MR. P. BOWLES

13 February 1962 NI/GP/62/9

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

GENERAL PURPOSES COMMITTEE

Report on an Enquiry into the Rutherford Laboratory Restaurant Scheme

1. The General Purposes Committee, on 9 January 1962, asked as a matter of urgency for an investigation to be made into the increased estimate for the Rutherford Laboratory Restaurant, and into the scheme as it then stood, to see what economies could be made. The Board of Enquiry comprised:

Dr. T. G. Pickavance (Chairman)
Mr. P. Bowles (Appointed by the GPC)
Mr. R. M. Fishenden (Appointed by the GPC)
Mr. H. J. Millen (Appointed by the GPC)
Dr. J. A. V. Willis (Co-opted as Secretary)

We have taken evidence from:

Colonel N. Wilson
Mr. G. A. Flook
Mr. J. De Metz
Mr. G. W. Dixon
Mr. K. H. Choate
Mr. G. M. Harbert
of the AEA Southern Works Organisation
Dr. G. H. Stafford
of the Rutherford Laboratory.

2. We interpreted our task as falling into four parts, as detailed below:

I.	(Sections 3 - 6)	Investigation of the circumstances in which the estimate increased by nearly 50% after the building had been started.
II.	(Sections 7 - 10)	Completion of information lacking in Paper NI/GP/62/5.
III.	(Section 11)	Investigation of the present commitments on the scheme.
IV.	(Sections 12 - 13)	Recommendations for future action.

Investigation of the Increase in the Estimate

3. It will be helpful to start with a few points from the present organisation and procedure in SWO, as explained by Colonel Wilson and Mr. Flook.

3.1 Responsibilities

Subject to the general responsibility of the Manager and Deputy Manager of SWO, the Project Manager is fully responsible for the job, including its finance. The Estimates and Sanctions Group provide a service to project managers, by estimating and by logging commitments against estimates and warning project managers by the issue of a "Red Letter" when there is any reason to believe the estimate to be unsound. It is then the Project Manager's responsibility to obtain more funds, or to make savings in the scheme.

3.2 Estimates

There are three types of estimate which are now named as follows (but these names were not all established by April 1960):

"TOKEN" or "Order of Cost" ESTIMATE: Based typically on a very brief specification and small sketch, it is normally used to obtain approval to proceed with design.

"PROJECT" or "Preliminary Rough" ESTIMATE: Normally based on $\frac{1}{8}$" scale drawings and clear agreement on standards, layout, and equipment, but not working drawings. This estimate should be accurate to about ± 10% and is normally used to obtain financial approval.

"CONTROL ESTIMATE": This is prepared by the quantity surveyors from working drawings and is fully itemized. It is used as the control against which every order is checked.

3.3 Procedure

3.3.1 Estimates are reviewed monthly and revisions are promptly reported to the client (in the case of the NIRNS, to the Rutherford Laboratory Building Committee).

3.3.2 SWO practice is that estimates include a reference to the drawings on which they are based, and an endorsed copy of this drawing is now always kept by the Project Manager.

4. Principal dates in the restaurant scheme are as follows:

12 February 1960	First discussions with SWO
13 April 1960	Token estimate, £75,000, prepared by SWO
4 May 1960	GPC Paper 60/23, with estimate of £75,000 plus fees, £10,500
June 1960	Bill of quantities prepared as basis for tenders for building and civil work
14 December 1960	Treasury approval
20 January 1961	Estimate prepared by SWO, £75,000 (excluding fees). This was a Control Estimate as regards B & C, but a Token Estimate as regards M & E. Overall status: Project Estimate.
6 June 1961	Site preparation started
12 September 1961	SWO reported possible £10,000 increase to the Rutherford Laboratory Building Committee
September 1961	Control estimate completed for M & E work
10 October 1961	SWO reported to Rutherford Laboratory Building Committee an increased estimate of £90,000 plus fees
October 1961	Control estimate revised to £106,000 plus fees
1 and 8 December 1961	SWO provided details of excess costs, £39,650, including fees, as reported in GPC Paper 62/5 on 19 December 1961.

5. Causes of Increase in the Estimate

In NI/GP/62/5, the increase of £39,650 in the estimate was analysed as follows:

		£
(a)	Increased cost of labour and materials	10,000
(b)	Increase in fees	8,650
(c)	Changes to clients specification	9,600
(d)	Under-estimating - Architects	8,100
(e)	Under-estimating - M & E Services	3,300
		£39,650

Item (a) appears to be a fair statement of the rise in relevant prices between April, 1960 and October, 1961. The majority of the rise occurred in September and October, 1961.

Item (b) The original provision was a standard percentage applied to the estimate of 13 April, 1960. The new figure is an estimate of actual S.W.O. costs. The difference is largely due to changing requirements, and also to a change in the material and construction of the rotunda roof.

Item (c) proves, on examination, to have been incorrectly analysed in NI/GP/62/5. We find that £5,150 of this sum was due to omissions from the estimate of specific items introduced on or before July, 1960, i.e.

800 sq. ft. of storage space	£ 3,100
Revolving door	850
Revised siting	1,200

These omissions are discussed in detail in Section 5.1.1 and 5.2.1 below. The balance was due to changes and additions requested by NIRNS staff after September, 1961. These are discussed in detail in Sections 5.3.2 and 8 below.

Items (d) and (e) are increases due to under-estimating in the April, 1960 estimate.

5.1 Building and civil estimate

5.1.1 There was a substantial revision of requirements on 4 July, 1960, involving an increase in area of 800 sq. ft., and the addition of two revolving doors (one since deleted). The bill of quantities, forming the basis for tenders had only just been made. It was not amended to allow for these changes. Subsequent reviews of the estimate, including that of 20 January, 1961, also failed to take account of these changes.

5.1.2 Mr. K. H. Choate became Project Manager of the scheme in December, 1960, at the time when NIRNS passed instructions to proceed to S.W.O. At that time, both Mr. Choate and NIRNS staff believed that the estimate related to the drawings of 4 July, 1960. There were further modifications to requirements in February and July, 1961. These were compared with the 4 July, 1960 drawing and did not involve increased costs as compared with that.

5.2 Mechanical and electrical services estimate

5.2.1 The discussions on 12 February, 1960 and a discussion of M & E requirements on 7 April, 1960, were based upon a dining room of 200 seats. By 13 April, 1960, the requirement had been revised to 250 seats, and the diameter of the dining room was increased from 66 ft. to 75 ft., and the siting was altered, causing a substantial increase in external service costs. The estimate of 13 April 1960 for building and civil work took account of this, but the M & E estimate was based upon a drawing, AK/3 dated 23 March 1960, which did not do so.

5.2.2 SWO's estimate of 20 January 1961 had not, in fact, been revised as to M & E items since the Token Estimate of 13 April 1960. It was, however, endorsed "M & E still as Project Estimate".

5.2.3 Partly because of repeated design changes, the preparation of a Control Estimate for M & E services was not put in hand until June 1961, and was then delayed because, by that time, the best means of revision was considered to be to obtain tenders. The first of these were obtained in September.

5.3 Action by NIRNS staff

5.3.1 Changes in NIRNS requirements in April 1960, July 1960, February 1961 and July 1961 have already been mentioned. There were other minor changes during the same period, and further changes to be mentioned below continuing to December 1961. It can be seen in retrospect that the changes since 4 July 1960 have only involved minor changes in costs. Nevertheless, the continuance of changes gave a feeling of non-finality, and diverted attention from the preparation of a first-class control estimate.

5.3.2 In September 1961, the NIRNS set up a working party to consider the operation of the restaurant. This working party made a detailed study of the layout and equipment, and asked for certain re-arrangements and certain additions to equipment at a total cost of about £5,000.

6. Criticisms

As a result of our investigation, we think it necessary to make the following criticisms:

6.1 There was a failure to prepare and maintain a satisfactory control estimate. In particular:

(a) The effect of design changes occurring between April and July 1960 was missed out of the estimate until August 1961.

(b) A control estimate for the M & E work was not prepared until September 1961, nine months after financial approval of the project, and three months after work had started on the site.

(c) Although the anticipated final cost was reported as £75,000 at each monthly meeting of the Rutherford Laboratory Building Committee up to September 1961, it does not appear to us that the estimate received a really effective review between April 1960 and September/December 1961.

6.2 The financial situation was not treated with sufficient urgency by either SWO or Rutherford Laboratory staff.

It was known by 10 October 1961 that the estimate exceeded the approved sum by 20%. It was clearly the responsibility of SWO to see that work did not proceed without either corresponding economies or the approval of additional funds. We are informed by SWO that the letting of further contracts was stopped in October 1961 (with the exception of the internal electrical contract which was let with instructions only to carry out £300 worth of conduit buried in concrete). However, details of the increased estimate were not provided by SWO until December 1961, and the building work continued until it was stopped as a result of the discussion at the GPC on 9 January.

6.3 Some details in the design were extravagant. Quite apart from the matter of their inclusion in the first place, they should have been eliminated when a cost in excess of the approved sum was first estimated.

7. Correction and Completion of the Information in Paper NI/GP/62/5

7.1 On account of the errors reported in Sections 5.1.1 and 5.2.1 above, it is necessary to correct Paragraph 5.2 of NI/GP/62/5. The changes specifically mentioned in that paragraph, i.e. the additional 800 sq. ft. of storage space, the revolving door, and the revised siting, were all introduced by 4 July 1960; not as a result of the "special investigation into the operation of the canteen" which began in September 1961 and resulted in the recommendation of different changes, as mentioned in Paragraph 5.3.2 above.

7.2 Further detail of the estimate of 8 December 1961 included in Paper NI/GP/62/5, as compared with the estimate of 13 April 1960, on which approval was obtained, is given in Appendix I.

7.3 In Paragraph 6 of NI/GP/62/5 it was stated that the present complement, including Atlas and all visitors, was 1,100, compared with the 750 estimated early in 1960. The table below shows what those figures included, what additional numbers (unchanged) were taken into account then, and three increases not then allowed for. These figures are on the assumption that the RHEL complement will be held at 950. We consider that they fully justify the increase to 300 seats, which is just about practicable without increasing the size of the dining room.

Description	Number Estimated		
	(a) Early in 1960	(b) In preparing NI/GP/62/5	(c) Now
RHEL personnel	650	950	
RHEL visitors	100	100	
Atlas personnel	-	50	
	750	1,100	
MRC personnel	200	200	
AERE Reactor School	20	20	
	970	1,320	1,320
Atlas visitors (say)			20
Ferranti staff at Atlas			10
Direct labour at RHEL to replace contract labour			70
			1,420

8. Cost of the Recommendations of the Restaurant Working Party

The Restaurant Working Party mentioned in Section 5.3.2, recommended in November 1961 changes in layout of the kitchen and servery, and in kitchen equipment. The changes in layout, though very substantial, involved only £1,000 of additional building cost. The changes in kitchen equipment were at the time estimated to cost an additional £2,000. This figure is hard to calculate, because the new plans were more detailed than the old, and therefore more inclusive, and because, in the new plans, certain items previously included in building work were not included in kitchen equipment (regarded as M & E).

However, these changes were the only ones involving extra cost which were introduced after the receipt of financial approval, and we therefore think it necessary to estimate their cost as closely as possible. The estimate is as follows:

Building and civil work	£ 1,000	extra
Kitchen equipment	3,000	extra
Stainless steel topped benches	2,000	
	£ 6,000	
Less amount provided in the building and civil estimate for benches replaced by stainless steel tops	750	
	£ 5,250	

This is a maximum figure which makes no allowance for the fact that the new schedule of kitchen equipment has been developed in much more detail than the old, and is therefore more complete.

9. Recommendations of the Ministry of Aviation Catering Adviser

The design was examined by Mr. F. G. Murray, the Ministry of Aviation Catering Adviser, in May 1961, and the modified design and schedule of kitchen equipment were examined by him in February 1962. His comments on both occasions are reproduced in Appendix II. The recommendations of May 1961 were adopted. The reduction of cold room capacity remained for decision for some time but was accepted after the second recommendation.

We accept Mr. Murray's recommendations of 9 February 1962 in principle, but they have not yet been discussed with him in detail and there may be some adjustment after doing so.

10. Comparison with AEA Canteens

The AEA Finance Branch have provided a comparison of cost with a recently built AEA canteen at Winfrith, and with the proposed new Springfields and AERE canteens. This is reproduced as Appendix III.

The Southern Works Organisation have, at our request, made a comparison with the proposed AERE canteen. This is reproduced at Appendix IV.

The first comparison does indicate that the restaurant is more expensive than most of the AERE canteens listed.

From Appendix IV it can be seen that the cost estimate for the Rutherford Laboratory restaurant compares with that from the AERE canteen as follows:

	Rutherford Laboratory Restaurant (Comparison with AERE New Canteen)	
	(a) November 1961 estimate	(b) With economies suggested in Appendix V
Building cost per seat, excl. fees and furniture	47% greater	27% greater
Building cost per sq. ft. excl. fees and furniture	37% greater	17% greater
Building cost per sq. ft. excl. fees, furniture and kitchen equipment	31% greater	11% greater

The figures at (b) suggest that the economies suggested in Appendix V probably reduce the standards below those of the AERE canteen, if the larger scale of the latter, and also the fact that existing kitchen equipment will be used in it, are taken into account.

11. Present Commitments

The expenditure already incurred, and committed if the work were abandoned now, is approximately estimated as follows:

Work already done	£ 11,000
Materials on site (£3,700, less allowance for disposal, £2,700)	1,000
Estimate of Contractor's claims for abortive work	5,000
Fees already incurred	13,000
Total approx.	£ 30,000

The Committee satisfied themselves, on 16 January 1962, that instructions had been given to the main contractors to stop the work, and that no further commitments were being entered into.

Recommendations for Future Action

12. We have considered three possible courses:

(a) To abandon the building and substitute the cheapest possible alternative building;

(b) To re-open the question of accommodation in the AERE canteen, and if successful to abandon the building;

(c) To complete the building with the greatest practicable economy.

In view of the large sum already committed and the unlikelihood that the building would be suitable for other purposes, we do not feel able to recommend course (a) or (b). In connection with (b) we have been advised that the AEA's policy objections to accommodating us remain.

We, therefore, recommend that the restaurant should be completed, with very great attention to economy.

13. Economies

13.1 We have reviewed the estimate again with SWO, in order to make all possible economies. Two lists of economies were suggested by SWO, described as "parings" and "surgery". We have accepted nearly all the items in both lists, and these are combined in Appendix V. The estimated saving on these items is £16,870 on building work and £1,400 on furniture.

13.2 The following items have not been accepted, or call for special comment:

Item 41 was a suggestion to substitute painted softwood for afrormosia in the external cladding, where the afrormosia had not yet been cut. It was found that the afrormosia had been cut for the kitchen but not yet for the rotunda. We do not recommend the substitution of painted softwood here, but white cedar may be satisfactory. The maximum saving is £200 but the actual saving is problematical.

Item 43 was a suggestion of cheaper wood flooring (Gurjun) in the rotunda with a saving of £180. We accept this, but the elimination of removable duct covers to the rotunda heating pipes increases the area to be so floored, eliminating the saving.

Item 44 was a suggestion to delete entirely the shop and kiosk already simplified by Item 6; the further saving would be £300. We consider that it would be shortsighted to eliminate a good source of profit at a saving of such a small amount.

Item 51 was a suggestion to wire the rotunda lighting in tough rubber-sheathed cable. The saving would have been marginal or nil owing to elimination of the false ceiling.

Items 17 and 52 represent a plainer installation of radiators. About half the heating in the rotunda is under-floor, and we considered eliminating this at an additional saving of £200. However, we were advised that to concentrate all the heat round the wall would be most unpleasant to those sitting there, and we concluded that the change would be unsatisfactory.

Item 53 We have accepted, with some reserve, the proposal to eliminate one of the two fans and heaters for the kitchen ventilation, and are asking for further information, which could result in a request to reduce the saving.

Items 54 and 55 These stood at £700 and £1,100 in the SWO recommendation, but Item 55 has been increased to £2,300 so that the two together fully represent Mr. Murray's recommendation. However, after detailed discussion with him, some further modification is possible.

13.3 The economies listed in Appendix V have been suggested without being fully worked out in all cases. Some, of which examples are mentioned in Section 13.2, may not be fully practicable or may not save quite so much as expected. A small contingency sum must be added to allow for this. £2,000 is recommended. It should be remarked that the estimate includes "Allowance factors" totalling £3,250. These sums are primarily the estimated cost of miscellaneous items of the work impossible to detail in advance, but a small element of contingency for unforeseens is included in them.

The present estimate for fees, including provision for the work involved in making the economies recommended in this report is £19,600.

With the recommended economies, totalling £16,870 (less the contingency of £2,000) the estimated cost is:-

Building, including M & E £101,000 - £16,870	say	£ 84,000
Contingency		£ 2,000
Fees		£ 19,600
Furniture		£ 3,600
		£109,200

14. Summary of Conclusions and Recommendations

Conclusions

14.1 The restaurant scheme was approved in December, 1960 at an estimated cost of £85,500 including fees. In December, 1961, an increased estimate of £125,150 including fees was reported to the G.P.C. We find that the difference of £39,650 was due to:-

Increased cost of labour and materials	£10,000
Design changes made before approval of the scheme, but not allowed for in the approved estimate	£ 5,150
Changes recommended in November, 1961 by the Restaurant Working Party	£ 3,000*
Under-estimating	£12,850
	£31,000
Increase in fees proportional to the above increase	£ 4,650
Other increases in fees	£ 4,000*
	£39,650

* The estimated cost of the Working Party's recommendations and of fees have subsequently been revised upwards by £2,250 and £450 respectively, but the figures in the table are those forming part of the estimate of £125,150.

14.2 The reason why this increased cost was not estimated in good time was that a satisfactory control estimate was not completed until September, 1961. The delay in doing so was partly the effect of numerous changes in requirements. The extent of these is reflected in the large increase in fees, corresponding to the extra design work made necessary.

14.3 The N.I.R.N.S. Building Committee were misled at their monthly meeting by the regular repetition by S.W.O. of £75,000 as the estimate for the scheme.

14.4 Although it became clear in September, 1961 that the cost of the scheme would substantially exceed the financial sanction, and the placing of additional contracts was stopped in October, construction work on the site continued until it was stopped in January following the G.P.C. meeting. Formal responsibility for the continuation of this work clearly rests with S.W.O., but we consider that the Institute, who were aware that the work was continuing, might have been expected to challenge S.W.O.

Recommendations

14.5 Subject to formal confirmation that the A.E.A. would continue to object to the use of Harwell's canteen facilities by Institute staff, the right course is to proceed with the existing scheme, with the maximum economies consistent with a satisfactory and efficient canteen.

14.6 The increase in staff estimates since the scheme was first approved fully justifies the increase in the number of seats from 250 to 300, and the equipment and furniture for the restaurant should be based on the latter figure.

14.7 The current specification should be modified in accordance with the detailed recommendations in Section 13 of this report, subject to such modifications as may be thought desirable in the light of further discussions with the Ministry of Aviation's Catering Adviser, Mr. Murray. These cuts amount to about £17,000 in buildings and equipment, and £1,400 in furniture. The effect of these changes on the finances of the scheme is as follows:-

	Original Estimate (250 seats)	NI/GP/62/5 (Approx. 300 seats)	Current Recommendation (300 seats)
	£	£	£
Architect	46,000	101,000	84,000
M. & E.	24,000		
Contingency	-	-	2,000
Fees	10,500	19,150	19,600
	80,500	120,150	105,600
Furniture	5,000	5,000	3,600
	85,000	125,150	109,200
Cost of restaurant excluding furniture	£322 per seat	£401 per seat	£352 per seat
Cost of restaurant excluding furniture and fees	£280 " "	£337 " "	£287 " "

The many changes in this scheme, culminating in those now recommended, will inevitably result in a high level of fees. In comparing the scheme now proposed with the original scheme, we therefore think it fair to exclude furniture and fees. On this basis, the increase of £14,300 on £70,000 (20%) is largely accounted for by the substantial rise in building and labour costs, while by increasing the number of seats the cost per seat has been kept down almost to the figures in the original scheme.

14.8 The cost of the restaurant built to this revised specification would remain high compared with some Authority canteens. The small size made this inevitable, unless a particularly cheap type of building had been chosen. However, the G.P.C. accepted in May, 1960 that the restaurant should be attractive in siting and design. The basic design of the building is probably expensive, and this is reflected in the cost per place of the final scheme.

As is indicated by the extent of the economies which we have been able to recommend, we think that there were some unnecessary features in the scheme, but we consider that we have recommended all the practicable economies, and that any further significant reduction in cost would probably result in an unsatisfactory and uneconomic restaurant.

Acknowledgement

14.9 In the circumstances of this case it was inevitable that our enquiries primarily took the form of detailed questioning of S.W.O. staff. We wish to place on record our appreciation of the frankness and ready co-operation of all S.W.O. staff whom we interviewed.

T. G. Pickavance
P. Bowles
R. M. Fishenden
H. J. Millen
J. A. V. Willis

Rutherford High Energy Laboratory,
Harwell,
Didcot, Berks.

20th March, 1962.

RUTHERFORD LABORATORY RESTAURANT

Increases between estimate of £24,000 and December 1961 estimate of £36,000 for mechanical and electrical work

	£ 13 April 1960	£ 8 December 1961
Heating and steam services	3,500	5,700
Hot water services	1,500	2,300
Kitchen equipment	6,500	9,000
Refrigeration plant	1,000	1,500
Ventilation	3,000	5,200
Lighting and small power:		
Kitchen	1,200	
Restaurant	2,000	4,500
Power for kitchen and switchboards	1,500	
Telephone conduit	200	
External Services		
Steam and condense main	1,500	3,550
Cold water main	100	
Electricity supply cable	1,000	2,750
Contingency	1,000	1,500
	£24,000	£36,000

APPENDIX I

SCHEDULE "A"

N.I.R.N.S. R.22 SCHEDULE OF INCREASES

Between Estimate of £46,000 and October Estimate of £64,000 for Building and Civil Work

Items	Original Estimate	Added by N.I.R.N.S up to 31.12.60.	Added by N.I.R.N.S after 31.12.60.	Added by S.W.O	Oct. 1961 Estimate	Remarks
	£	£	£	£	£	
Main Building Contract	21,327				21,327	) Based on Approx. Bills
Preliminaries for same	3,623				3,623	)
Profit and Attendance on P.C.	3,000	100	50	350	3,455	Increase on additional costs
Increase on Main Contract						Gross Figures
Increase in area 800 sq.ft.		3,000			3,000	Added Furniture Store Cloaks Washup Area and Plant Room
Ducts and Ground Beams				1,200	1,200	Necessary due to details for foundations
Mobile Snack Bar			500		500	July 1961
Additional Work in Kitchen			200	500	700	Part due to recent revision remainder to development of W.D.'s
Louvres in Apex of Roof				200	200	Previously in P.C.s
Ground Floor Insulation				250	250	Now omitted
Radiator Casings				800	800	Found necessary when heating scheme prepared
Rotunda Roof Beam Casings				500	500	Necessary when roof was redesigned
Dining Area Screens				300	300	Should have been included with furniture
Water Jet for Meat				50	50	Omission
Dirty Returns Unit				1,000	1,000	Omitted owing to item being under review
Mobile Tea Bar			250		250	Should be in furniture estimate
Sundry Joinery			150		150	Added to cover details for recent revisions
Glass in Lieu of Panels				400	400	*See Savings in P.C.s for infill panels
Kiosk and Shop			265		265	Extra over original sum included in bills
Totals from Main Contracts	27,950	3,100	1,415	5,505	37,970	Excludes P.C. allowance factor and CVC

APPENDIX I

Items	Original Estimate	Added by N.I.R.N.S up to 31.12.60.	Added by N.I.R.N.S after 31.12.60.	Added by S.W.O.	Oct. 1961 Estimate	Remarks
	£	£	£	£	£	
Brought Forward	27,950	3,100	1,415	5,505	37,970	Excludes P.C. allowance factor and CVC
P.C. Items						
In Fill Panels	1,200			820	380	New Saving £420 see * above
Ironmongery	550				550	
Louvred panels	150				150	
Sanitary Fittings	250			150	400	
Metal Windows	1,200			400	1,600	Small part of this sum due to N.I.R.N.S. revisions
Structural Steelwork	3,000				3,000	
Curtain Walling	500				500	
Suspended Ceiling	400			2,200	2,600	Recent tender shows this estimate to be high main increase due to rotunda roof revision
Hardwood Flooring	1,000				1,000	
Rotunda Roof	5,000				5,000	
Wall Tiling	1,000			200	1,200	
Mural	300				300	
Revolving Door		850			850	
Total including P.C.	42,500	3,950	1,415	7,635	55,580	Excludes allowance factor and C.V.C.
Allowance Factor	3,500	20	15	465	4,000	Under normal 10%
	46,000	3,970	1,420	8,100	59,500	
C.V.C.					4,500	Reported £5,500 Balance Non-contractual but in P.C. and rises between sketch plan estimate and contract date
	46,000				65,000	

RECOMMENDATIONS OF THE MINISTRY OF AVIATION CATERING ADVISER

(a) Dated 24 May 1961

Further to our telephone conversation of this afternoon, I confirm that it is too late to do very much with the plan, as it is obvious these are finished drawings and detailed services are already shown.

I would have preferred to have had the bar somewhere in the foyer, and this may be possible even now.

The areas proposed based on a kitchen capacity of approximately 350 main meals with seating accommodation for 300 persons at one sitting appears reasonable. An improved kitchen layout would have been possible if the width of the kitchen could have been increased, thus enabling benching to be sited on either side of the main battery of equipment. A reduction in the overall length of kitchen would have meant no increase in total area.

Cold room capacity is high, and based on our standards two 100 cu.ft. sectional cold rooms would have been considered adequate.

The position of the cold rooms shown is a long way from the main entrance. Subject to a floor channel being provided around the wet units, such as steaming ovens and boiling pans, this should be sufficient.

Reserve hot closets, elevated type, fitted in the divided wall between kitchen and service counter, are necessary. This wall, erected nearer the counter in line with the wall separating wash-up and tea-bar, would be an advantage. No pot and pan wash-up section is shown, and it is assumed this will be located in the general wash-up.

An access door into the wash-up room from the main dining room should be provided.

The position shown for the tea and coffee bar will, it is considered, restrict circulation from the main meal counter, and, if possible, it would have been preferable for the tea bar to be combined with the licensed bar in the centre of the dining room.

I have asked the British Automatic Co. and Machine Economy Ltd., to send you direct details of their automatic tea and coffee machines.

With regard to the management of the canteens, we could give you advice and help you generally, if you wish to remain independent of Harwell but, on the other hand, you may prefer to make use of their services, as they are in the vicinity. It depends, of course, whether you wish to be independent or otherwise.

(b) Dated 9 February 1962

Thank you for your letter of 26 January, together with enclosures, which are returned.

Quite frankly, the source of the trouble is in the design of your building, and as I do not know how far you have gone with the erection, it is difficult to tell you at this stage whether it is cheaper to continue or to start again with a fresh design.

I have examined Benham's tender and deleted certain items which would save in the region of £3,000, which does not really help very much.

If you will let me know when you would like me to call and see you I shall make arrangements to do so.

Messrs. Benhams' Tender - dated 28 December 1961

DELETE

Item 1	Single Unit Fish Fryer (two unit fryer adequate)
3	One (1) Boiling Pan
5	Cabinet Roasting Oven - and substitute single-oven General Purpose Oven
9	Pastry Oven 36" x 30" - and substitute Oven 30" x 24"
21	Mobile Chip Racks
32	Cup and Glass Trolleys
44	Ice Cube Maker
46	Refrigerated Cupboards
50	Refrigerated Cupboards
51 (Part) II	Refrigerated Storage Unit
53	Service Counter - replace with cheaper unit
56	Tray Lowerator
65	Water Unit - consider a cheaper unit
63	Dish-washing Machine - consider a single tank machine

It is recommended alternative quotation should be received from firms such as Sissons and Stotts for all stainless steel benching and sinks.

Total saving on equipment mentioned above, and sinks etc., it is estimated would be in the region of £3,000.

Built-in cold rooms are specified on drawing. Although no details of costs are available, a saving could no doubt be achieved by supplying two standard 100 cuft. sectional cold rooms - estimated cost £800. Cold rooms of this capacity are more than adequate for the numbers being catered for.

No mention is made of tea service equipment - presumably this is to be fitted in the centre of the dining room.

F. G. Murray

COMPARISON OF CANTEEN COSTS AT (PRESUMED) POST OCTOBER 1961 PRICES

	NIRNS after economies	HARWELL	SPRINGFIELDS	WINFRITH
Seats provided	300	1,140	500	740
No. of sittings	2	$2\frac{1}{4}$	2	2
Total area	10,300 sq. ft.	35,750 sq. ft.	18,000 sq. ft.	28,700 sq. ft.
Dining area	3,300 sq. ft.	14,350 sq. ft.	6,600 sq. ft.	9,790 sq. ft. (incl. bar)
Building costs	£86,000	£250,800	£135,660	£239,883
Furniture	£ 3,600	£ 10,000	£ 4,000	£ 4,924
Fees	£19,600	£ 50,160	£ 27,132	£ 48,000
Total costs	£109,200	£310,960	£166,792	£292,807
Cost per seat (excl. fees and furniture)	£287	£220	£271	£324
Cost per seat (incl. fees and furniture)	£364	£273	£334	£396
Building cost per sq. ft. gross	£8.7.0	£7.0.9	£7.10.9	£8.7.2
Area per seat gross	34 sq. ft.	31 sq. ft.	36 sq. ft.	39 sq. ft.
Dining space area per seat	11 sq. ft.	$12\frac{1}{2}$ sq. ft.	13 sq. ft.	13 sq. ft. (incl. bar)

Note: 1. Building costs for Harwell and Springfields have been increased by 14% to make them comparable with NIRNS, and Winfrith building costs have been increased by 20%
2. Fees have been added at 20%: this is arbitrary but is roughly in line with NIRNS
3. Winfrith figures are for projects which have been built. The Harwell and Springfields schemes have not advanced beyond the project estimate stage

	NIRNS	HARWELL	SPRINGFIELDS	WINFRITH
Special features	(1) Accommodation comprises: cafeteria and waitress service area determined by movable partitions. (2) This is a particularly small canteen. (3) A certain amount of wasted work due to faulty planning. (4) Planned also to pick up lecture room later.	Accommodation comprises Directors and Visitors dining room and lounge, waitress area (part of which will be used for lunches for large conferences or as a lounge), cafeteria and general lounge for 150 people.	(1) Accommodation comprises waitress area for 80 people and cafeteria, but no lounge. (2) Two sittings are unusual for this type of canteen but were imposed by the complications of shift working.	(1) Accommodation comprises Directors dining room, Senior Staff dining room, waitress service, cafeteria and bar lounge. (2) Costs include £20,000 for boiler house and plant, an item normally not separately necessary for a canteen, and £31,000 for abnormal labour and foundation costs. (3) More than average space allowed to enable seating to be increased at a later date within existing building. (4) Exceptionally high proportion of staff catered for since local facilities are poor.

APPENDIX III

N. I. R. N. S. Restaurant

Comparison of Canteen Costs at (presumed) Post-October, 1961 Prices

		HARWELL		NIRNS Nov. 61	NIRNS after economies
1.	Seats provided	No	1105	300	300
2.	No. of sittings	No	$2\frac{1}{4}$	2	2
3.	Total area	Ft. Sup	35300	10,300	10,300
4.	Dining area	Ft. Sup	14350	3,585	3,585
5.	Building cost	£ 250,800		101,000	86,000
6.	Furniture	£ 10,000		5,000	3,600
7.	Fees	£ 50,160		19,600	19,600
8.	Total cost	£ 310,960		125,600	109,200
9.	Cost per seat Excl. Fees and Furniture	£ 227		337	287
10.	Cost per seat Incl. Fees and Furniture	£ 282		419	364
11a.	Building Cost per square foot Excl. fees and furniture	£ 7-2-0		9-16-6	8-7-0
11b.	Cost of kitchen equipment per square foot	4-3		17-6	15-6
11c.	Building cost per square foot Excl. fees, furniture and equipment	£6-17-9		8-19-0	7-11-6
11d.	Cost of furniture per square foot	5-9		9-9	8-0
11e.	Cost of externals per square foot	13-3		12-3	12-3
12.	Area per seat GROSS	Ft. Sup	32	$34\frac{1}{3}$	$34\frac{1}{3}$
13.	Dining space per seat	Ft. Sup	13	12	12
14.	Kitchen equipment	£ 7,500		9,000	7,900
15.	Externals	£ 23,400		6,300	6,300

16. Special Features: Accommodation comprises Directors and Visitors dining room and lounge, waitress area (part of which will be used for lunches for large conferences or as a lounge), cafeteria and general lounge for 150 people. Kitchen equipment being moved from existing canteen.

(1) Accommodation comprises Cafeteria and Waitress service area determined by movable partitions (partitions deleted in savings)
(2) This is a particularly small canteen
(3) A certain amount of abortive work because of planning modifications
(4) Building cost includes £9,000 kitchen equipment.

Notes

(1) Figures for NIRNS EXCLUDE (i) additional items recommended by Benhams

(ii) disruption charges by Contractors

(2) Building costs for Harwell have been increased by 14% for comparison with NIRNS

(3) Fees added at 20%; arbitrary but roughly in line with NIRNS

(4) Existing equipment is used in the Harwell Canteen, but the NIRNS Canteen has all new equipment. Thus, equipment cost per square foot and per place is far higher at NIRNS

(5) The equipment needed and kitchen area do not reduce proportionally to the number of people catered for, and as these are the expensive parts of the building, a smaller number catered for will increase the cost per place and the cost per unit area of floor

(6) The Harwell Canteen has approximately 50% of its total area devoted to dining rooms, bars and coffee lounges, while in the NIRNS Canteen it is approximately 35%. The remainder of the space is kitchen, foyer, etc. which are expensive areas and will increase the average costs of the whole.

N. I. R. N. S. Restaurant
Suggested Savings

Item No. in SWO List	Description	Saving £	Notes
1	Omission of removable duct covers	200	Rough assessment only
2	Lino in lieu of rubber	200	" " "
3	Grano in lieu of Quarries	200	" " "
4	Roller Shutter	180	Item omitted
5 & 36	Illuminated Ceiling in Foyer	380	Substitute ordinary lighting
6	Shop and Kiosk	200	Expenditure to be limited to £300 gross
7	Screens to dining area	300	Omitted
9	Dirties return	300	Special piece of equipment replaced by simple fitting
10	Mobile snack bar	500	Transferred to furniture
11 & 38	Casings to Rotunda Roof Beams	500	Omit
12	Plasterer	150	Target saving. No details
13	32 oz. in lieu of Plate	200	Assuming all plate reduced to 32 oz. To be estimated in detail
14	Emulsion in lieu of Oil Paint on Walls	50	Target saving. No details
15	Omit Paint on Aluminium Windows	105	To be checked in detail
16	Omit 1" Jablite Insulation	250	Check Estimate
17	Radiator Casings	700	See item 52. £100 left for treating dwarf walls
18	Moat omitted	1000	Estimate to be checked, but this rough figure quoted on the basis of charging surface water disposal to Job 6654
19	Prelims, etc. on certain of above Items	460	
20	Allowances for Misc. extras reduced to £250	750	Reduction of Estimators' conservative view of information available
	P.C. Sums		
21	Infill Panels	+ 50	Client's minor addition
22	Louvred Panels	150	Included in metal window N.S.C.
23	Sanitary Fittings	+150	Stainless steel sinks
24	Structural Steelwork	100	Re-assessment of working drawings. Check

25 & 34	Curtain Walling	300	The curtain walling is being replaced by a concrete screen not to exceed £200 in value. To be investigated for further savings
26, 35 & 37	Suspended Ceilings (Kitchen and rotunda)	2150	Omitted, but £250 retained to treat the cupola in the rotunda
27	Hardwood Floor	100	Difference between tender of £897 (excluding Dayworks) and P.C. sum of £1,000
28 & 42	Wall Tiling	570	Reduced to 4'6". Feature tiling omitted.
29	Mural	300	Omitted entirely
30 & 40	Revolving Door	750	Two pairs of folding entrance doors to be substituted for the revolving door
31	Proportional preliminaries etc. on P.C. Savings	380	
32	Reduction of Allowance Factor	1000	Reduced from £4000 to £3000
33	To C.V.C. on Savings Say	445	
45	Curtain Walling	NIL	Too far committed
46	Terrace Paving in Tarmac	NIL	In external services. Will be reduced
47	Facing Bricks	60	Savings against P.C. rates in B.Q.
48	Switchgear	150	Use of non-standard gear
49	5 amp Sockets to Rotunda	25	Omit half
50	Bracket lights to Rotunda	125	Omit twelve
52	Heating extra	+ 200	Radiators will cost an additional £200, but this is a consequence of the saving of £700 in item 17
53	Ventilation	1000	Simplification reducing to one fan and one heater
54	Refrigeration	700	Omit one unit
55	Kitchen equipment	2300	This and item 54 allow for Mr. Murray's recommendations
57	To C.V.C. on savings Say	540	
58	Disruption say 1½% on M and E work	+ 500	Because of delays, one Contractor has indicated an increase in his contract price and others may be similarly affected
Total	Nett suggested saving	£16,870	

59 Furniture was considered on a total basis and not as individual cuts from existing estimates:

Tables and Chairs	1800	300 seats
Trolley and Tray Stands	-	Duplicated in the M/E equipment list
Tables for preparation and wash up	500	
Batten racking for stores	-	(Joiner)
Lockers	250	
Office Furniture	350	
Venetian Blinds and Curtains	200	£400 to be cut 50%
Mobile Snack Bar	500	Mobility necessary to clear centre of dining room for dances etc.
Total furniture	£3600	