



New Towns Analysis

Phase II

Final Report

8th October 2007

Foreword

Bord Gáis Networks is undertaking a review of towns that are currently not connected to the national gas network. All regions are being taken into consideration.

Reviews completed in the years 1996 & 2001 found that it was not feasible to bring gas to towns remote from the existing network.

A new Network Connections Policy was adopted in April 2006, allowing towns to be amalgamated into a regional group and subsequently appraised as a single project. Extended payback periods of 25 years have also been taken into account. The New Towns Analysis Phase I Report was published in October 2006 identifying 11 towns which proved viable for connection to the grid when analysed in a single group. Bord Gáis Networks is currently progressing the design and construction of these pipelines.

This Phase II report contains the results of a further 15 towns and a review of updated data for Ballinrobe, a non-viable town in Phase I. A Phase III report will contain the results of the remaining 34 towns and will be completed in mid to late 2008.

The analysis will avail of the opportunity to economically assess regional groups, consisting of towns, which may otherwise be uneconomical on their own.

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Executive Summary

Bord Gáis Networks is conducting a comprehensive review of towns currently being considered for connection to the national natural gas network. The principle objective of the study is to determine the economic viability of connecting these new towns to the network, in accordance with the new Network Connection Policy. This report of 15 new towns in 5 distinct groups, and a review of one town from phase 1, comprises the second phase of the study to connect potential towns, following the publication of the Phase I Towns Report in October 2006.

An estimate of each town's potential gas demand has been established. The impact of forecasted population growth and the resultant rise in industrial / commercial activities has been factored into the study. The infrastructure necessary to meet this demand has been determined and a subsequent cost benefit analysis has been undertaken for each town.

The Phase I Report on the Mayo Galway towns was issued to the CER and the Department of Communications, Marine and Natural Resources in October 2006 in which 11 towns proved viable for connection to the grid when analysed as a single group. Following the publication of this report, a Phase II study commenced in January 2007. Forty-nine additional towns were identified and it has been decided to complete the analysis of the first 15 of these towns in this Phase II report, with the remaining 34 towns scheduled for completion in a Phase III report in 2008.

The towns analysed in Phase II of this study are as follows:

- | | |
|-------------|-----------------------|
| ➤ Cashel | ➤ New Ross |
| ➤ Cahir | ➤ Enniscorthy |
| ➤ Thurles | ➤ Gorey |
| ➤ Loughrea | ➤ Monasterevin |
| ➤ Gort | ➤ Mountmellick |
| ➤ Dungarvan | ➤ Mountrath |
| ➤ Youghal | ➤ Abbeyleix |
| ➤ Wexford | ➤ Ballinrobe (review) |

Based on the analysis to date, the towns of Cashel, Cahir, Monasterevin, Gort, Loughrea and Ballinrobe, subject to load uptake especially anchor loads, qualify for connection to the natural gas grid. Anchor loads are critical to the viability of most towns due to their positive impact on the Net Present Value (NPV), and as such the timing and roll-out to those towns will be on a phased basis dependent on load uptake, especially anchor loads, in individual towns.

The town of Ballinrobe was re-examined following submission of new information on potential customer loads in the towns, particularly the large anchor industrial load and new housing projections. The towns of Ballinrobe, Gort and Loughrea qualify when examined as part of the enlarged Phase I towns group using the published 2007/08 tariffs and 2007/08-2011/12 rate of return.

Monasterevin town, when taken in conjunction with planned reinforcements to the Kildare and Portlaoise networks, is viable for connection to the gas network.

The result for a stand-alone solution to supply the town of Tipperary was to be published in this report, however, further analysis is required. When available, the analysis for Tipperary town will look to take into account the potential benefits of supplemental NPV from other towns in Co. Tipperary within this report. The results will form part of the delivery of the remaining towns in the Phase III study.

The towns that will be examined in the Phase III report, due for completion in mid to late 2008, are outlined in the map provided at the end of this executive summary.

Potential extensions and connections to the Natural Gas Grid continue to be evaluated and constructed on an ongoing basis in accordance with the Network Connection Policy, independent of the current studies being undertaken.

Summary Results for Phase II Towns:

Viable Towns	Distribution NPV (€m)	Transmission NPV (€m)	Total NPV (€m)	NPV / Therm
Cashel	€0.47	€2.76	€3.23	€23.36
Cahir	-€0.04	€1.01	€0.97	€14.94
Gort*	€0.22	-€0.32	-€0.10	-€2.53
Loughrea*	-€1.58	€1.23	-€0.35	-€6.10
Ballinrobe*	-€2.36	€1.31	-€1.05	-€17.15
Monasterevin (Reinforcement Option)	€0.57	€1.28	€1.84	€23.32

* When included in Phase I grouping.

Non - Viable Towns	Distribution NPV (€m)	Transmission NPV (€m)	Total NPV (€m)	NPV / Therm
Mountmellick	-€3.41	€0.75	-€2.66	-€75.82
Mountrath	-€3.53	€0.50	-€3.03	-€129.44
Abbeyleix	-€4.01	€0.70	-€3.31	-€101.00

Non - Viable Grouped Towns	Distribution NPV (€m)	Transmission NPV (€m)	Total NPV (€m)	NPV / Therm
Cashel and Thurles	-€4.34	-€7.61	-€11.95	-€67.13
Youghal and Dungarvan	-€4.26	-€3.68	-€12.94	-€68.28
Enniscorthy, Wexford, Gorey and New Ross	-€22.14	-€13.37	-€35.51	-€104.22

Summary Costs Estimates:

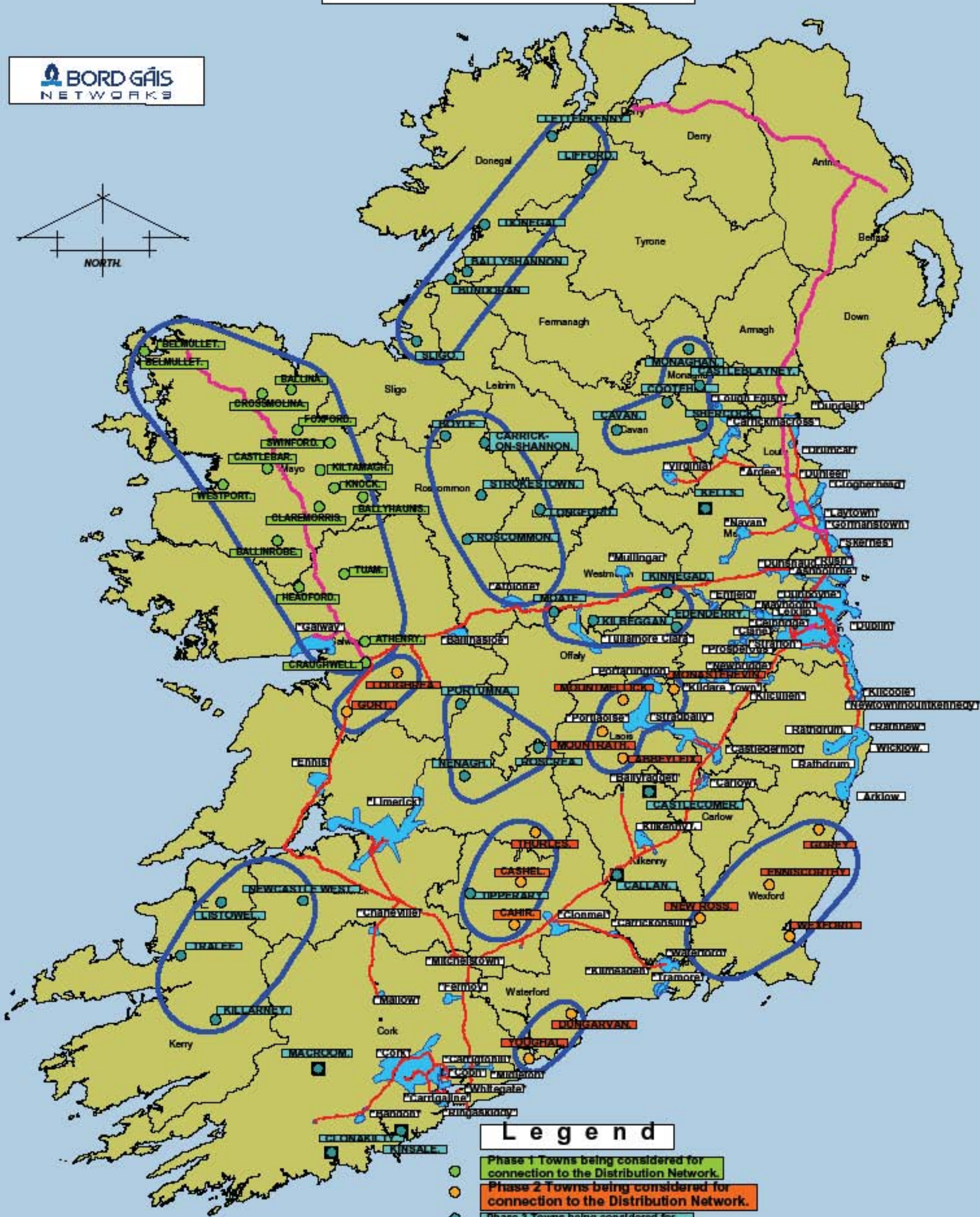
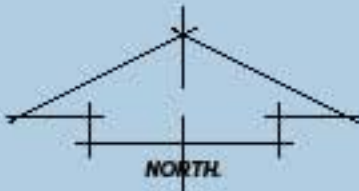
Viable Towns	Total CAPEX Costs**
Cahir	€2,564,583
Cashel	€4,650,407
Gort	€2,051,606
Loughrea	€3,543,058
Monasterevin	€6,187,520
Ballinrobe	€3,956,916
CAPEX Total:	€22,954,090

** The above capex costs do not include for meter and service costs.

Overall Map

The overall map shown has been modified to take into account examination of group boundaries that best match the most likely physical connectivity of towns and common sharing of infrastructural and operational costs, towns grouped because of their close proximity to each other and the inclusion of additional towns to the overall list.

**BORD GAIS NEW TOWNS ANALYSIS .
PHASE 1,2 & 3 TOWNS .**



Legend

- Phase 1 Towns being considered for connection to the Distribution Network.
- Phase 2 Towns being considered for connection to the Distribution Network.
- Phase 3 Towns being considered for connection to the Distribution Network.
- Phase 3 Single location for consideration.
- Area location for consideration.
- Existing Distribution Network.

Distribution Network Areas.
Scale: Not to Scale
Plot Date: 19/09/07
Drg. No.: SK / 540g

1. Assumptions of Analysis

Load Analysis:

The following assumptions were made to forecast the gas consumption in each town.

1. New Housing Estimated Annual Consumption E.A.C.

The number of new residential connections was forecast for each town by Bord Gáis Networks New Connections Section for the next 10 years. The EAC for each new residential connection is 15,240kWhs (Bord Gáis Networks standard average value per unit).

2. Existing Housing and Non-Gas Estates

Existing housing in towns has not been included in the study as due to the necessity for expensive open cutting of mains and services, the subsequent costs negatively affect the NPV of the project. Existing Housing estates can be evaluated individually under the non-gas estate policy at a later date should the town involved proceed.

3. Anchor loads

The timing of Anchor loads is critical to the viability of most towns due to their positive impact on the Net Present Value, and as such the timing and roll out of towns will be on a phased basis dependent on load uptake, especially anchor loads, in individual towns.

4. Industrial / Commercial Loads.

Each town was surveyed and a list of potential users was compiled with estimated loads for each. Potential industrial / commercial customers were divided into four groups depending on estimated annual consumption (load) as follows.

Contract Customers	Above 150,000 Th / 4,395MWh
Large I/C	40,000 Th /1,172MWh to 150,000 Th / 4,395MWh
Medium I/C	7,000 Th /200MWh to 40,000 Th / 1,172 MWh
Small I/C	Under 7,000 Th / 200 MWh.

As all existing I/C customers may not connect to the natural gas network certain assumptions needed to be made on customer uptake. IC load uptake was revised to take account of a potential economic slowdown in the coming years. As a result the following uptake rates were generally assumed.

Contract Customers and large I/C	80% Uptake over the first 3 Years.
Medium I/C	40% Uptake over the first 5 Years.
Small I/ C	20% Uptake over the first 7 Years.

The uptake percentages outlined above were used as a guide in estimating resultant load uptake and slight variations are possible depending on the load makeup in a particular town.

5. Peak Hourly and Peak Day Load

One Standard Cubic Metre per hour was used as the peak hourly demand for each new housing customer.

Peak Day Load for the Industrial / Commercial customers was forecast using the following swing factors:

Up to 73,000 kWh	EAC - 2.79
73001 - 750,000 kWh	EAC - 2.41
750,001 - 2,000,000 kWh	EAC - 2.27
2,000,001 - 3,000,000 kWh	EAC - 2.02
3,000,001 - 4,000,000 kWh	EAC - 1.82
Above 4,000,000 kWh	EAC - 1.69

6. Network Design

(a) Pipe sizing for Transmission mains was based on the forecasted loads, and the minimum design pressure at the offtake point from the existing network.

(b) Pipe sizing for Distribution mains was based on an operating pressure, a minimum pressure of 2 Bar for each town network and on the forecasted load data.

(c) Pipe sizing for the low pressure Distribution network was based on an operating pressure, a minimum pressure of 30 millibar for each town and on the above load data.

Potential Large I/C and Contract Customers in the towns were consulted with regard to future expansion plans and these loads were catered for in the network design.

Note: For the purposes of this analysis, it was assumed that the earliest initial start date for construction of the new lines would be June 2008.

Construction Costs:

Construction cost estimates are based on rates currently used by Bord Gáis Networks for carrying out similar work and are reflective of rates contained in a recent tender process.

Operating Costs:

Allowance has been made for relevant incremental operating costs including first response, call out costs and sales costs. The estimates of those costs are reflective of the current cost levels.

7. Business Modelling:

Appraisal is based on the framework outlined in the Connections Policy, i.e.:

1. Project is appraised over 25 years in real terms;
2. Customer contributions are calculated in accordance with the connection policy (i.e. €220 per connection for residential and 30% of meter and service capex costs for I&C connections);
3. All relevant transmission and distribution costs and 100% of transmission (exit and entry) and distribution revenues are included;
4. Common capex and opex costs (e.g. pipelines, AGI's, first response costs) are allocated to towns based on current project requirements where possible;

5. Transmission revenues are based on 2007/8 tariff rates, which are assumed to remain flat in real terms;
6. Distribution revenues are based on 2007/8 tariff rates, which are assumed to remain flat in real terms and are applied to average load profiles for each customer;
7. A Discount rate of 5.2% pre-tax real is used, based on the current regulated rate of return;
8. Towns are selected / grouped using the criteria outlined in the terms of reference such as;
 - Positive NPV towns are automatically included
 - Negative towns are included in descending order
 - If two towns are equally negative then their connection is based on their NPV/therm
 - Total NPV of the group must be positive

Sensitivity Analysis

Sensitivity analysis has been undertaken to assess the impact of varying costs and volumes on the results of the six viable towns.

Costs

Analysis was carried out with variations of +/- 5% in construction costs and +/- 10% in operating costs. When a variation in capex and opex of +5% and +10% respectively was applied to the six viable towns the results were that Cashel, Cahir and Monasterevin still retained a positive NPV. The increased capex and opex had a negative effect on the towns of Gort, Loughrea and Ballinrobe, but there is a contingency across the capex and opex costs that would cover some if not all of the shortfall for Gort, Loughrea and Ballinrobe. If the costs decreased by 5% for capex and 10% for opex then the NPV for all of the six viable towns would improve and they would all become more viable.

Volumes

Some sensitivity analysis has been carried out on the phasing of the large I&C loads. If all the proposed large IC loads were delayed by 2 years this would result in an overall negative NPV for the Phase I towns of €3.01m affecting the new towns of Ballinrobe, Gort and Loughrea while Cashel, Cahir and Monasterevin would still retain positive NPV results. If the payback period were increased to 30 years then an additional NPV of approximately €2.24m would be recouped.