

APPENDIX 2.1  
(referred to in paragraph 2.19)

**GEC: source and application of funds**

	<i>Financial year ended 31 March</i>				<i>£ million</i>
	<i>1981</i>	<i>1982</i>	<i>1983</i>	<i>1984</i>	<i>1985</i>
Funds generated from operations	556	745	847	834	878
Funds from other sources					
Sales of assets	10	17	27	14	14
Sale less purchases of investments	39	3	7	122	30
	<u>605</u>	<u>765</u>	<u>881</u>	<u>970</u>	<u>922</u>
Application of funds					
Purchase of fixed assets	161	173	208	226	252
Purchase of own shares and advance corporation tax	—	—	—	—	195
Tax paid	135	158	214	258	281
Dividends paid	48	60	74	86	99
Reduction in loan capital	46	25	23	93	91
Purchase of subsidiaries	83	—	—	—	—
Capital repayment	—	—	82	—	—
Loan to associated companies	1	2	2	1	7
	<u>474</u>	<u>418</u>	<u>603</u>	<u>664</u>	<u>925</u>
Increase/(decrease) in working capital					
Stock	46	110	43	57	130
Debtors	61	40	134	81	89
Creditors	(1)	(114)	(73)	(106)	(47)
Payment on accounts of contracts	(37)	(64)	(105)	34	(30)
Net liquid funds	62	375	279	240	(145)
	<u>131</u>	<u>347</u>	<u>278</u>	<u>306</u>	<u>(3)</u>

Source: GEC Annual Reports and Accounts.

## APPENDIX 2.2

(referred to in paragraphs 2.24, 3.25, 5.13 and 10.95)

### **Collaborative research programmes**

#### **The Alvey Programme**

1. The Alvey Programme is a five-year programme of pre-competitive collaborative research in the enabling technologies of information technology (IT) sponsored by DTI, the MOD and the Science and Engineering Research Council together with industry. It has an overall budget of £350 million of which more than half is to be provided by the Government and its objective is to double the level of IT research in the United Kingdom over five years and to meet a number of detailed technical goals.

2. The key feature of the programme is collaboration; at project level between companies and between companies and academic institutions; and at management level between Government departments and between Government departments and industry. Projects normally involve participants from at least two companies together with academic institutions as appropriate. The programme is administered jointly by the sponsoring bodies and industry and finance is shared between the Government and industry.

3. The programme is a response to increased overseas effort on IT research particularly in Japan which announced its programme to develop fifth-generation computers in April 1982. It is one of directed research and is based on detailed technical strategies covering the following four main technical areas against which individual projects are matched:

- (a) intelligent knowledge-based systems;
- (b) software engineering;
- (c) very large-scale integration; and
- (d) man-machine interfaces.

The programme also supports large-scale demonstrator projects aimed at the creation of practical applications of IT research and at showing the exploitable results of the programme.

4. Any centre of IT research in the United Kingdom of any size, public or private, can participate. There is no bar on the involvement of foreign-owned multi-national companies. However, a foreign-controlled company must have a United Kingdom industrial collaborator, the research work must be done in the United Kingdom and the route to exploitation in the United Kingdom must be clear. Industrial partners receive 50 per cent of the allowable costs of a project. Academic partners are funded 100 per cent of allowable costs. IPR stemming from Alvey projects are owned by the industrial participants who make appropriate payments to their academic collaborators.

5. The programme has so far attracted nearly 700 applicants. Almost 200 industrial projects have been approved representing a commitment of about 95 per cent of total funds. Altogether some 108 companies, 53 universities, 11 polytechnics and 15 research establishments are involved.

## **JOERS**

6. The Joint Optoelectronics Research Scheme (JOERS) was launched in December 1982 and was the first pre-competitive research scheme launched by the DTI. Under the scheme companies and universities collaborate on work on the technology of optoelectronics.

7. The success of the scheme in attracting high quality research projects meant that the funds initially allocated for five years were used up in three and in March 1986 an expansion of the scheme from £25 million to £36.5 million in the years up to 1989 was announced. Under the scheme companies are funded by the DTI with grants up to 50 per cent and the universities are funded by awards from the Science and Engineering Research Council.

8. An important feature of the scheme is an industry/academic assessment committee which advises on overall strategy and on individual proposals. All proposals have to have strong potential for exploitation.

9. As of March 1986 21 projects had been supported under the scheme. These involved 15 companies and 26 universities and polytechnics. Each project involves two or more companies and a similar number of university engineering or science departments.

10. As a result of projects carried out under the scheme significant advances have been made with lasers for fibre optic communications systems. There have also been considerable improvements in the purity and uniformity of materials for lasers and infra-red LEDs and in fabrication techniques for lithium niobate for ultimate use in advanced instruments including optical switches.

## **ESPRIT**

11. The European Strategic Programme of Research and Development in Information Technology (ESPRIT) was launched by the European Community in February 1984. It was the result of initiatives taken by the European Commission and the so-called Round Table of 12 leading IT companies, those from the United Kingdom being GEC, ICL and Plessey, in response to growing concern at the European IT industries' poor competitiveness.

12. The objective of the programme is to encourage collaboration between European IT organisations in pre-competitive IT R & D in the hope that collaboration will extend to the market place to strengthen the European technology base and make Europe competitive in international IT markets. ESPRIT was initially set to run for five years with a budget of 1,500 million ecu (approximately £900 million), half of which is provided by the European Community and half by participating organisations through shared cost contracts.

13. The programme provides support in the following areas of IT:

- (a) micro-electronics;
- (b) software technology;
- (c) advanced information processing;

- (d) office systems; and
- (e) computer integrated manufacture.

Like Alvey ESPRIT is a programme of directed research and work is based on published work programmes. Unlike Alvey, ESPRIT is organised on an annual cycle. The programme is open to companies, academic institutions and research bodies irrespective of size, public or private. As a rule, each project must include companies from at least two member states and there is no formal prohibition on the involvement of subsidiaries of multi-national companies so long as the research is carried out within the Community by a Community-based organisation.

14. Management and strategic development of ESPRIT is a co-operative venture involving the European Commission, the Round Table, an ESPRIT Advisory Board and representatives of member states. The basic level of support is 50 per cent of allowable costs. These are defined quite generously to include various overheads and for universities this means that the level of support can be equivalent to Alvey's 100 per cent funding.

15. Two categories of project are promoted: projects aimed at specific strategic goals with well-defined objectives requiring substantial resources and large teams; or smaller, more speculative research orientated projects. Some 75 per cent of ESPRIT funds are reserved for projects of the former kind costing 10 million ecu or more.

16. IPR arrangements are similar in effect to those of Alvey. The programme has been very popular and over 1,000 proposals were generated by the 1984 and 1985 work programmes. Only a fifth could be supported and some 200 projects have now been approved and the Community budget for projects is now substantially committed. Some 50 United Kingdom companies, 35 universities, 5 polytechnics and 15 research establishments and other bodies (a total of 105 United Kingdom organisations) are involved in projects. The United Kingdom is involved in 165 of the 200-odd projects.

17. The Commission is developing plans for a second phase of the programme to be known as ESPRIT II but its formal proposals are still awaited. It is unlikely that any decision on ESPRIT II will be made by the end of 1986 and it could be delayed further.

## **RACE**

18. The Programme of Research and Development on Advanced Communications for Europe (RACE) is one element in a six-line action programme initiated by the European Council of Ministers in November 1983. The programme was set in motion in July 1985 by an 18-month definition phase during which work will be undertaken to focus the main programme accurately towards future needs.

19. The definition phase of RACE is in two parts. The first consists of analytical work which is being carried out mainly by the European Conference of Posts and Telecommunications to formulate a reference model for integrated broadband communications. Part two of the definition phase involves projects

to evaluate and explore technology options for research and development, to be carried out under shared-cost contracts open to all companies, universities and research establishments.

20. Proposals have to indicate the significant participation of at least two independent industrial partners in the Community but not all in one member state. Proposers have to be able to bear jointly at least 50 per cent of the cost of the project and to demonstrate that work would be carried out within the Community.

21. A total of 83 separate consortia involving 192 organisations have submitted proposals and as of February 1986 32 contracts had been placed. United Kingdom companies are lead contractors in 14 contracts and there is United Kingdom involvement in a further 12 contracts.

22. It is envisaged that the total cost to the European Community of the definition phase of RACE will be 21 million ecu.

23. The priorities for the main phase of RACE are unlikely to emerge before mid to late 1986. No formal proposal for the main phase has been made by the Commission nor has it suggested a timetable for expenditure.

APPENDIX 3.1  
(referred to in paragraph 3.19)

**Plessey: source and application of funds**

£ million

	Year to March				
	1981	1982	1983	1984	1985
Funds generated from operations	108.8	131.1	194.8	172.3	199.6
Funds from other sources					
Sale of assets	8.7	11.7	4.0	13.3	8.6
Sale of investments	1.2	—	—	—	8.7
Issue of shares	3.0	3.5	4.1	2.7	1.9
Extraordinary items	0.4	5.2	(1.4)	2.6	(3.8)
	<u>122.1</u>	<u>151.5</u>	<u>201.5</u>	<u>190.8</u>	<u>215.0</u>
Application of funds					
Purchase of fixed assets	26.5	35.1	57.6	82.7	118.2
Tax paid	10.2	18.9	34.1	47.4	86.8
Dividends paid	16.6	18.4	21.1	24.1	28.0
Acquisition of subsidiaries and minority interests	4.5	1.2	18.9	13.4	26.7
Currency retranslation	3.0	(4.2)	(0.7)	(0.8)	6.0
	<u>60.8</u>	<u>69.4</u>	<u>131.0</u>	<u>166.8</u>	<u>265.7</u>
Increase/(decrease) in working capital					
Stock	25.2	(23.3)	30.7	13.0	29.7
Debtors	6.2	(4.5)	50.6	31.5	156.5
Creditors	(9.4)	(31.0)	(39.7)	(33.1)	(107.9)
Provisions	(10.2)	(32.8)	(3.4)*	(24.2)*	9.8*
Net liquid funds	49.5	173.7	32.3	36.9	(138.8)
Sale of assets	61.3	82.1	70.5	24.1	(50.7)

Source: Plessey.

\* Provisions expected to be utilised within one year have been classified as working capital in the years to March 1983, 1984 and 1985.