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Water Supply Project
Eastern and Midlands Region

Summary of Demographic Projections

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Summary of Demographic Projections

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REV 2

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Introduction and Terms of Reference

The focus of this study is on demographic assessment, with the objective of examining a range of pre-defined growth scenarios for State and regional population projections out to 2050, as the basis for the estimation of water demand. When modified, these scenarios may also be applied to supply-demand assessments for other major infrastructure projects.

Population projections have been prepared for the Planning Regions[1] and the State, out to 2050. These are done as per the last census for the base year 2011, with projections for 2021, 2026, 2031, 2041, 2046 and 2050. Years 2031 and 2046 respectively, represent the furthest dates used for the CSO Regional and State Population Projections.

The projections are primarily based on the CSO Projections - based on the most relevant CSO projections for the Planning Regions out to 2031, and then by way of providing Regional 'best fits' in respect of the CSO's State projections to 2046 and finally, to projecting them forward to 2050.

The Study Area

For the purpose of establishing the maximum possible supply requirement, these Demographic Projections are based upon a spatial configuration that envisages a project to supply a Defined Water Supply Zone – consisting of Dublin City and surrounding counties - and an adjoining area of the midlands that stretches as far west as Tipperary and West Meath (Demand and Corridor Area). [See Map in Part Two]

All other alternative spatial configurations and technical options are likely to serve smaller areas and smaller populations – accordingly this 'maximum area' is the basis for examination – in accordance with best practice for impact assessment purposes.

In the case of every Projection, a standardised table layout shows regional population data in three 'sets', one each for the Planning Regions affected by the Demand and Corridor areas and a third set pertaining to the rest of the State's Planning Regions including areas outside of the Demand and Corridor areas. The CSO Projections are expressed in thousands, to one decimal point.

Regard is had to the projections prepared by RPS in 2010 as detailed in *The Plan Water Supply Project – Dublin Region Appendix A*.

[1] There are 8 planning regions in Ireland. The Regional Authorities coordinate certain local authority activities and play a monitoring role regarding the use of EU Structural Funds.

The projections are presented in two parts:

Part One

Regional Population projections under four scenarios 2011 – 2050

Part Two

Population Projections under four scenarios for Demand Areas 2011 – 2050

Part One

Regional Population projections under four scenarios 2011 – 2050

1.1 Introduction

This section of the report sets out regional population projections for a range of scenarios for the years 2021, 2026, 2031, 2041, 2046 and 2050. Years 2031 and 2046 respectively represent the furthest dates used for current CSO Regional and State Population Projections. By way of interpolation with additional application, related projections for the intermediate dates, which are anticipated to coincide with the likely years for future census taking, have also been provided. The CSO projections inform the projections for the defined project areas as discussed in Part Two of this Report. A summary of the demographic assumptions used in the CSO projections is included in Appendix 1 of this report.

1.2 The Scenarios

The Scenarios[2] used for these assessments are:

- A Planned Growth Scenario, providing for both 'High' and 'Low' population variations;
- A Most Likely Growth Scenario;
- A Minimum Expected Economic Growth Scenario;
- A Maximum Expected Economic Growth Scenario, providing for both 'High' and 'Low' population variations.

A detailed description of the assumptions underlying these scenarios is included in Appendix 2 of this report.

1.3 Scenario 1: The Planned Growth: Providing both 'high' and 'low' set of Population Projections

Commencing with the **'High'** variation, this Scenario anticipates that the likely political objective of the forthcoming National Spatial Strategy, as in the case of the 2002-2020 NSS, will seek to achieve a balanced approach to developing all areas of the country. This would again, pursue a policy of decreasing Dublin's agglomeration momentum by seeking to distribute some activities to the Rest of State (RoS) area.

[2] The Scenarios are informed by the explanatory Texts and Tables content of the April 2013 Report from the CSO on Population and Labour Force Projections for the State, to April 2046 together with their Regional Population Projections to 2031, published in December 2013. These Projections have been published by the CSO and its Expert Group.

The 'best fit' for this Planned 'High Growth' variation is adjudged to be CSOs **M2F2 'Traditional'** projection where the 2031 Regional totals replicate those of the CSO State Projections of April 2013 and the CSO Regional Projections of December 2013.

Table 1: Regional Analysis M2F2 Traditional Planned (High)

	2011	2021	2026	2031	2041	2046	2050
Dublin	1,262.0	1,364.8	1,441.9	1,519.0	1,660.0	1,706.4	1,745.3
Mid-East	534.0	591.6	634.8	678.0	729.7	750.0	766.9
Midlands	284.0	294.0	301.5	309.0	327.8	336.4	343.6
Mid-West	378.0	390.8	400.4	410.0	420.1	431.1	440.3
Border	516.0	522.8	527.9	533.0	545.5	559.9	571.9
South-East	499.0	519.4	534.7	550.0	572.8	587.9	600.5
South-West	662.0	690.4	711.7	733.0	770.8	788.0	802.5
West	441.0	447.0	451.5	456.0	464.4	475.5	484.8
State	**4,576.0**	**4,820.8**	**5,004.4**	**5,188.0**	**5,491.0**	**5,635.2**	**5,755.8**
GDA Total	1,795.0	1,956.4	2,076.7	2,197.0	2,389.7	2,456.4	2,512.2
GDA Share	**39.23%**	**40.58%**	**41.50%**	**42.35%**	**43.52%**	**43.59%**	**43.65%**

Source: M2F2 'Traditional'
Note: Rounding to nearest decimal may result in some totting differences.

Here it is noted that there is just a moderate increase in the GDA's share of State population as at 2046 and 2050 which is consistent with the strategic objective of 'balance'.

However, the **'Low'** side variation of this Planned Growth Scenario also disregards the emerging reality for many rural counties and because of their absence of large settlements – that would tend not to have population-absorptive capacity with wider employment opportunities. In the current economic recessionary conditions, such counties are reported to be experiencing excessive unemployment leading to sharp reversals with migration in an outward direction which counterbalances the urban-based, mainly Dublin in-migration, i.e. a prospect of zero State migration out to 2050. Confirmation of such possible, sharp, reversals will have to await the outcome of the 2016 census. Here, the assumption made in this 'low' variation for State, is for modest, balanced growth for Dublin as is projected in the CSO **M2F2 'Recent'** Projection, with higher RoS area regional growth. There is no change in the State total for 2046. The principal distinguishing characteristic between this 'High' Table 1 and the 'Low' variant Table 2 is that the 'Low' variant is based on the 'Recent' growth pattern of the CSO's M2F2 Regional 2031 Projections.

Accordingly this 'low' Scenario will support a return to the 'Recent' pattern of growth, as opposed to the 'Traditional' population growth choices of 'high', which would otherwise result in much more robust growth for the GDA and particularly for Dublin. Thus for Table 2

Dublin's population is considerably lower, counterbalancing the growth anticipated for other regions.

Table 2: Regional Analysis M2F2 Recent Planned (Low)

	2011	2021	2026	2031	2041	2046	2050
Dublin	1,262.0	1,346.0	1,409.0	1,472.0	1,574.6	1,623.9	1,666.9
Mid-East	534.0	578.0	611.0	644.0	693.6	717.6	736.6
Midlands	284.0	306.8	323.9	341.0	358.0	366.1	374.8
Mid-West	378.0	385.6	391.3	397.0	424.7	437.9	448.4
Border	516.0	529.2	542.1	555.0	578.0	588.8	602.9
South-East	499.0	525.8	545.9	566.0	590.7	602.3	616.7
South-West	662.0	706.5	728.8	751.0	792.3	811.9	831.3
West	441.0	449.4	455.7	462.0	479.0	486.7	498.3
State	**4,575.0**	**4,827.3**	**5,007.7**	**5,189.0**	**5,491.0**	**5,635.2**	**5,776.0**
GDA Total	1,795.0	1,924.0	2,020.0	2,116.0	2,268.2	2,341.5	2,406.5
GDA Share	**39.23%**	**39.86%**	**40.34%**	**40.78%**	**41.31%**	**41.55%**	**41.66%**

Source: M2F2 Recent

Note: Rounding to nearest decimal may result in some totting differences.

In comparing between 'high' and 'low' variants of Scenario 1 outcomes for 2046 and 2050, as would be expected it is observed that the GDA share of population is notably greater for the 'High' Planned Growth Scenario than for the 'Low' option of this first considered Scenario. However, in both instances the strategy of 'balance' is deemed to be generally effective in 'controlling' the GDA percentage population share.

As to the balance within the GDA between Dublin and the Mid-East share of future population, throughout this Study, the view is taken that despite rising fuel/ transportation costs, the market differential in Dublin residential values will persist, unless very considerable long-term improvement is made in boosting the supply of the capital's affordable housing stock. Thus, there will continue to be a Von Thunen/ Alonso spatial trade-off between residential market value and distance. Unfortunately, this need to exchange 'affordability' for distance will do little to reduce medium and long-distance commuting into the capital.

Nevertheless, acknowledgement must be given to increasing awareness of the spatial advantages of 'sustainable living', facilitated by compact urban morphologies, in reducing home-to-work, college and school journey times/ distances, in the quest to achieve the optimum land-use/ transportation interface. Here, developments in public transport will be a key determinant. Hence the next Scenario examines the optimistic prospect of market-led growth.

1.4 Scenario 2: A Most Likely Growth Scenario:

This market and economy-driven Scenario reflects the patterns of evidence-based demographic growth as is evident from the trends of recent censuses particularly that of 2011 and of the emerging recovery patterns of the Irish economy. Whilst not as robust as the outcome from Scenario 4, nevertheless this 'Most Likely Growth Scenario' envisages a greater GDA growth pattern, driven by consolidated FDI clusters and a recovering building industry, enhancing Dublin's 'Agglomeration effect'. Development of this **M2F2 'Modified'** Projection from 2031 to 2046 and 2050 results in Table 3, thus:

Table 3: Regional Analysis M2F2 Modified

	2011	2021	2026	2031	2041	2046	2050
Dublin	1,262.0	1,376.4	1,462.2	1,548.0	1,690.9	1,760.2	1,824.2
Mid-East	534.0	578.0	611.0	644.0	692.8	716.4	739.3
Midlands	284.0	302.8	316.9	331.0	351.0	360.5	367.8
Mid-West	378.0	382.4	385.7	389.0	398.4	402.6	410.8
Border	516.0	525.6	532.8	540.0	552.5	558.1	563.5
South-East	499.0	520.2	536.1	552.0	574.7	585.3	593.2
South-West	662.0	692.0	714.5	737.0	774.7	792.6	804.7
West	441.0	443.8	445.9	448.0	456.1	459.6	463.9
State	**4,575.0**	**4,820.6**	**5,004.8**	**5,189.0**	**5,491.0**	**5,635.3**	**5,767.4**
GDA Total	1,795.0	1,954.4	2,073.2	2,192.0	2,383.7	2,476.6	2,563.5
GDA Share	**39.23%**	**40.54%**	**41.42%**	**42.24%**	**43.41%**	**43.95%**	**44.45%**

Source: M2F2 Modified

Note: Rounding to nearest decimal may result in some totting differences.

Prior to discussing these results, it is instructive to describe the methodology for this Table 3 construction, which, likewise, is used for the other Scenario Tables. All figures 2031-2050 are shown in thousands to one place of decimals, in line with the CSO projections. The 2011-2031 data provides the regional growth for that 20 year period. The intermediate assessments for 2021 and 2026 are apportioned as to 40% of the 2011 to 2031 growth occurring by 2021 and the remaining 60% split 30-30 for each of these five-year periods. Each of the 2031-2046 Regional Projection figures together with the 2046 regional populations are proportional to each individual region's growth outcome for the 2011-2031 period.

The figures for 2050 are based on a State total figure which continues the 2031-2046 population growth for each region, again achieved by a multiplier-based interpolation technique which is first applied to the CSO projections for regional growth 2011-2031.

As noted for the Maximum Expected Growth which is the last Scenario 4, the above M2F2 Projection results in robust growth and a high share of total State population with the GDA 2046 and 2050 percentage shares at 43.95% and 44.45%, respectively. Likewise, the Dublin Region population also exhibits robust growth due to the anticipated urban agglomeration effect for a metropolitan city region.

By way of contrast, the next Scenario 3, is prefaced by a Scenario-description for poor economic performance.

1.5 Scenario 3: Minimum Expected Economic Growth:

For this Scenario, it is assumed that Ireland has found it difficult to escape both its public and private debt-burden and as a consequence, financial resources have been very limited for job creation purposes. Resolution of residential mortgage and buy-to-let debt issues has retarded economic recovery and growth. Enterprise has been stultified and high unemployment has persisted. Foreign Direct Investment growth is limited. Consequently, restricted inward migration has been insufficient to balance larger out-migration movement.

Unsettled world political and economic conditions have not been conducive to assisting Ireland's dependency on export-led growth. Accordingly **M3F2**-type conditions prevail, wherein migration remains negative throughout the lifetime of these projections.

The following Table 4 encapsulates the thrust of this Minimum Expected Economic Growth Scenario, thus:

Table 4: Regional Analysis M3F2

	2011	2021	2026	2031	2041	2046	2050
Dublin	1,262.0	1,300.0	1,328.5	1,357.0	1,379.9	1,387.9	1,396.1
Mid-East	534.0	565.2	588.6	612.0	629.8	637.4	644.1
Midlands	284.0	300.8	313.4	326.0	335.9	339.7	343.3
Mid-West	378.0	378.0	378.0	378.0	378.0	378.0	378.0
Border	516.0	519.6	522.3	525.0	527.6	527.9	528.7
South-East	499.0	518.2	532.6	547.0	558.4	562.6	566.8
South-West	662.0	683.2	699.1	715.0	727.9	732.2	736.8
West	441.0	438.2	436.1	434.0	433.3	431.7	431.1
State	**4,575.0**	**4,703.2**	**4,798.6**	**4,894.0**	**4,970.8**	**4,997.4**	**5,024.5**
GDA Total	1,795.0	1,865.2	1,917.1	1,969.0	2,009.7	2,025.3	2,040.2
GDA Share	**39.23%**	**39.66%**	**39.95%**	**40.23%**	**40.43%**	**40.53%**	**40.61%**

Source: CSO 2046, M3F2 Recent

Note: Rounding to nearest decimal may result in some totting differences.

This is observed as the lowest population projection, where the State total of 4,997.4 (thousand) matches CSO Table 6 in 2046. Both Dublin and Mid-East's share of State populations, as at 2046 and 2050, show only minor changes from their respective 2011 shares. Such a scenario reflects minimum expected economic growth, including some regional loss of population, as is projected for the West Region. Both youth and family-formation-age and persistent high unemployment has reflected in a depressed birth rate that has fallen back to the European norm.

1.6 Scenario 4: Maximum Expected Economic Growth:

As detailed in Appendix 2, the setting for this Scenario has regard to the urban agglomeration effect as is reflected in additional growth for the GDA *vide* CSO Area Volume, which are apportioned in proportion to their 2011 settlement population (Table 7), thereby contributing to the State's maximum expected economic growth.

As in the format for Scenario 1, this scenario sets out two variants, a lower one Table 5 and a higher variant in Table 6. In purposely setting the greater growth projection in Table 6, both the 2046 and 2050 figures for the GDA together with the GDA components of Dublin and the Mid-East, also reflects superior fertility growth, which would contribute to a 2046 State population of 5,907.3 thousand, which is in line with the CSO's **M2F1** (Table 3) projection as at 2046 and 6,068.0 thousand as at 2050.

It has to be noted that such projections point to population levels that are well above those of their Tables 4 and 6, which form the basis for the CSO M2F2 and M3F2 Regional Projections to 2031. Such levels of growth are dependent upon achieving a greater GDA projection resulting from the 'urban agglomeration' effect for that area of State as is supported in the emerging literature of the New Economic Geography, *vide* Fujita and Thisse, (2013).

Post 2031, in line with world trends, it is expected that cities will contain most of a country's population. At 2011 in Ireland, its cities only comprise one-third of State population. If RoS regions are to grow and to be viable, expansion of its cities will be pivotal – regions without cities will continue to languish. Thus all three identified 'Areas' and especially the two mainly RoS-based ones must be likely to experience more city-concentrated populations.

Accordingly the high-growth Scenarios anticipate and accommodate such city-led growth and this is reflected in their post-2031 accelerations of population. The 'Low' variation of Scenario 4 shows the GDA share of State population increasing to 42.75% in 2046 and to 42.84% in 2050. The 5,907.3 (thousand) projection for 2046 is similar to the CSO M2F1 projection, per Table 3 of April 2013. This Scenario assumes that world geo-political conditions have been conducive to Ireland's strong economic performance, reflected in its steady net inward migration and robust natural growth. Furthermore, the urban agglomeration effect has been particularly conducive to greater GDA population performance, driven by similar critical-mass urban growth throughout that metropolitan city

region, complemented by the increasing importance of the Dublin-Belfast Corridor. Such a scenario is expressed in the following M2F1 Regional Projection.

Table 5: Regional Analysis M2F1 at 2046

	2011	2021	2026	2031	2041	2046	2050
Dublin	1,261.0	1,377.9	1,470.5	1,553.2	1,680.8	1,745.6	1,796.6
Mid-East	534.0	597.7	647.7	693.3	750.8	780.0	803.0
Midlands	284.0	296.8	307.5	316.0	338.9	347.8	361.4
Mid-West	378.0	394.5	408.3	419.2	448.0	462.8	474.5
Border	516.0	527.6	538.1	545.0	579.3	602.9	618.4
South-East	499.0	524.4	545.3	562.4	603.0	622.3	638.3
South-West	662.0	697.0	725.7	749.5	807.3	830.7	852.5
West	441.0	451.1	460.3	466.3	494.6	515.2	528.3
State	**4,575.0**	**4,901.0**	**5,103.4**	**5,293.5**	**5,702.7**	**5,907.3**	**6,068.0**
GDA Total	1,795.0	1,975.6	2,118.2	2,246.5	2,431.6	2,525.6	2,599.6
GDA Share	**39.23%**	**40.31%**	**41.51%**	**42.44%**	**42.64%**	**42.75%**	**42.84%**

Source: CSO 2046 M2F1
Note: Rounding to nearest decimal may result in some totting differences.

As mentioned above, a higher variant for Scenario 4 is next considered where, with an additional urban agglomeration effect due to inward migration pressure, the State population reaches 6,421.2 (thousands) by 2046 as per the CSO **M1F2** Projection. This 'High' variant is the only M1 parameter addressed in this Study and as at 2046 the projected population is some 8.7% greater than the Scenario 4 'Low' projection as at that year.

It is noted that the CSO does not provide guidance Regional Projections for M1-type growth even to 2031, and therefore the Study's approach is to take the highest available 2031 Regional figures as per Table 5 above and to reflect subsequent growth as an urban agglomeration effect that applies primarily to Ireland's cities.

In the final scenario for which there is no regional CSO guidance, as portrayed in the next Table 6 are shown levels of principally city-led urban agglomeration occurring after 2031. This is generated by higher employment and sustained levels of external in-migration into city regions leading to steep population growth. This would result in a minor reduction in the difference between this Study and that of RPS in 2010. However, for the first period after 2011 the major portion in the gap between the higher RPS projection and this Study arises because of the sharp reversal, in the direction to State out-migration after 2009 and out to 2018. Table 6 is set out thus:

Table 6: Regional Analysis M2F1 at 2031 and moving to M1F2 thereafter

	2011	2021	2026	2031	2041	2046	2050
Dublin	1,261.0	1,377.9	1,470.5	1,553.2	1,813.8	1,947.8	2,053.0
Mid-East	534.0	597.7	647.7	693.3	811.8	879.7	937.0
Midlands	284.0	296.8	307.5	316.0	354.0	372.3	383.3
Mid-West	378.0	394.5	408.3	419.2	474.7	491.5	501.3
Border	516.0	527.6	538.1	545.0	617.4	640.1	660.7
South-East	499.0	524.4	545.3	562.4	637.3	659.2	680.3
South-West	662.0	697.0	725.7	749.5	850.9	885.0	910.5
West	441.0	451.1	460.3	466.3	527.5	545.6	566.1
State	**4,575.0**	**4,901.1**	**5,103.4**	**5,293.5**	**6,087.4**	**6,421.2**	**6,692.3**
GDA Total	1,795.0	1,975.6	2,118.2	2,246.5	2,625.6	2,827.5	2,990.0
GDA Share	**39.24%**	**40.31%**	**41.51%**	**42.44%**	**43.13%**	**44.03%**	**44.68%**

Source: CSO M2F1 Modified to 2031 and accelerating to State M1F2 levels by 2046

Note: Rounding to nearest decimal may result in some totting differences.

Commenting on Ireland's recent growth 'reversal', this could not have been anticipated at the time of the RPS publication in 2010 and account for this Study's use of the more recent CSO projections of 2013 with their lower future population growth estimates.

New levels of sustained net in-migration to the GDA would be required after 2031 together with an historic level of regional population growth to 'justify' the above Table 6 shift-share in order to achieve its 44.03% and 44.68% of State population by 2046 and 2050: *i.e.* requiring as large a step-change in the long-term share of State population; one which last occurred intercensal 1961-1981. That twenty year GDA step-change was 5.31%, increasing its share of State population from 32.16% to 37.47%. Nevertheless, it is plausible, that a similar step-change increase in the GDA share could occur again given that 2046 is thirty years after 2011 rather than just twenty years as in 1961-1981.

However, such happenings would run counter to current NSS strategic policy and would likewise require a successful, major housing supply intervention, particularly for Dublin. That is not to ignore the current momentum of sustained rural to urban migration for younger adults, particularly to the cities.

Part Two

Population Projections under four scenarios for Demand Areas 2011 – 2050

2.1 Introduction

As noted in the *Terms and Reference* section of this Report for the purpose of establishing the maximum possible supply requirement, these Demographic Projections are based upon a spatial configuration that envisages a project to supply a Defined Water Supply Zone – consisting of Dublin City and surrounding counties - and an adjoining area of the midlands that stretches as far west as Tipperary and West Meath. [See Figures 1 and 2 below]

All other alternative spatial configurations and technical options are likely to serve smaller areas and smaller populations – accordingly this 'maximum area' is the basis for examination – in accordance with best practice for impact assessment purposes.

Projections have also been undertaken for the remainder of the State, in order to build up a complete picture of future population growth.

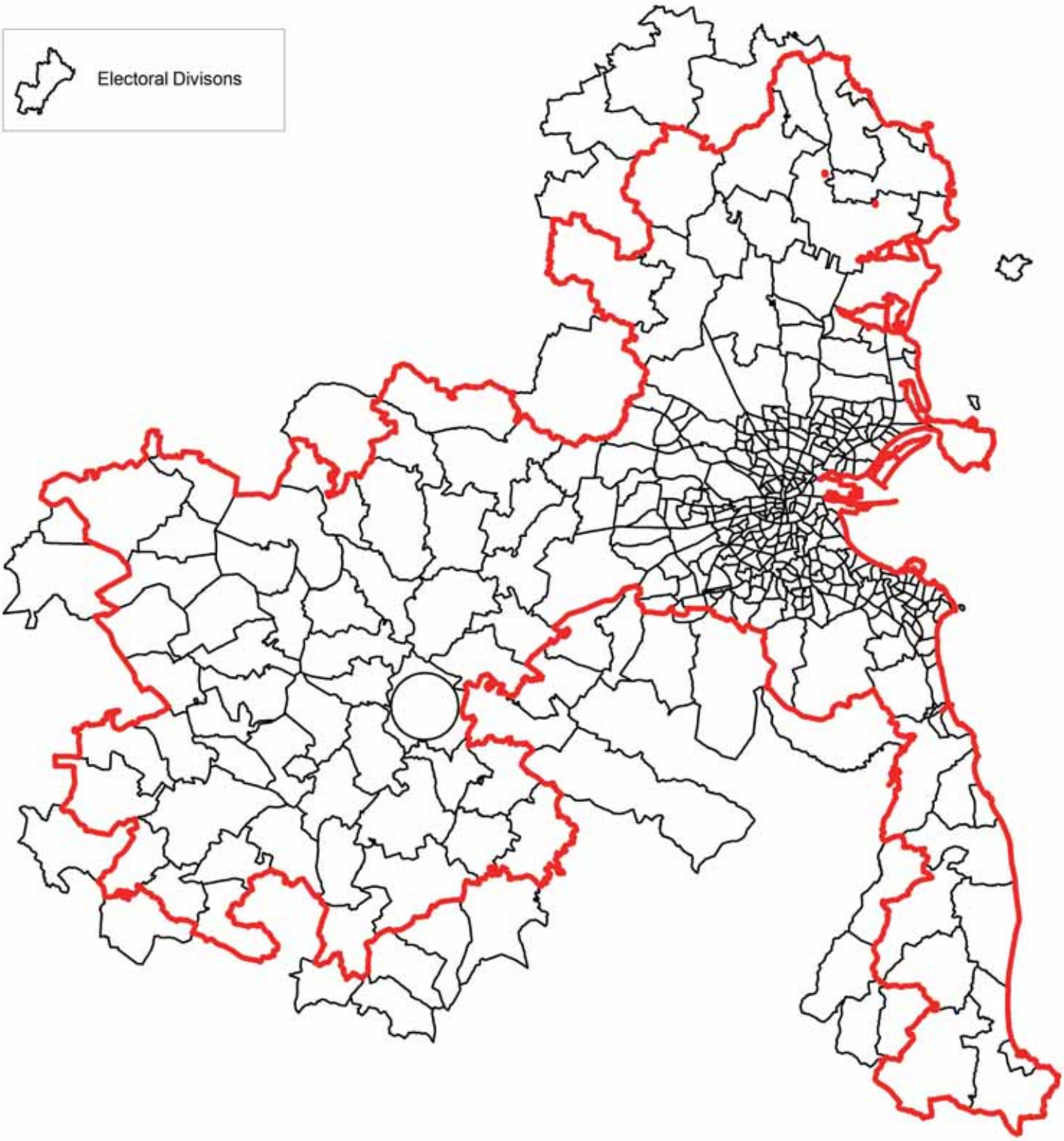
Thus, the areas for which the projections have been undertaken are as follows:

Defined Water Supply Zone (Area 1): This area generally comprises a majority of the GDA counties as identified in section 2.2 below. This area comprises the defined water supply zone, the water demands of which will be met by this infrastructure project. See figure 1 below for details.

Corridor of Benefit (Area 2): This area includes the Counties of North Tipperary, Offaly, Laois, Westmeath and parts of Counties Kildare, Meath and South Dublin not included within Area 1. The project will serve to secure water supply for these areas in combination with existing water supply schemes. See figure 2 for details.

Residual of State (Area 3): This area comprises the remainder of the State not included within Areas 1 and 2 as identified above.

Figure 1: Defined Water Supply Zone (Area 1)



2.2 Demand Area 1

Demand Area 1[3]: comprises a majority portion of the GDA counties. They are shown in the following Schedule with 2011 census population data as:

Table 7: Demand Area 1

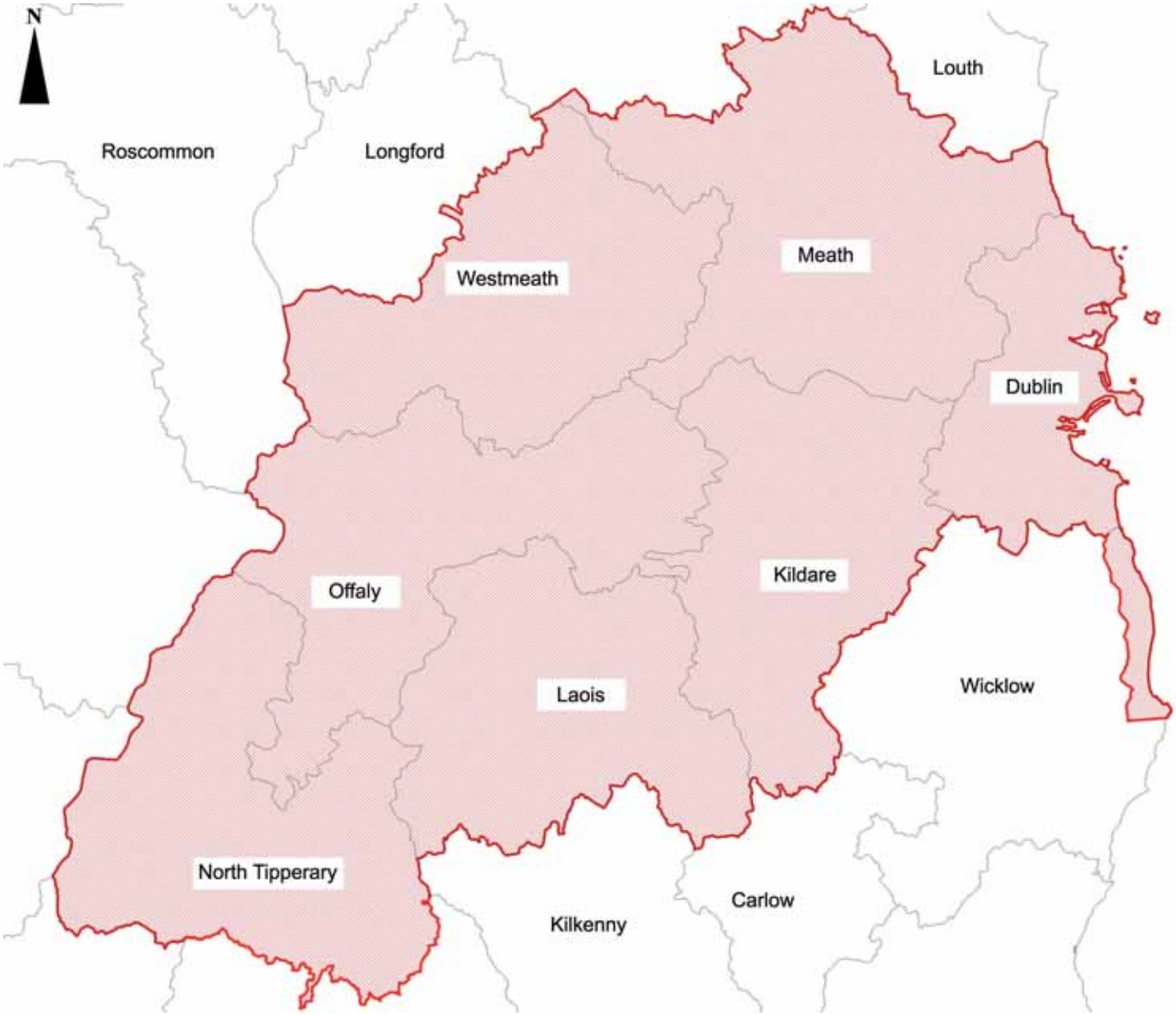
Schedule of Counties **Area 1:Defined Water Supply Zone**	**2011** **Populations**	**Portion of County [ED based]** **County %**
Wicklow: comprising 15 EDs	68,869	50.40%
Kildare: comprising 52 EDs	172,865	82.19%
Meath: comprising 3 EDs	22,594	12.27%
Dublin (excluding 5 EDs in South Dublin 21,264)	1,251,805	98.33%
Total Area 1	**1,516,133**	**84.04% of GDAs 1,804,156 population**

Source: CSO 2011 Census Area Volume.

In summary, the 2011 demand population for Area 1 is **1,516,133,** which is 84% of the total GDA population of 1,804,156.

[3] **Map reference: Jacobs 32105800-DA1/ R01a/002b**:

Figure 2: Corridor of Benefit (Area 2)



2.3 Demand Area 2

Demand Area 2 – the Corridor of Benefit[4]

Table 8: Schedule of Regions and Counties for Area 2: The 'Corridor of Benefit'

Schedule of Regions for Area 2: Corridor of Benefit		2011 Populations	Percentage of County [County-level Corridor]
Region	**Counties**	**County Pop**	
Mid-West	North Tipperary	70,322	100.00%
Midlands	Laois, Offaly & Westmeath	243,410	100.00%
Mid-East	Kildare excluding 52 EDs	37,447	17.81%
Mid-East	Meath, excluding 3 EDs	161,541	87.73%
Dublin	Dublin, including 5 EDs in South Dublin	21,264	1.67%
Total Area 2		**533,984**	
% of State 2011 Pop.		11.64%	

Source: CSO Regional Populations at 2011 Census

Note: North Tipperary (as it was for Census 2011) is the only Mid-West county. Longford is excluded from the Midlands Region. The GDA content = 220,252. A residual 67,771 for Wicklow's mainly 'whitelands' is in the Area 3, separate to the 15 ED Area with a population of 68,869 in Area 1.

[4] **Map Reference Jacobs 32105800-DA1/ Ro1a/008**

2.4 Area 3

Area 3 comprises the Rest of State (excluding Areas 1 and 2).

Table 9: Schedule of Area 3

Region/County	2011 Population
Border	514,891
South-West	664,534
South-East	497,578
West	445,356
Residual Wicklow	67,771
Longford	39,000
Clare	117,196
Limerick	191,809
Residual of State Total	**2,538,135 (55.32% of State population)**

Source: CSO Area Volume 2011, Tables 1 and 4.

2.5 Area Based Summary Tables for Demand Areas at 2011, 2021, 2026, 2031, 2041, 2046 and 2050

Table 10: Scenario 1(a): Planned Growth 'High' M2F2 Traditional

Areas	2011	2021	2026	2031	2041	2046	2050
1	1,516,133	1,644,072	1,745,167	1,846,262	2,008,198	2,064,250	2,111,142
2	533,984	565,383	590,181	614,978	655,486	672,981	687,614
3	2,538,135	2,611,345	2,669,052	2,726,760	2,827,316	2,897,969	2,957,044
Totals	**4,588,252**	**4,820,800**	**5,004,400**	**5,188,000**	**5,491,000**	**5,635,200**	**5,755,800**

Table 11: Scenario 1(b): Planned Growth 'Low' M2F2 Recent

Areas	2011	2021	2026	2031	2041	2046	2050
1	1,516,133	1,616,845	1,697,519	1,778,193	1,906,095	1,967,693	2,022,316
2	533,984	563,647	586,430	609,291	646,914	664,789	681,862
3	2,538,135	2,646,808	2,723,752	2,801,516	2,937,991	3,002,718	3,071,822
Totals	**4,588,252**	**4,827,300**	**5,007,700**	**5,189,000**	**5,491,000**	**5,635,200**	**5,776,000**

Table 12: Scenario 2: Most Likely Growth M2F2 Modified

Areas	2011	2021	2026	2031	2041	2046	2050
1	1,516,133	1,642,391	1,742,226	1,842,060	2,003,156	2,081,225	2,154,252
2	533,984	564,676	589,693	614,710	655,058	674,430	692,296
3	2,538,135	2,613,533	2,672,881	2,732,230	2,832,786	2,879,645	2,920,851
Totals	**4,588,252**	**4,820,600**	**5,004,800**	**5,189,000**	**5,491,000**	**5,635,300**	**5,767,400**

Table 13: Scenario 3: Minimum Expected Economic Growth M3F2 Recent

Areas	2011	2021	2026	2031	2041	2046	2050
1	1,516,133	1,567,432	1,611,046	1,654,661	1,688,863	1,701,973	1,714,494
2	533,984	548,491	560,620	572,749	582,435	585,898	589,719
3	2,538,135	2,587,277	2,626,934	2,666,591	2,699,502	2,709,530	2,720,287
Totals	**4,588,252**	**4,703,200**	**4,798,600**	**4,894,000**	**4,970,800**	**4,997,400**	**5,024,500**

Table 14: Scenario 4 (a): Maximum Expected Economic Growth (Low) M2F1

Areas	2011	2021	2026	2031	2041	2046	2050
1	1,516,133	1,660,207	1,780,042	1,887,859	2,042,149	2,122,403	2,184,589
2	533,984	575,934	601,886	603,487	676,937	701,954	721,427
3	2,538,135	2,664,859	2,721,473	2,802,154	2,982,115	3,082,944	3,161,984
Totals	**4,588,252**	**4,901,000**	**5,103,400**	**5,293,500**	**5,701,200**	**5,907,300**	**6,068,000**

Table 15: Scenario 4 (b): Maximum Expected Economic Growth (High) M2F1 moving to M1F2 after 2031

Areas	2011	2021	2026	2031	2041	2046	2050
1	1,516,133	1,660,207	1,780,042	1,887,859	2,206,438	2,376,106	2,512,664
2	533,984	576,034	584,286	603,487	724,995	768,879	804,507
3	2,538,135	2,664,859	2,721,473	2,802,154	3,155,967	3,276,215	3,375,129
Totals	**4,588,252**	**4,901,100**	**5,085,800**	**5,293,500**	**6,087,400**	**6,421,200**	**6,692,300**

Source: Tables 1-6 Population Projection data.

2.6 Final Study Conclusions

These contrasting population projections reflect the established natural growth differences wherein since 1996 the GDA's natural growth has almost matched that of the RoS area, despite their size difference. Furthermore, the employment trends favouring city regions are becoming more pronounced.

Any study of population projections beyond 15-20 years needs to be qualified by noting that future societal norms may differ, especially with reference to unknowable total fertility rates for birth mothers, some of whom are not yet born. Both economic and spatial planning strategic policy options are also likely to play significant roles in the direction of Ireland's future growth. Likewise, the influence of outcomes of two-way migration will continue to impact on Ireland's demographic growth where both Irish and international economic performance will be major determinants.

Accordingly for this Study it is emphasised that the strategic approach was to utilise the available CSO 2011 census population projection documentation as the 'spinal structure' upon which all six projection tables are based. Specifically, the CSO Regional Projections to 2031 served to inform all projections up to and including that year. All subsequent date projections utilised the State projections to 2046. Thus the projections herein avoid using other methodologies than those that are deployed by the CSO.

Appendices

Appendix 1

Assumptions

The following Summary of demographic assumptions is used in the CSO Projections, [P. 23 CSO, April 2013]

Fertility:

F1: TFR (total fertility rate) to remain at the 2010 level of 2.1 for the lifetime of the projections.

F2: TFR to decrease to 1.8 by 2026 and to remain constant thereafter.

Mortality:

Mortality rates are assumed to decrease which will result in gains in life expectancy at birth from:

- 77.9 years in 2010 to 85.1 years in 2046 for males
- 82.7 years in 2010 to 88.5 years in 2046 for females

Migration:

M1: Net migration returning to positive by 2016 and rising steadily thereafter to plus 30,000 by 2021

- -19,100 annual average per annum in 2011-2016
- +18,200 annual average per annum in 2016-2021
- +30,000 per annum in 2021-2046

M2: Net migration returning to positive by 2018 and rising slowly thereafter to plus 10,000 by 2021

- -21,600 annual average per annum in 2011-2016
- +4,700 annual average per annum in 2016-2021
- +10,000 per annum in 2021-2046

M3: Net migration remaining negative for the whole period

- -25,100 annual average per annum in 2011-2016
- -10,000 annual average per annum in 2016-2021
- -5,000 per annum in 2021-2046

Appendix 2

1: <u>Planned Growth Scenario:</u>

- Fairly even rate of economic growth throughout the eight planning regions of State as per the eight-point European Spatial Development Perspective's *Balanced Regional Development* (Box 1.1, P.12, National Spatial Strategy).
- That the revised National Spatial Strategy (NSS) will continue to be informed by the principles of Balanced Regional Development (BRD).
- Evidence of balanced growth within and between the regions.
- 'Trickle-down' effect from larger settlements to small towns, villages and rural areas.
- Balanced Foreign Direct Investment (FDI) and SME (Small and Medium Enterprise) new-firms and expansions with at least 50% of new FDIs establishing outside of Dublin plus Cork.
- Assumption that many of the 2002-2020 lists of Gateways and Hubs (G&H) are retained under the revised NSS.
- Although and despite the post-Celtic Tiger recovery is already a Dublin-led one, this scenario assumes that such recovery will quickly spread to all regions.
- State authorities are successful in implementing BRD, in their policy to attract some jobs to other regions.
- Reinforcement of the polycentric model of deflecting both populations and increased employment to G&Hs is successful.
- Such inclusive, sustainable, growth will result in reducing medium and long-distance commuting patterns and in creating critical mass.
- Assumption that such Planned Growth can be maintained against a background of a favourable, stable international economic environment.
- Dublin and Mid-East's growth will follow the CSO 'Recent' model-trend and accordingly the GDA share of State population will stabilise at a 39-41% level.
- Acceptance that this 'steady as we go' approach will result in moderate levels of growth, with a slow but gradual recovery in economic activity, but without much of the dynamic growth characteristics of the 'Celtic Tiger' era.
- Less recognition is attributed to the growth potential of the Dublin-Belfast Economic Corridor and the eastward demographic–drift.

- Likewise, there is little recognition of the emerging Urban Agglomeration growth phenomenon of the Dublin Metropolitan City Region.

- There is little or no public policy strategy to grow Ireland's cities and the propensity for cities to flood again is cited as a barrier to focusing on a continuing political indifference towards them and to their growth potential.

- There is little or no recognition of the importance of 'the city' as the economic engine of a planning region.

2: <u>Most Likely Growth Scenario:</u>

- This scenario seamlessly flows from the current pattern and thrust of Ireland's economic recovery, evidenced from the last eight Quarterly National Household Survey (QNHS) data and echoing the thrust of the 2013 ESRI Medium Term Report.

- Having exited the 'Troika' and regained economic sovereignty, Ireland has recovered its 'Investment Grade' status, with broad-funded international exchequer funding at competitive rates of interest.

- There is a gradual recovery in banking liquidity, albeit with continuing constraints on lending to the SME sector, for Mortgages and for the private sectors.

- Government efforts to obtain the write-off of the €68Bn of Bank Recapitalisation are not yet resolved.

- Dublin leads the State's economic recovery, with growth in house prices, commencement of a number of major infrastructure investment projects, coupled with increasing evidence of private sector starts.

- Improved discretionary spending, as evidenced in a strengthening retail market, with new car and big-ticket sales recovery.

- Further progress in the major economic indicators: in employment, GDP, stock market growth, SME start-ups and in enterprise creation.

- Strong growth in IDA-announced FDI projects, with specific cluster consolidation, particularly in the Dublin area.

- Some evidence of such growth also occurring in Cork and Galway, with some other locations being announced.

- This growth scenario sees consolidation of the CSO 'Traditional' growth pattern with the GDA is expected to increase its share of State population from the 39.32% level in the 2011 census to the mid-40%s by 2031.

- In contrast to the more even-spread BRD pattern of the first-listed, Planned Growth Scenario, this Most Likely Growth one, gives full recognition to the urban agglomeration momentum resulting in 'lumpiness' rather than to BRD.

- Accordingly, Dublin's growth becomes more pronounced, and the consequent spill-over effect likely to benefit other major centres of population.

- Likewise, overall growth becomes imbalanced with the West and Border Regions exhibiting lower growth, reflecting their relative absence of major growth settlements.

- It is recognised that this scenario, whilst matching Ireland's current economic recovery, will gradually undergo political resistance because of its 'unbalance' effect and in the perceived slowness in the 'trickle-down' effect.

- Nevertheless, this current perception reflects the optimum growth scenario of what is likely to occur. Accordingly, the direction of public policy implementation is the most favourable strategy to Ireland's recovery and to the probability of maintaining the current pattern of accelerated economic recovery on a 'steady as she goes' basis.

3: **Minimum Expected Economic Growth Scenario:**

- This minimum expected economic growth scenario sets the country back for a ten-fifteen year period as the short-term recovery - the emerging growth-trend since 2012 quickly peters out.

- Such scenario results from both international political and economic instability and risk-aversion to investment decision-making coupled with Ireland's failure to make progress in reducing its high debt-to-GDP ratio, combined with a final rejection on the quest to recoup its bank-legacy debt.

- Ireland's mortgage-debt problem is brought to the fore, with a large increase in foreclosures with dispossessions, a critical shortage in social housing and a continuing stagnation in housing construction. Paradoxically, some housing remains unoccupied, particularly in Western and Border areas.

- International pressures result in the abolition of the 12.5% corporate tax rate for FDI-type activity and combined with the Pharmaceutical 'Patent Cliff', this results in plant closures with a marked reduction in employment. Accordingly, Ireland's exports experience sharp decline, generating severe balance-of-payments pressures.

- Rising World interest rates associated with the international economic and fiscal uncertainties result in a marked increase in Ireland's debt-service burden, with little domestic investment-resource capacity being available for job creation.

- A collapse in world agricultural produce prices presents little opportunity to give relief to Ireland's ailing and ageing farming community of mainly price-takers.

- World tourism also suffers due to the uncertain security situation and threatened crisis. Many hotels, particularly in rural areas are closed/ for sale.

- Mid-Eastern countries' civil strife is heightened with several theatres of internecine Islamic conflict, threatening energy supplies and greatly increasing supply-uncertainty with sharp-rising energy prices. Russian conflicts affecting several former peripheral Soviet territories, increasingly results in civil strife with sporadic interruption to Russian Gas supplies to Western Europe.

- Several Irish general elections occur in quick succession reflecting political instability and failures in attempts to form 'unity-governments'. Opposing Left-Right approaches become more radicalised with weakening of the political middle ground.

- Significant multi-annual bouts of net outward migration exceed natural growth where the economic depression results in sharp reductions in Ireland's birth rate. The outcome is population loss for the first time since inter-censal 1986-1991 combined with the 'at work' total falling back to under 1.5 million.

- The economic despond is pervasively negative, evocative of the mid-late 1950s.

- Some political and social unrest – coupled with rising crime make Ireland an unattractive place to live and there is increasing evidence of entire families who can afford to emigrate, actually doing so.

- The country becomes increasingly ungovernable and its 'Junk Bond' status returns.

- There are marked increases of areas experiencing either urban or rural poverty.

- Social welfare cuts are combined with severe pensions' crisis and GDP shrinks for several years. There is a severe loss in private wealth and discouraging investment as GDP decline averages of - 2% to -3% per annum.

4: **Maximum Expected Economic Growth Scenario:**

- Ireland's low density combined with its high GDP per capita makes it increasingly attractive as a location in line with the overall momentum for world migration. By 2050, the United Nations Population estimate – subject to long-term fertility trends – will see a further 2.5 billion growth added to its 2011 population of 7.2 billion. Most such growth will be urban and will see a large increase in city-size.

- The world economic background strengthens post-2014, with favourable economic conditions for trade, deregulation and Ireland's continuing strong export demand.

- Obtaining a final, favourable settlement to its Bank-Legacy debt in 2015, Ireland's debt-to-GDP ratio position moves closer to 90%, resulting in a strengthened bargaining position for the National Treasury Management Agency (NTMA) to raise future funding at more favourable terms, including renegotiation and renewal of some existing Bond-terms.

- Early return to 'Celtic-Tiger' economic growth is broad-based with multi-sector growth benefitting the entire State. This growing 'can do' mind set results in broader urban economic growth, with spill-over from the cities in core-periphery fashion to the regions.

- This momentum will be somewhat curtailed due to commuting costs and the spatial imperative to locate residences closer to employment, school and college locations.

- Without over-heating the economy, it experiences large single-figure GDP growth on a multi-annual basis, resulting in a reduction to the 90% ratio well before the 2020 target with sustained improvement, including the liquidation of National Asset Management Agency (NAMA) and a revived National Pension Fund Reserve.

- The Mortgage crisis is eased as more people are back at work and realistic schemes of Mortgage Settlements have been devised and enthusiastically taken up. Broad-based residential Market Values are restored to c. 75% of 2006-07 levels and incidences of negative equity are reduced to just 15-20% of previous peak levels.

- Further progress is made North-South in developing the Dublin-Belfast (DB) Economic Corridor coupled with the decisions to complete the Dublin Motorway to Derry and the upgrade of the DB railway line. Strong local links are achieved for Sligo-Enniskillen and for Derry-Letterkenny resulting in robust settlement growth.

- Drogheda's agglomeration with Bettystown-Laytown-Mornington, with its combined 2016 population exceeding that of Waterford City, results in its formal establishment as Ireland's sixth city. Further robust growth of DB Corridor settlements sees Swords, Balbriggan and Dundalk as Ireland's largest town settlements. Thus the overall

eastward trend in the island's population continues with a growth level of two-to-three times that of the west of the island, (both North and South).

- With a continuation of the present liberal EU Immigration policy, the all-Island population of 6.4 million of April 2011 continues to expand at a compound annual growth rate of 1.7% per annum, to reach 7.6 million by April 2021. The DB Corridor area now accounts for over 4 million of the island population.

- Ireland is increasingly recognised as an attractive third-level education base, attracting a large (export) growth to its international student numbers. Both DIT and UCD provide Dublin with significant-sized (+20,000) campus populations, in addition to those of TCD and DCU (12,000-15,000). Specifically, the increase in the Engineering and Built Environment Programmes student numbers reflects both the recovery in these industries and in their contribution to Ireland's progress.

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