APPENDICES

Appendix 1

Membership of Expert Group

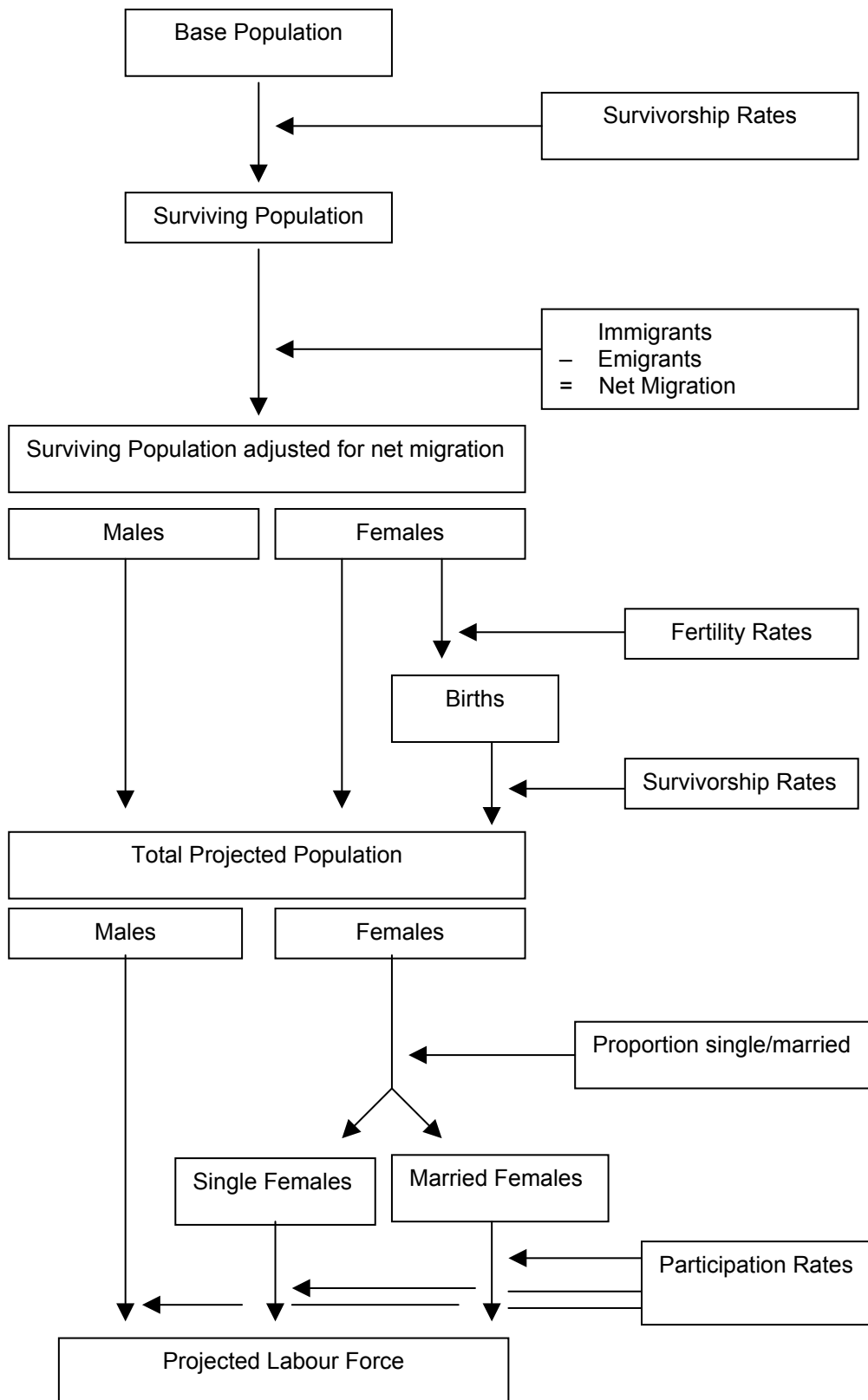|	
Gerry O'Hanlon Chairperson	Central Statistics Office
Aidan Punch	Central Statistics Office
Padraig Dalton	Central Statistics Office
Mary Heanue	Central Statistics Office
Francis McCann	Central Statistics Office
Helen Cahill Secretary	Central Statistics Office
Mary Dunne	Department of Education and Science
Tom Healy	Department of Education and Science
Marie Dempsey	Department of Enterprise, Trade and Employment
Owen O'Sullivan	Department of Environment and Local Government
Conn Creedon	Department of Finance
Marie Mackle	Department of Finance
Hugh Magee	Department of Health and Children
Ciara O'Shea	Department of Health and Children
Siobhan Lawlor	Department of Social, Community and Family Affairs
Paul Morrin	Department of Social, Community and Family Affairs
Gerry Cribben	Department of the Taoiseach
Damien Courtney	Cork Institute of Technology
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Brendan Walsh	University College Dublin

Appendix 2

Description of population and labour force projection model
2002 - 2036

Projections of the population have been compiled on an annual basis up to 2036. The model used is the demographic component method which projects the base 2002 population forward under the chosen assumptions governing births, deaths and net migration. This is illustrated graphically in Figure A.

The 2002 Census of Population data are first disaggregated by age and sex. The death and gross migration rates which these groups are assumed to experience in the following year are then applied. The assumed fertility rates are applied to the female population aged 15-49. The population projected in this way then becomes the base population for the following year. The whole procedure is repeated.

One hundred different single year age groups are distinguished (0-1 to 99+) for both males and females. After the base population is aged a year the appropriate survivorship ratios (see Appendix 3) are applied to it. Next the assumed migration effects are included. The assumed outward and inward flows are broken down by age and sex on the basis of the distributions estimated for the intercensal period 1996–2002. This yields the surviving population adjusted for net migration but without an estimate of the number of children born in the year. The age specific fertility rates for the projection year are applied to the projected female population to estimate the projected births. These births are then divided into males and females on the basis of the ratios experienced for recent years. The appropriate survivorship ratios are then applied to male and female births before these are added in to yield the total projected population.

The assumed labour force participation rates are applied to the projected population aged 15 years and over to give the projected labour force.

Figure A

Diagram of population and labour force projection model

```
┌─────────────────────┐
│   Base Population    │
└─────────────────────┘
           │                              ┌─────────────────────┐
           │◄─────────────────────────────│ Survivorship Rates  │
           ▼                              └─────────────────────┘
┌─────────────────────┐
│ Surviving Population │
└─────────────────────┘
           │                              ┌─────────────────────┐
           │                              │    Immigrants       │
           │◄─────────────────────────────│  −  Emigrants       │
           ▼                              │  =  Net Migration   │
┌──────────────────────────────────────┐ └─────────────────────┘
│ Surviving Population adjusted for net │
│ migration                            │
└──────────────────────────────────────┘
┌──────────────┐  ┌──────────────┐
│    Males     │  │   Females    │
└──────────────┘  └──────────────┘
       │                 │                ┌─────────────────────┐
       │                 │◄───────────────│   Fertility Rates   │
       │                 ▼                └─────────────────────┘
       │           ┌──────────┐
       │           │  Births  │
       │           └──────────┘
       │                 │                ┌─────────────────────┐
       │                 │◄───────────────│ Survivorship Rates  │
       ▼                 ▼                └─────────────────────┘
┌──────────────────────────────────────┐
│      Total Projected Population       │
└──────────────────────────────────────┘
┌──────────────┐  ┌──────────────┐
│    Males     │  │   Females    │
└──────────────┘  └──────────────┘
       │                 │                ┌─────────────────────────┐
       │                 │◄───────────────│ Proportion single/married│
       │              ╱     ╲             └─────────────────────────┘
       │         ┌──────────┐ ┌────────────────┐
       │         │  Single  │ │ Married Females│
       │         │ Females  │ │                │
       │         └──────────┘ └────────────────┘
       │              │            │            ┌─────────────────────┐
       │              │            │◄───────────│ Participation Rates │
       ▼              ▼            ▼            └─────────────────────┘
┌──────────────────────────────────────┐
│        Projected Labour Force         │
└──────────────────────────────────────┘
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Appendix 3

Glossary of technical terms

Age specific fertility rate: The age specific fertility rate for a particular age group is the number of live births to women in that age group per 1,000 females in the same age group.

Labour force participation rate: The number of persons at work or unemployed (either looking for first regular job or having lost or given up previous job) in a particular age group expressed as a percentage of all persons in that age group.

Life expectancy: The average number of additional years a person would live if current mortality trends were to continue. The expectation of life at birth represents the mean length of life of individuals who are subjected since birth to current mortality trends. Life expectancy is usually compiled on the basis of a life table showing the probability of dying at each age for a given population according to the age specific death rates prevailing in a given period.

Net Migration: The net effect of immigration and emigration. A positive entry denotes that inward migration exceeds outward migration and vice-versa.

Old dependency ratio: The population aged 65 years and over expressed as a percentage of the population aged 15-64 years.

Survivorship ratio: The survivorship ratio at age x, S_x, is calculated as

$$S_x = L_x / L_{x-1}$$

where L_x is the population aged between x and x+1 assuming that 100,000 births occur each year according to the Life Tables.

Total dependency ratio: The sum of the young and old dependency ratios.

Total fertility rate (TFR): The TFR represents the theoretical average number of children who would be born alive to a woman during her lifetime if she were to pass through her child bearing years (ages 15-49) conforming to the age specific fertility rates of a given year. The rate refers to a theoretical female cohort.

The TFR is compiled by summing the age specific fertility rates for the relevant five-year age groups, dividing by 1,000 and multiplying by 5. The small number of births for which the age of the mother is not stated is distributed in proportion to the stated categories.

Young dependency ratio: The population aged 0-14 years expressed as a percentage of the population aged 15-64 years.

Appendix 4

Availability of data

Detailed results of the projections are available in Excel and comma delimited formats on the Census area of the CSO website (see www.cso.ie/census.html). The detailed data files contain projections of the population for each year from 2002 to 2036 classified by sex and single year of age. Births, deaths and net migration are analysed by sex only. The detailed projections are provided for the six combinations of fertility and migration assumptions distinguished in the publication (i.e. M1F1, M1F2, M1F3, M2F1, M2F2 and M2F3).

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Appendix 5

SUPPORTING TABLES

Table A1   Population classified by sex at each census since 1841

Census year	Persons	Males	Females
	Thousands		
1841	6,529	3,222	3,306
1851	5,112	2,494	2,617
1861	4,402	2,169	2,233
1871	4,053	1,992	2,061
1881	3,870	1,912	1,958
1891	3,469	1,729	1,740
1901	3,222	1,610	1,612
1911	3,140	1,590	1,550
1926	2,972	1,507	1,465
1936	2,968	1,520	1,448
1946	2,955	1,495	1,460
1951	2,961	1,507	1,454
1956	2,898	1,463	1,435
1961	2,818	1,417	1,402
1966	2,884	1,449	1,435
1971	2,978	1,496	1,482
1979	3,368	1,693	1,675
1981	3,443	1,729	1,714
1986	3,541	1,770	1,771
1991	3,526	1,753	1,772
1996	3,626	1,800	1,826
2002	3,917	1,946	1,971

Table A2   Females in selected age groups at each census since 1926

Census year	Females aged 20-39 years	Females aged 15-49 years
	Thousands	
1926	404	709
1936	408	694
1946	413	704
1951	389	670
1961	313	598
1966	316	607
1971	339	627
1979	442	750
1981	466	780
1986	505	839
1991	501	869
1996	537	934
2002	618	1,032

Table A3   Life expectancy at various ages, 1925 - 2003

Period		0	5	10	30	40	50	60	70	80	90
		Age in years									

Period		Age in years									
		0	5	10	30	40	50	60	70	80	90
		Males									
1	1925-1927	57.4	59.5	55.2	38.4	30.4	22.7	15.8	10.0	5.8	3.3
2	1935-1937	58.2	60.1	55.8	38.5	30.3	22.4	15.5	10.0	6.0	3.1
3	1940-1942	59.0	60.7	56.3	38.9	30.6	22.5	15.4	9.6	5.7	3.6
4	1945-1947	60.5	61.5	56.9	39.2	30.6	22.4	15.1	9.2	5.3	3.2
5	1950-1952	64.5	63.6	58.8	40.3	31.3	22.8	15.4	9.2	5.0	2.7
6	1960-1962	68.1	65.7	60.8	41.7	32.4	23.5	15.8	9.7	5.1	2.5
7	1965-1967	68.6	65.7	60.8	41.7	32.2	23.4	15.6	9.7	5.2	2.6
8	1970-1972	68.8	65.5	60.6	41.5	32.1	23.3	15.6	9.7	5.4	2.8
9	1978-1980	69.5	65.7	60.8	41.7	32.2	23.3	15.7	9.5	5.3	2.9
10	1980-1982	70.1	66.1	61.3	42.1	32.6	23.6	15.9	9.7	5.4	2.9
11	1985-1987	71.0	66.8	61.9	42.7	33.1	24.0	16.0	9.7	5.3	2.8
12	1990-1992	72.3	68.0	63.1	43.9	34.4	25.2	17.0	10.4	5.8	3.0
13	1995-1997	73.0	68.6	63.6	44.5	35.1	25.8	17.5	10.6	5.9	3.0
14	2001-2003	75.1	70.7	65.7	46.5	37.0	27.8	19.2	11.9	6.5	3.3
		Females									
1	1925-1927	57.9	59.2	54.9	38.6	30.8	23.2	16.4	10.7	6.5	3.7
2	1935-1937	59.6	60.4	56.1	39.2	31.2	23.3	16.2	10.6	6.5	3.4
3	1940-1942	61.0	61.4	56.9	39.9	31.6	23.5	16.3	10.4	6.4	4.2
4	1945-1947	62.4	62.5	57.9	40.5	32.1	23.9	16.4	10.2	6.0	3.8
5	1950-1952	67.1	65.4	60.6	42.2	33.3	24.7	16.8	10.2	5.6	3.2
6	1960-1962	71.9	69.0	64.1	44.7	35.3	26.3	18.1	11.0	5.9	3.0
7	1965-1967	72.9	69.6	64.8	45.2	35.7	26.6	18.4	11.2	6.1	3.1
8	1970-1972	73.5	70.0	65.1	45.6	36.0	27.0	18.7	11.5	6.2	3.2
9	1978-1980	75.0	71.0	66.1	46.5	36.8	27.6	19.2	11.9	6.4	3.4
10	1980-1982	75.6	71.5	66.6	47.0	37.3	28.0	19.5	12.2	6.7	3.5
11	1985-1987	76.7	72.4	67.5	47.8	38.1	28.7	20.1	12.6	6.8	3.3
12	1990-1992	77.9	73.5	68.6	48.9	39.2	29.8	21.1	13.5	7.4	3.6
13	1995-1997	78.5	74.1	69.1	49.5	39.8	30.3	21.5	13.7	7.5	3.7
14	2001-2003	80.3	75.7	70.8	51.1	41.4	31.9	22.9	14.8	8.2	4.1

Table A4   Projected life expectancy at various ages, 2005 - 2037

Period		Age in years									
		0	5	10	30	40	50	60	70	80	90
		Males									
15	2005-2007	76.1	71.6	66.6	47.4	37.9	28.6	20.0	12.5	6.7	3.4
16	2010-2012	77.2	72.7	67.8	48.6	39.1	29.7	20.9	13.1	7.1	3.6
17	2015-2017	78.4	73.8	68.9	49.6	40.1	30.8	21.8	13.8	7.5	3.8
18	2020-2022	79.5	74.9	69.9	50.6	41.1	31.7	22.7	14.5	7.9	4.0
19	2025-2027	80.5	75.9	70.9	51.6	42.1	32.7	23.5	15.1	8.3	4.1
20	2030-2032	81.5	76.9	71.9	52.6	43.1	33.6	24.3	15.7	8.7	4.3
21	2035-2037	82.5	77.8	72.8	53.5	44.0	34.5	25.1	16.4	9.0	4.5
		Females									
15	2005-2007	81.1	76.6	71.6	51.9	42.2	32.7	23.6	15.3	8.5	4.3
16	2010-2012	82.1	77.5	72.6	52.9	43.1	33.6	24.5	16.0	9.0	4.6
17	2015-2017	83.1	78.5	73.5	53.8	44.1	34.5	25.3	16.7	9.5	4.9
18	2020-2022	84.1	79.4	74.5	54.7	45.0	35.4	26.1	17.4	9.9	5.2
19	2025-2027	85.1	80.3	75.4	55.7	45.9	36.3	26.9	18.1	10.4	5.5
20	2030-2032	86.0	81.2	76.2	56.5	46.8	37.1	27.7	18.7	10.9	5.8
21	2035-2037	86.9	82.1	77.1	57.4	47.6	38.0	28.5	19.4	11.4	6.2

Table A5   Labour force participation rates, 1991 - 2016 (%)

Age group	Actual*				Assumed		
	1991	1996	2002	2004	2006	2011	2016
Males							
25 - 29	93.1	92.1	91.5	91.9	93.0	93.0	93.0
30 - 34	94.7	94.8	93.8	93.1	93.0	93.0	93.0
35 - 39	93.6	93.9	93.8	93.2	93.0	93.0	93.0
40 - 44	92.2	92.8	92.1	93.0	93.0	93.0	93.0
45 - 49	90.3	89.7	89.8	91.8	93.0	93.0	93.0
50 - 54	86.0	84.3	85.4	86.2	88.0	88.5	89.0
55 - 59	74.9	72.6	75.2	75.5	77.0	78.0	79.0
60 - 64	55.6	51.8	55.7	54.9	57.0	59.0	61.0
65 and over	16.5	15.3	15.1	13.7	16.0	17.0	18.0
Married females							
25 - 29	55.1	66.8	65.7	68.3	69.0	71.0	71.0
30 - 34	47.2	59.8	65.7	64.4	68.0	71.0	74.0
35 - 39	40.2	55.4	61.3	62.6	66.0	69.0	74.0
40 - 44	35.3	49.9	64.0	64.5	68.0	70.0	73.0
45 - 49	31.5	41.8	61.6	62.3	64.0	69.0	71.0
50 - 54	26.6	35.2	50.5	56.0	60.0	64.0	67.0
55 - 59	20.0	26.5	37.2	41.2	43.0	50.0	52.0
60 - 64	11.7	14.8	21.5	23.7	24.0	28.0	30.0
65 and over	2.5	2.6	2.9	2.9	4.0	5.5	6.0
Other females							
25 - 29	86.7	85.3	86.6	83.1	83.0	84.0	85.0
30 - 34	82.8	83.7	84.8	82.5	83.0	84.0	85.0
35 - 39	78.8	80.8	80.8	78.0	80.0	82.0	82.0
40 - 44	73.2	79.7	79.6	76.0	79.0	80.0	81.0
45 - 49	73.2	78.0	73.4	71.9	73.0	74.0	75.0
50 - 54	65.5	69.3	66.3	64.3	65.0	66.0	66.0
55 - 59	55.3	55.3	47.1	53.6	54.0	56.0	58.0
60 - 64	34.8	35.4	37.7	37.3	38.0	40.0	41.0
65 and over	6.6	5.8	4.1	3.8	5.0	6.0	6.0

* Source: Labour Force Surveys 1991, 1996; Quarterly National Household Surveys 2002, 2004

Table A6   Actual and projected labour force, 1991 - 2016

Year	Males	Females			Persons
		Married	Other	Total	
	Thousands				
Actual*					
1991	879.4	244.1	230.9	475.0	1354.4
1996	925.1	322.1	260.2	582.3	1507.4
2002	1076.6	414.5	349.8	764.3	1840.9
2004	1119.6	442.9	357.8	800.7	1920.3
M1					
2006	1170.5	462.7	394.7	857.4	2027.9
2011	1261.3	525.6	432.9	958.5	2219.7
2016	1336.7	574.6	462.2	1036.8	2373.6
M2					
2006	1170.5	462.7	394.7	857.4	2027.9
2011	1242.8	520.9	422.5	943.4	2186.2
2016	1280.5	557.6	432.2	989.8	2270.3

* Source: Labour Force Surveys 1991, 1996; Quarterly National Household Surveys 2002, 2004