced but unlikely that the number of compatibility groups will reduce, so adequate facilities need to be maintained so that all the EO can be safely housed.

At this stage until the two issues are resolved (reduction of quantity, compatibility groups) the licensing of Buildings 21 & 22 as APB for ATEA's use cannot go ahead

Building 24 is currently used as propellants standards storehouse. This storage cannot be reduced.

Maj. Spalding is not keen to be forced to rely on Mangalore for storage.

Les Opie says no more than 15kg NEQ will be required for MA's work in building 22.

Summary of report on Licensing options.

Major Andrew Morrison

10:35-10:55

Discussion:

The Australian Ordnance Council is expected to move to an "as needed" basis of licensing for explosives rather than the current system which is defined by physical distances between the buildings.

The result of the licensing study is that it maybe feasible for P&EE storage and ATEA EO work to co-exist at Graytown.(see report attached) if the current storage levels can be reduced.

Minimum Training Level necessary for MA staff to undertake development work at Graytown T.L. Opie 10:55 - 11:05

Discussion:

refer to Annex B

Mr. Opie opened the discussion by explaining the levels of training MA staff have achieved (details in Annex B)

Maj. Spalding, Maj. Morrison and Capt. Andrews all agreed that as head of Section, the decision about which staff should be allowed to work at Graytown should rest with Mr. Opie.

OH&S on site is Maj. Spalding's responsibility as discussed last meeting.

The issue of commonality of approach was raised with regard to certification of competency for staff members. Mr. Opie said he would undertake to build into the quality plan such a system to certify that staff have attained a certain level of competency.

Mr. Opie pointed out that if the relocation is to go ahead it will be necessary to fence off Buildings 22 and 21 to allow access only to MA staff for security reasons.

Conclusions:

It was agreed that these issues will be formally decided and written up in a Memorandum of Understanding probably signed by Director of Engineering and Director of PEO

Resolution of Storage issue

ALL

Discussion:

Mr. Opie reiterated that no date has been set for the move of the Maribyrnong EO complex to Graytown however to have completed the relocation of the complex in 12 months time is seen as highly desirable.

No further action can be taken until the storage requirements issue is resolved which involves a decision being made by the PEO. This will depend on the outcome of various other issues involving Puckapunyal, Mangalore, Benalla and future customer requirements. Maj. Spalding said that it is likely that P&EE GT storage requirements will increase rather than decrease in the foreseeable future.

Maj. Spalding is to pursue this and return to the group with reports on any movements on the issue.

There are three scenarios:

1. storage can be reduced to a level which allows relicensing of building 22 as an APB
2. storage requirements remain the same as at present.
3. Storage requirements increase from current levels

The first scenario is unlikely but if it occurs then MA can move right in almost immediately. Scenarios 2 and 3 will require additional building/s to be built at Graytown.

Mr. Opie confirmed that there is some money available for redevelopment of the Maribyrnong site which would be channelled into a building project at Graytown.

A siting board would need to be convened to determine the location of a new building, and the comparative costs of a number of options need to be considered.



Additional Information

Staff No	Name	Classification	Years		Qualifications in Explosives Handling
			Experience in Explosives Handling	Explosives Handling	
1	Grima, Joseph	ATO3	7		DMEO cert (Expired) design & assembly experience RAKED/FRED, Affray, 81mm ammo
2	Campbell, Andrew	TO4	10		DMEO cert (Expired) RAE Demolition Range Supervisor Design, assembly, breakdown and modification of ammunition RAKED, Affray, grenades, 40mm ammo, beehive development and trials, 25 mm ammo trials, 81 mm mortar development studies Gazetted as A/Mag Officer ATEA certify packages free of explosives
3	Tuisku, Aulis	PO2	7		DMEO cert (Expired) MSc in Explosives Ordnance Engineering Experience in assemble Affray, explosives fabrication, 81 mm mortar studies, explosives trials
4	Hayes, Peter	TO4	20		DMEO cert (Expired) Demolition Supervisor (ROBC-DML PHASE) Supplier Explosive Ordnance Course authorises the signing of Transport of Foreman, SAA production certify packages free of explosives Extensive experience in D&D of SAA, SA weapons, EOD equipments, mortar and artillery ammunition. Extensive experience in field trials of ammo

Staff No		Name		Classification		Years Experience in Explosives Handling		Qualifications in Explosives Handling	
5	Juffs, James	PO2		25		Overseas training at USA arsenals in the D&D of ammunition. Explosives machining D&D experience in EOD equipment(s) Experience in D&D of mortar and art ammo, large cal weapons, EOD equipments, mortar and artillery ammunition.			
6	Scolaro, Anthony	SPOB		40+		Overseas training UK 2 years Extensive experience in D&D of ammunition and explosives related trials			
7	Opie, T.L.	SPOC		45		Extensive training and experience in the analysis, production and D&D of ammunition. Extensive trials experience relating to EO			
8	Dimsey, Peter	SPOC		28		Extensive training and experience in the UK on D&D of ammunition. Extensive trials experience relating to EO			
9	Goodman, Graeme	SPOC		25		Extensive training and experience in the USA on D&D and production of ammunition. Extensive trials experience relating to EO			



**ANNEX B to
ATEA REPORT 5/97**

LICENSING ARRANGEMENTS APPROPRIATE TO MAGAZINE AREA

REVIEW OF P&EE GRAYTOWN LICENSING

Review of the current licences has revealed that limits could be amended for PES 21/22 and 23/24. Amendment takes into account the property boundary is not a Gp4 risk, it is a Gp3 risk. The nearest Gp 4 risk is the Tpt compound as indicated on licences for the APB and PES20 (consistency).

PES	HD1.1	HD 1.2	HD 1.2*	HD 1.3	HD 1.3*
20	6000	35000	250000	250000	250000
21/22	2500	250000 ¹	250000	180000 ³	250000
23/24	3000	250000 ¹	250000	180000 ³	250000
APB ²	2000	2000	2000	2000	2000

- Notes: 1. Increase results from revised Gp3 and Gp 4 risk factors.
 2. Licensing authority reduced to a practical working limit.
 3. Revised distances to licensing factors from accurate map.

If 21/22 grouped facility becomes an APB the licensing is altered as follows.

PES	HD1.1	HD1.2	HD1.2*	HD1.3	HD1.3*
20	6000	35000	250000	250000	250000
21/22	2000 ¹	2000 ¹	2000 ¹	2000 ¹	25000 ²
23/24	1600	NIL	250000	25000	250000
APB	2000	2000	2000	2000	2000

- Notes: 1. Permitted NEQ restricted by licensing authority to practical working limit.
 2. Full time storage of 1.3 Pyro and 1.4 can be permitted in PES 21 whilst PES22 is used as an APB as the risk to personnel involved in operations in the APB (22) is no greater than those inherent in the licensing principles (OPSMAN 3 Sect 4 Chap 1 Para 130 a) For this reason it is not possible to permanently store HD 1.1, 1.2 or 1.3 in PES 21.

If 30 (Small Arms Bty) was licensed as an APB it's possible limits might be:

PES	HD1.1	HD1.2	HD1.2*	HD1.3	HD1.3*
30	<D11=3.6Q ^{0.5}	NIL	2000	2000	2000

Note. HD 1.1 would only be permitted where the NEQ is kept to a very low level and it consists of bulk explosives not contained in fragmentation or solid packaging. Structures to direct or contain any fragments may be required subject to approved NEQ.

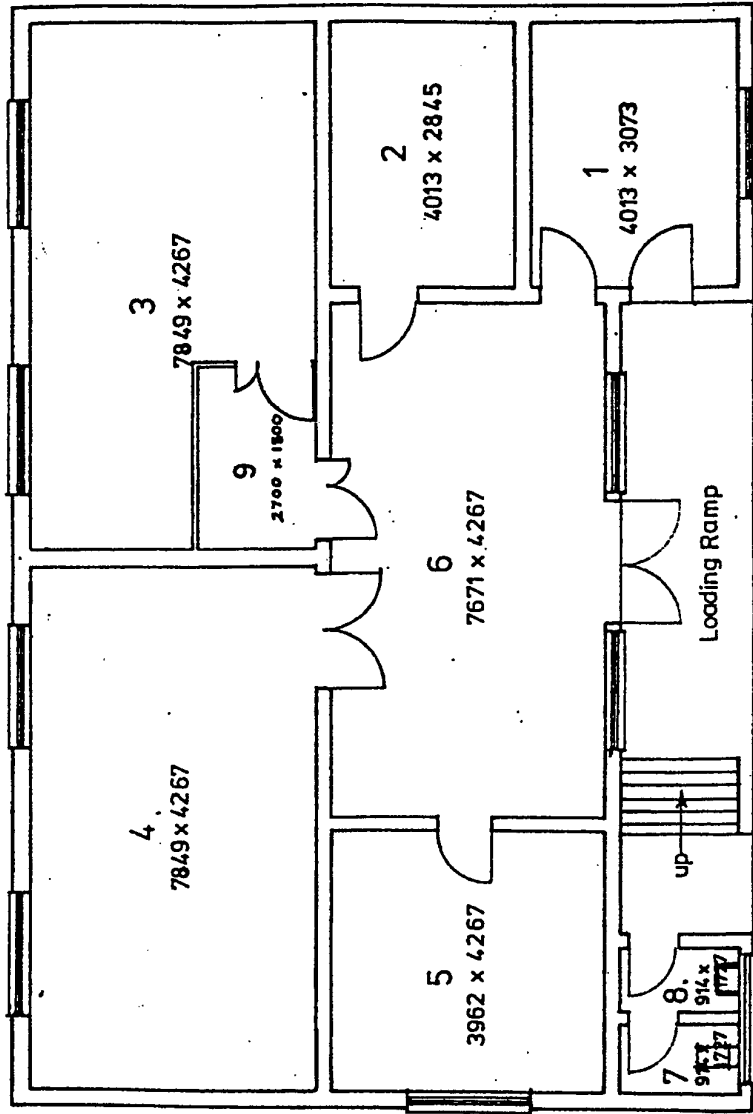


**ANNEX C to
ATEA REPORT 5/97**

FLOOR PLAN OF BUILDING 22

**Building No.22
INDEX TO ROOMS**

- 1. OFFICE
- 2. CONDITIONING ROOM
- 3. PREPARATION ROOM
- 4. OPEN PLAN OFFICE
- 5. GAUGE ROOM
- 6. TOOL ROOM
- 7. TOILET
- 8. WASH ROOM
- 9. SHIFTING LOBBY



BUILDING No. 22 AMMUNITION PREPARATION BUILDING



**ANNEX D to
ATEA REPORT 5/97**

TABLE OF FEATURES

GRAYTOWN - BUILDING 22

EXISTING CONDITIONS

		Open Plan Office	Gauge Room	Tool Room	Shifting Lobby	Preparation Room	Conditioning Room	Office
DETAILS								
Dimensions	height	2.75m	2.79m	2.73m	2.74m	2.73m	2.73m	2.73m
	front to back	4.25m	4.32m	4.35m	1.80m	4.25m(2.35)	2.85m	3.40m
	left to right	8.0m	4.05m	7.65m	2.70m	7.90m(5.10)	3.95m	3.95m
Floor area	143m	34m	17m	33m	5	28	11	13
Category						A zone 2	A zone 2	
Lighting	quantity	8	6	8	1	8	2	4
	type	non safety	2x36w fluor	2x36w fluor*	2x36w fluor	2x36w fluor*	2x36w fluor	non safety
	condition	y	y	y	y	y	y	y
Air Conditioning	y/n	n		n	n	y	y	n
Flooring	type	anti static	anti static	anti static	anti static	anti static	anti static	anti static
	condition	good	good	good	good	good	good	good
Comp.Air Supply	y/n	0	0	2	0	2	0	n
Earthing	y/n	n	y	y		y	y	n
Heating	y/n	y	y	n	n	y	n	n
Detectors	quantity	2	1	2	1	2	1 thermal 1 smoke	1
	Fire Extinguish	quantity	n		2	n	n	n
Power Points	type			DCP				
	single phase	3	2	5	0	3	0	3
	- cond.	non safety	safety	safety		safety		non safety
	triple phase	0	0	1	0	2	0	0
Touch plate	- cond.			safety		safety		
				3	1			n
Benchtops	type		Cu	Cu		Cu		
	condition		good	needs to be replaced		corrosion on seams		
Walls	condition	good	good		good	good	fair	good
Wiring	condition	not known	not known	not known	not known	not known	not known	not known
Water Supply	y/n	n	y	n	n	n	n	n

Notes:

Compressor works may need cleaning or servicing

Other Construction Details

Wall: Double Brick Roof: Corrugated AC Sheet Floor: Concrete.

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ABSTRACT. This report identifies and compares the sites at P&EE Graytown that are available for use as ATEA's new Explosives Ordnance facility. The costs of each option have been examined. The necessary upgrades for the preferred option have been detailed. The recommendation is that Building 21 and Building 22 should be used by Mechanical Armaments Unit for Explosives related tasks. The report sets out what decisions are required to be made and by whom, in order to effect the relocation to Graytown.			