

3rd September 1962

NI/GP/62/28

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

Estimates of Capital and Non-Capital Expenditure 1963/64
and Forecast Estimates 1964/65 and 1965/66

Prepared by A. Miller

Schedule 1	Summary of Estimates
Schedule 2	Capital Expenditure
Schedule 3	Non-Capital Expenditure
Schedule 4	Staff in Post
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- (1) These estimates have been prepared on the basis of cash requirements to meet existing commitments and to maintain the approved programme.
- (2) It has not yet been decided what financial steps will be necessary for the transfer of the British Hydrogen Bubble Chamber to N.I.R.N.S. ownership. Treasury advice is being sought.
- (3) The General Purposes Committee are invited to review these proposals and to approve submission to the Treasury with such amendments as are considered appropriate.

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

Summary of Estimates 1963/64, 1964/65 and 1965/66

	<u>Treasury</u> <u>Grant 1962/63</u>	<u>1962/63</u> <u>Estimate</u> <u>£000</u>	<u>1963/64</u> <u>Estimate</u> <u>£000</u>	<u>1964/65</u> <u>Estimate</u> <u>£000</u>	<u>1965/66</u> <u>Estimate</u> <u>£000</u>	<u>Remarks</u>
A. Rutherford Laboratory						
Capital - NIMROD including buildings	1,707	1,410	674	296	150	See Schedule 2 Sheet 2
Other NIMROD Plant	530	665	1,130	1,134	1,071	" "
PLA Plant	170	112	182	189	185	" "
General Plant	292	340	362	260	240	" "
Building Schemes	911	699	773	533	177	" Sheet 1
	<u>3,610</u>	<u>3,226</u>	<u>3,121</u>	<u>2,412</u>	<u>1,823</u>	
	<u>2,900</u>	<u>2,985</u>	<u>3,388</u>	<u>3,766</u>	<u>3,875</u>	" Schedule 3
<u>Non-Capital</u>	<u>6,510</u>	<u>6,211</u>	<u>6,509</u>	<u>6,178</u>	<u>5,698</u>	
B. Electron Laboratory						
Capital - 4 GeV Electron Synchrotron	214	19	600	800	800	See Schedule 2 Sheet 3
including buildings	15	10	92	136	140	" "
Other Plant	21	1	24	55	80	" "
Building Schemes	250	30	716	991	1,020	" Schedule 3
	<u>230</u>	<u>100</u>	<u>373</u>	<u>562</u>	<u>700</u>	
	<u>480</u>	<u>130</u>	<u>1,089</u>	<u>1,553</u>	<u>1,720</u>	
<u>Non-Capital</u>						
	6,990	6,341	7,594 ⁸	7,731	7,418	
	<u>800</u>	<u>-</u>	<u>600</u>	<u>500</u>	<u>300</u>	
	<u>6,190</u>	<u>6,341</u>	<u>6,994⁸</u>	<u>7,231</u>	<u>7,118</u>	
Total of A. & B.						
Less Shadow Cut	450	815	940	1,010	540	Including development
	<u>-</u>	<u>-</u>	<u>16</u>	<u>21</u>	<u>90</u>	See Schedule 2 Sheet 3
	<u>450</u>	<u>815</u>	<u>956</u>	<u>1,031</u>	<u>630</u>	
	<u>150</u>	<u>120</u>	<u>572</u>	<u>487</u>	<u>385</u>	
	<u>600</u>	<u>935</u>	<u>1,528</u>	<u>1,518</u>	<u>1,015</u>	See Schedule 3
<u>Non-Capital</u>						
	6,790	7,276	8,524 ⁶	8,749	8,133	
	<u>110</u>	<u>110</u>	<u>120</u>	<u>230</u>	<u>740</u>	
	<u>6,680</u>	<u>7,166</u>	<u>8,402⁶</u>	<u>8,519</u>	<u>7,393</u>	
D. Total NIRS Expenditure						
Less Receipts						

SCHEDULE 1

N.I.R.N.S.

CAPITAL

Rutherford Laboratory
Building Schemes

1. Extension of PLA Buildings
2. Heavy Laboratories
3. Parasitic Area Extension
4. Extension to Building R.2.
5. Didcot Housing Scheme
6. RHEL Restaurant
7. Abingdon and Chilton Housing Scheme
8. Electronics Building
9. Capital Accelerator Development
10. Second Main Nimrod Experimental Area
11. Research Reactor (Token)
12. Site Services and Roads
13. Laboratory and Office Block
14. Roofing Hard Standing
15. Landscaping Spoil Heap
16. Modifications to PLA Experimental Area
17. Site Power Distribution
18. Lecture Theatre
19. Sub-station No. 14
20. Cooling Towers Extension
21. Safety Store and F.A.P.
22. Service Workshop
23. PLA Building Improvements
24. Auxiliary Building for Nuclear Physics
25. Extension to Building R.25. Offices
26. Remote Test Building
- Minor Items

Total Cost	1962/63	1963/64	1964/65	1965/66	Later years	Remarks
£000	Forecast £000	Estimate £000	Estimate £000	Estimate £000	Estimate £000	
273	70	26				
127	65	47				
80	35	40				
226	70	100	30			
120	60	2				
106	36	37	4			
220	10	100	80	30		
120	1	50	69			
300	-	-			300	
290	-	-			280	
1	-	-			1	
355	80	60	40	20	20	Continuing
90	48	14				
63	35	20				
20	15	5				
30	5	20				
35	15	18	5			
50	15	20	15			
45	5	20	15	5		
40	5	20	12	3		
30	1	10	19			
30	1	10	19			
100	1	10	30	59		
100	3	17	70	10		
80	1	55	24			
60	1	10	49			
-	121	62	50	50	40	Continuing
-	699	773	533	177	-	

N.I.R.N.S.

CAPITAL

Rutherford Laboratory

Other Nimrod Plant

1. Beam Handling Plant - Phase I
2. Helium Bubble Chamber
3. Parasitic Area (Shielding)
4. Beam Handling Plant - Phase II
5. Heavy Liquid Bubble Chamber
6. N.P. Apparatus - Major Scheme
7. Nimrod Spares
8. Track Analysis Equipment
9. N.P. Apparatus - Miscellaneous
10. Beam Handling Plant - Miscellaneous
11. Nimrod Improvement
- Minor Items

P.L.A. Plant

1. Analysing Magnets
2. Tank I Improvement
3. Major Modifications
- Minor Items

General Plant

1. Orion Computer
2. Helium Liquefier
3. Capital Accelerator Development
4. Research Reactor (Token)
5. Future Major Site (Token)
- Minor Items

<u>Total Cost</u>	<u>1962/63</u>	<u>1963/64</u>	<u>1964/65</u>	<u>1965/66</u>	<u>Later Years</u>	<u>Remarks</u>
<u>£000</u>	<u>Forecast</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	
	<u>£000</u>	<u>£000</u>	<u>£000</u>	<u>£000</u>	<u>£000</u>	
1,030	256	390	250	131	-	
435	20	100	120	180	16	
130	-	90	40	-	-	
420	5	30	100	100	185	
383	100	130	150	-	-	
730	-	10	10	150	519	
190	75	60	44	-	-	
-	37	40	50	80	100	Continuing
-	-	70	100	100	300	Continuing
-	-	10	50	100	300	Continuing
520	-	-	-	-	520	Continuing
-	172	200	220	230	250	
-	<u>665</u>	<u>1,130</u>	<u>1,134</u>	<u>1,071</u>	-	
85	11	60	10	-	-	
40	1	1	34	5	-	
80	-	1	15	40	23	
-	100	120	130	140	150	Continuing
-	<u>112</u>	<u>182</u>	<u>189</u>	<u>185</u>	-	
352	200	152	-	-	-	
80	-	20	60	-	-	
1,800	-	-	-	-	1,800	
1	-	-	-	-	1	
2	-	-	-	-	2	
-	140	190	200	-	250	Continuing
-	<u>340</u>	<u>362</u>	<u>260</u>	<u>240</u>	-	

N.I.R.N.S.

CAPITAL

Electron Laboratory

Building Schemes

1. Houses, Hostels and Flats
Minor Items

Plant Schemes

1. External Electron Beam
2. N.P. Apparatus - Major Scheme
3. N.P. Apparatus Miscellaneous
Minor Items

Atlas Computer Laboratory

Plant Schemes

1. New Computer Storage etc.
2. Computer Replacement (Token)
Minor Items

<u>Total Cost</u>	<u>1962/63</u>	<u>1963/64</u>	<u>1964/65</u>	<u>1965/66</u>	<u>Later Years</u>	<u>Remarks</u>
<u>£000</u>	<u>Forecast</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	
<u>£000</u>	<u>£000</u>	<u>£000</u>	<u>£000</u>	<u>£000</u>	<u>£000</u>	
100	1	19	40	40	-	
-	-	5	15	40	40	Continuing
-	1	24	55	80	-	
-	-	-	-	-	-	
310	-	-	-	10	300	
250	-	1	10	20	219	
100	-	1	1	10	88	
-	10	90	125	100	100	Continuing
-	10	92	136	140	-	
-	-	-	-	-	-	
150	-	1	1	60	88	
1	-	-	-	-	1	
-	-	15	20	30	40	Continuing
-	-	16	21	90	-	
-	-	-	-	-	-	

N.I.R.N.S.

NON-CAPITAL

Rutherford Laboratory

Salaries, Wages, etc.
Administration Expenses
Stores, Materials and Services
E.M.R.
Reactor Support

Less costs attributable to Atlas Laboratory

Electron Laboratory

Salaries, Wages, etc.
Administration Expenses
Stores, Materials and Services
E.M.R.

Atlas Laboratory

Salaries, Wages, etc.
Administration Expenses
Stores, Materials and Services
E.M.R.
A.E.A. Computer Support
Rutherford Laboratory Overheads

<u>1962/63</u> <u>Forecast</u> <u>£000</u>	<u>1963/64</u> <u>Estimate</u> <u>£000</u>	<u>1964/65</u> <u>Estimate</u> <u>£000</u>	<u>1965/66</u> <u>Estimate</u> <u>£000</u>
999	1,266	1,388	1,410
80	131	150	160
1,821	1,859	2,100	2,200
70	85	100	100
30	110	110	110
<u>3,000</u>	<u>3,451</u>	<u>3,848</u>	<u>3,980</u>
15	63	82	105
<u>2,985</u>	<u>3,388</u>	<u>3,766</u>	<u>3,875</u>
40	160	242	300
10	22	30	40
30	161	250	310
20	30	40	50
<u>100</u>	<u>373</u>	<u>562</u>	<u>700</u>
10	42	55	70
10	7	10	20
15	60	90	140
20	50	50	50
50	350	200	-
15	63	82	105
<u>120</u>	<u>572</u>	<u>487</u>	<u>385</u>

(£40,000 p.a. has also been provided in capital)

STAFF1963/64 Estimates

<u>In Post - 31st March</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
<u>RUTHERFORD LABORATORY</u>					
Professional	257	309	370	370	370
Ancillary	300	339	400	400	400
Industrial	200	252	252	252	252
	<u>757</u>	<u>900</u>	<u>1,022</u>	<u>1,022</u>	<u>1,022</u>
<u>ELECTRON LABORATORY</u>					
Professional	-	40	53	65	70
Ancillary	-	30	50	70	82
Industrial	-	30	40	48	52
	<u>-</u>	<u>100</u>	<u>143</u>	<u>183</u>	<u>204</u>
<u>ATLAS LABORATORY</u>					
Professional	2	9	13	19	23
Ancillary	2	17	23	27	29
Industrial	-	-	3	3	3
	<u>4</u>	<u>26</u>	<u>39</u>	<u>49</u>	<u>55</u>
<u>TOTAL</u>					
Professional	259	358	436	454	463
Ancillary	302	386	473	497	511
Industrial	200	282	295	303	307
	<u>761</u>	<u>1,026</u>	<u>1,204</u>	<u>1,254</u>	<u>1,281</u>

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

1963/64 Estimates

Research and Development with Industry and Universities

(not including capital expenditure, preparation for experiments or bubble chamber design)

	<u>1962/63</u> £000	<u>1963/64</u> £000	<u>1964/65</u> £000	<u>1965/66</u> £000
<u>UNIVERSITIES</u>				
Manchester	5	10	15	20
Oxford	30	30	35	35
University College Glasgow	10	15	15	15
Battersea College	5	5	5	5
Queen Mary College	5	5	5	5
Southampton	5	5	5	5
Durham	10	10	10	10
Imperial College	5	5	5	5
Liverpool	10	15	20	20
Westfield	5	15	20	25
Birmingham	5	10	10	10
Others	5	20	20	20
	10	10	15	15
	110	155	180	190
	-	10	10	10
	110	165	190	200
	110	165	190	200
<u>INDUSTRY</u>				
	70	85	100	100
Rutherford Laboratory	20	30	40	50
Electron Laboratory	20	50	50	50
Atlas Laboratory	110	165	190	200
	110	165	190	200

ESTIMATE PROVISIONS

Rutherford Laboratory
Electron Laboratory
Atlas Laboratory