

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE.

RUTHERFORD LABORATORY BUILDING COMMITTEE.

E.H.T. Power Supply - Sub-Station No. 14.

1. Introduction.

Paper NI/GP/61/5, January '61, put forward proposals for increasing the capacity of the electrical supply system to the Rutherford Laboratory. These proposals were accepted in principle, Minutes NI/GP/61, 1st Meeting, Para. 7.

2. Proposed scheme.

Further discussions have taken place between A.E.R.E., S.W.O., N.I.R.N.S., and a detailed scheme and estimates have been prepared for the E.H.T. Switchgear, sub-station and cabling mentioned in para. 2. of the above paper.

The new distribution sub-station will switch the output of two 30 MVA 132/11KV transformers and provide a firm capacity of 24 MVA to N.I.R.N.S. and 6 M.V.A. to A.E.R.E. The capital cost of this part of the sub-station has been agreed as being apportioned on the basis of this load division.

The switchgear included in the present scheme is the minimum necessary for the present known requirements of the Rutherford Laboratory. The arrangement of the plant and buildings is such that additional can be readily made as required.

3. Detailed scheme.

The detailed requirements of E.H.T. power supply for the Rutherford Laboratory was shown in paper RLBC/P65 and the scheme for M.V. Distribution was detailed in paper RLBC/P77. The appendices to this paper show similarly the details of the E.H.T. supply scheme.

Appendix A shows the cost breakdown and the steps necessary in order to complete the scheme. The scheme will allow the changeover with little or no interference with supplies. The addition of an interconnector to Sub. 12 will require a short shut down period.

Appendix B, shows the position of the C.E.G.B. compound, the new sub-station and the cabling changes required.

Appendix C shows the new sub-station in diagram form. Both A.E.R.E. (Sub. 11) and N.I.R.N.S. (Sub. 10) have duplicate feeds giving the firm capacity required. In addition an interconnector to Sub 12 allows a back-up supply to that of the present 20 MVA transformer in event of a fault. If in fact any one of the three 132/11KV transformers or their feeder cables should fail then the R.L. full load requirements can still be met. A further security which also allows separation of the pulsing supply when this Sub 12 interconnector is in service is the provision of double bus bars in the Sub 14 switchgear.

A.E.R.E. Building Committee has agreed to the site of the C.E.G.B. compound and the additional Sub-station and the expenditure of the sum of £6,800 plus fees, has been agreed by the R.G.M.B. as A.E.R.E.'s share of this project. An I.T.P. for this amount will be issued in parallel to one from N.I.R.N.S. to S.W.O. in due course.

4. Estimated cost.

The estimated cost is less than the original forecast of £100,000 due to the limitations mentioned in the previous paragraph.

Estimate. Sub station 14. N.I.R.N.S. liability (at 80% of total)	£27,200
" " " 10 & 12. Consequential additions.	£11,000
	<u>£38,200</u>
Fees at 15% say	£ 5,800
	<u>£44,000</u>

5. Provision in Estimates.

It is anticipated that the plant will be in operation before the end of 1963 and that the majority of the expenditure will fall in the period 1963/64. - £40,000 with the balance of £4,000 in the period 1964/65.

Provision has been made in the forecast estimates for this expenditure.

6. Recommendation.

Approval is requested for augmenting the Rutherford Laboratory Electrical Power Supplies at a cost not exceeding £44,000 to the N.I.R.N.S.

G. E. SIMMONDS.

May 31st. 1962.

3. Apportionment and spend by years:

A.E.R.E. - 20% of 1
N.I.R.N.S. - 80% of 1 100% of 2.

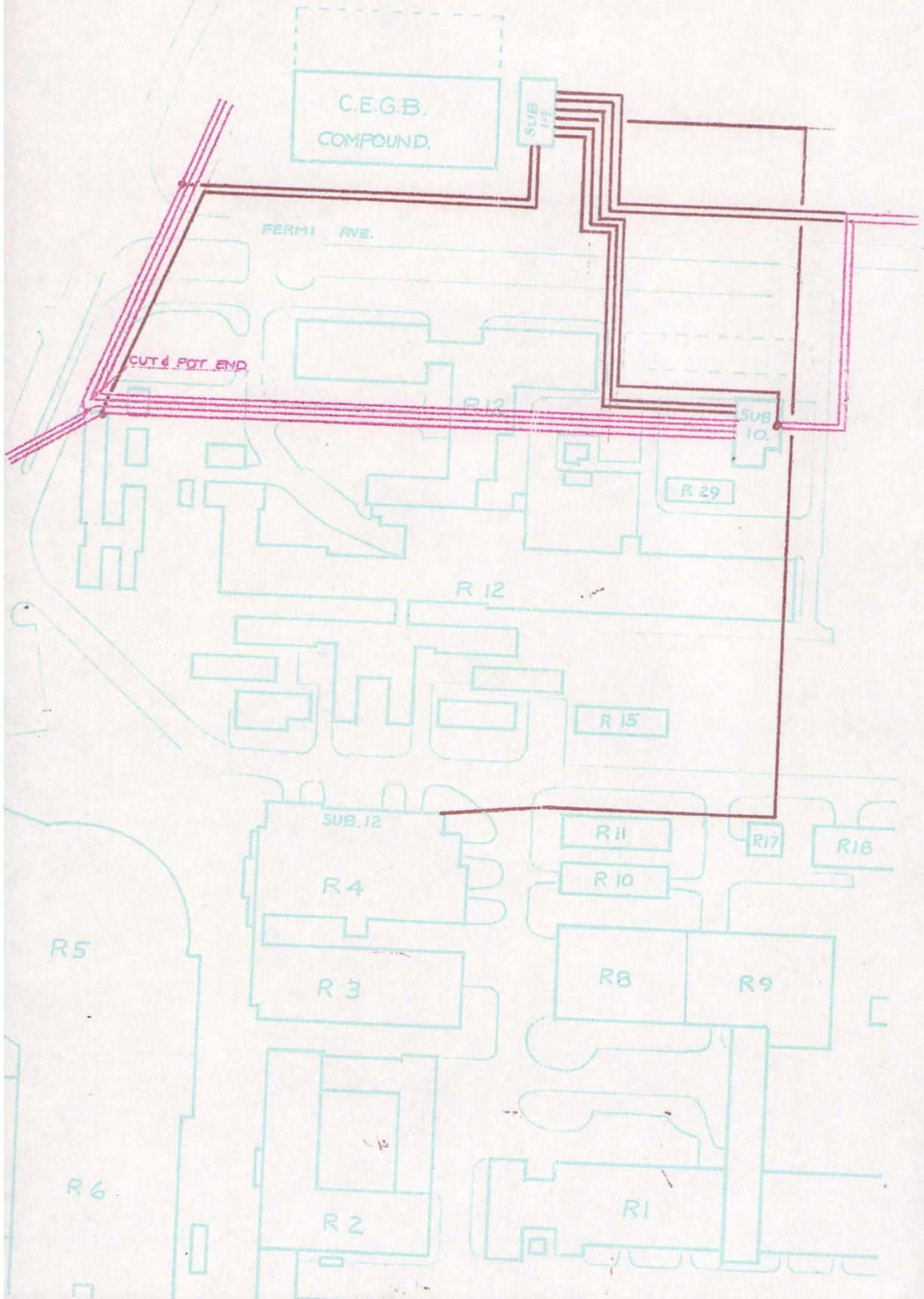
	<u>A. E. R. E.</u>	<u>N. I. R. N. S.</u>
1	6,800	27,200
2	<u>-</u>	<u>11,000</u>
Total:	6,800	38,200
1962/3	-	-
1963/4	6,000	35,000
1964/5	800	3,200

G. M. Harbert

28th May, 1962.

APPENDIX 'B'

- EXISTING CABLES
- NEW OR RELAID CABLES



APPENDIX 'C'

SUB-STATION N° 14

30 MVA TRANSFORMERS
132/11 KV
20% REACTANCE

