DETERMINATION OF MERGER NOTIFICATION M/06/039 – KINGSPAN/ XTRATHERM

Section 21 of the Competition Act 2002

Proposed acquisition by Kingspan Group plc of Leanort Group

Dated 25/10/06

The Competition Authority
An tÚdarás Iomaíochta

CONTENTS

SECTION ONE: INTRODUCTION

The Notification

1.1 On 26 June 2006 the Competition Authority, in accordance with Section 18(1) of the Competition Act, 2002 ("the Act") was notified, on a mandatory basis, of a proposal whereby Kingspan Group plc ("Kingspan") would acquire the entire issued share capital and sole control of the Leanort Group ("Leanort").

The Undertakings Involved

1.2 Kingspan, the acquirer, is a public limited company which is listed on the Irish and London Stock Exchanges. Kingspan is active in the manufacture and supply both in the State and worldwide of a range of building products to the construction industry.

1.3 Kingspan has six primary divisions:

- Insulation;
- Insulated panels;
- Environmental containers;
- Raised access floors;
- Structural steels framing solutions; and,
- Timber frame structures

1.4 With respect to insulation, Kingspan is active in the production and sale of polyurethane ("PU") and polyisocyanurate ("PIR") insulation boards in Ireland and the UK. Kingspan is also active in PU and PIR block and pipe sections and in phenolic board and pipe sections. It has manufacturing plants at Castleblaney, County Monaghan and Pembridge, Hereforshire in the UK.

1.5 Leanort, the target, is a privately owned group of companies established by Eoghan Hynes and other employees of the group. Leanort is active in the insulation industry and trades under the names 'Xtratherm' and 'Hytherm.'

1.6 Leanort is active in the production and sale of PU and PIR insulation boards in Ireland and the UK. Leanort is also active in the production of expanded polystyrene ("EPS") insulation products. It has manufacturing plants at Navan, County Meath and Chesterfield in the UK.[1]

The Transaction

1.7 In the share purchase agreement dated 26 June 2006, Kingspan agreed to purchase the entire issued share capital of Leanort. This will result in Kingspan acquiring sole control over Leanort.

[1] EPS is produced in the Navan plant only; PU/PIR is manufactured in both plants.

1.8 The total consideration for the transaction is €[.] million which includes:

- [.];
- [.]; and,
- [.]

[.].

Ancillary Non-compete Clause

1.9 Clause 9 of the share purchase agreement contains restrictions on each of [.] from competing with the business being transferred to Kingspan for a period of two years within both the State and the UK.

Rationale for the Notified Transaction

1.10 In Section 1 of the economic report submitted by RBB Economics ("RBB"), with the Notification, on behalf of Kingspan it stated that the acquisition of Xtratherm's UK production facility provides access to spare production capacity in a UK market that is expected to grow significantly over the next few years. It also stated that the transaction was expected to yield cost savings associated with freight transport incurred in the UK. Paragraph 2.7 of the Notification Form further states that "the objectives of the transaction for Kingspan relate primarily to the UK insulation sector".[2]

The Procedure

Phase 1: Preliminary Investigation

1.11 Pre-notification meetings took place between the Competition Authority and the undertakings involved on 13 February 2006 and 19 May 2006.

1.12 The Competition Authority was notified of the proposed transaction on 26 June 2006. During its initial investigation the Competition Authority interviewed producers of PU/PIR both in the State and in other EU Member States, producers of other insulation materials, builders merchants and architects. Having considered the materials submitted with the notification including an economic report provided by RBB as well as the information provided by third parties, the Competition Authority was unable to form the view that the result of the proposed transaction would not be to substantially lessen competition in markets for goods and services in the State.

1.13 On 25 July 2006, the Competition Authority determined, in accordance with Section 21(2) of the Competition Act, 2002, to carry out a full investigation under Section 22 of the Competition Act, 2002.

Phase 2: Full Investigation

1.14 During the Phase 2 or full investigation the Competition Authority issued written questionnaires to market participants, including but not

[2] In the Section 3 below, on relevant geographic market, the Competition Authority has defined the island of Ireland (i.e. the State plus Northern Ireland) as a separate market to Great Britain.

limited to: manufacturers of PU/PIR machinery; architects; buyers and distributors of insulation products; and, producers and potential producers of PU/PIR. The Competition Authority also sought submissions from interested third parties. Table 1 below provides details of the number of questionnaires issued by the Competition Authority and the number of responses, by category of market participant.

Table 1
Competition Authority Phase 2 Questionnaires, by Category of Market Participant: Number Issued and Number of Respondents

Category of market participant	Number of questionnaires issued	Number of respondents
PU/PIR producers in the State	3	3
PU/PIR producers in another Member State	3	3
Manufacturers of PIR machinery	3	2
Producers of 'other' insulation products	2	2
Buyer groups	3	2
Builders merchants	26	4
Specialist insulation distributors	7	2
Architects	6	1

Source: the Competition Authority

1.15 The market participants were selected so as to ensure that the Authority would have a set of responses on which it could rely in characterising competition in PU/PIR and other insulation products. In some instances the Authority relied on the undertakings involved to provide suitable market participants, while in others the Authority used its own sources.[3] In terms of coverage:

- All PU/PIR producers[4] and suppliers of PU/PIR machinery into the State;
- The major producers of other insulation products, buyer groups and builders merchants`, and specialist insulation distributors in the State;
- A small sample of architects in the State; and,
- Three important PU/PIR producers outside the State,

[3] For example, the Authority was able to draw on the experience and knowledge gained in the Grafton/Heiton merger to inform the set of builders merchants that should be surveyed. See, Competition Authority, *Proposed Acquisition by Grafton Group plc of Heiton Group plc*, M/04/051, 17 February 2005.
[4] It should be noted that Kingspan was not sent a questionnaire. It provided much of the information required in the Notification Form. However, additional requests were made to Kingspan for information.

were surveyed. The response rate varied across the different categories of market participant, with high response rates for PU/PIR producers (i.e., 100%) and lower response rates for architects and builders merchants (i.e., 15/17%). However, the response rate of 15% for builders merchants is understated in that 14 questionnaires were sent to three builders merchants (i.e., a combination of the head office and individual outlets).[5] If these 14 questionnaires are treated as, in effect, three, then the response rate for builders merchants rises to 27%.[6]

1.16 The Competition Authority regularly consulted with Kingspan's representatives Arthur Cox, and with Xtratherm and provided updates on issues that were relevant to the investigation. The Competition Authority met with Kingspan together with Arthur Cox and RBB Economics on 24 August and 19 September 2006, and held a conference call with Xtratherm on 21 September, during which the undertakings involved had an opportunity to discuss these issues with the case team.

1.17 On 13 September 2006 Kingspan agreed to the deferring of the Assessment for a week until 26 September 2006.[7] On 25 and 26 September Xtratherm and Kingspan respectively agreed to a further extension until 29 September to allow the Competition Authority time to consider further submissions by the undertakings involved.

1.18 One third party summons was issued to Mr Paddy Mohan, Sales Director, Quinn Group under Section 31 of the Act. The hearing took place in the Authority's offices on 28 September 2006.

1.19 The Competition Authority issued an Assessment to the undertakings involved on 29 September 2006. On 6 October Kingspan made a written submission concerning certain aspects of the Assessment and on 13 October made a written submission on the Assessment as a whole. Xtratherm also made a written submission on the Assessment on 13 October. Both undertakings, availed of their rights and made separate oral submissions to the Competition Authority on 16 October 2006.

1.20 In their submissions the undertakings involved took the view that the Competition Authority should have sent questionnaires to builders, since they are important decision makers concerning insulation choices in construction. In Phase 1 of the investigation builders were contacted but no information was obtained. In Phase 2 fresh attempts were made to contact builders with a view to sending questionnaires. Only one builder responded to initial contacts and they agreed to complete a questionnaire on 13 October. The response was received on 20 October and circulated to the undertakings involved for any comments that they might wish to make to the Competition Authority

[5] Nine of the builders' merchants are outlets of two 'builders' merchants' companies with multiple outlets. The head office of these two builders merchants were also surveyed and are included within this group of 26 builders merchants in Table 1. Another three questionnaires can be accounted for by a survey of a head office of another builders merchant and two outlets. In this case it was one of the outlets that responded and not the head office. Therefore 14 questionnaires of the 26 were sent to three builders merchants through a combination of the head office and individual outlets.

[6] In other words the builders merchants row in Table 1 becomes 15 and 4, rather than 26 and 4.

[7] Under the Authority's *Mergers and Acquisitions Procedures*, dated February 2006, to defer the Assessment beyond week 8 of Phase 2 requires the agreement of the undertakings involved. See the Authority's website for further details, www.tca.ie.

on 23 October. A response was received from one of the undertakings involved on 24 October.

Third Party Submissions

1.21 One third party submission was received by the Competition Authority from an undertaking involved in timber framed buildings.[8] The submission took the view that the proposed merger would lead to substantial lessening of competition ("SLC") in the PU/PIR market with consequent foreclosure effects in the downstream market for timber frame buildings. The key issue is whether or not there is SLC in PU/PIR and it is that issue which this Determination addresses.

Discussions with the Office of Fair Trading ("OFT")

1.22 The transaction between Kingspan and Leonart was also notified in the UK to the OFT. In order to assist the Authority in its investigation of the notified transaction in the State, the undertakings involved signed waivers, dated 14 August 2006, that permitted the Authority to discuss the transaction with the OFT.[9]

[8] It should be noted that Kingspan is involved in design and manufacture of timber frames used in the construction of buildings through its acquisition of Century Homes in 2005. (For details see Competition Authority, *Proposed Acquisition of Woodroe Limited by Kingspan Group Limited,* M/05/009, 13 April 2005). Leanort is not involved in this activity.

[9] The waivers relate to the confidentiality restrictions provided in section 32(1) of the Act.

SECTION TWO: BACKGROUND - INSULATION

Introduction

2.1 This section sets out the background against which the proposed acquisition is set to take place. The types of insulation products that are used in the State, some of which are produced by the undertakings involved, are detailed. The route to market for insulation products is outlined and the regulatory environment in the State and the UK is also described.

2.2 There were approximately 20 undertakings supplying insulation materials in the State in 2004 and 2005. Insulation materials ranged from foam based products such as polyurethane, polyisocyanurate and phenolic, to polystyrene, mineral fibres, concrete blocks, and naturally occurring insulation such as cork, cotton and sheep's wool.

2.3 The most common insulation applications are external cavity walls, floors and roofs and within these applications the most widely used products are PU/PIR, polystyrene and mineral Fibres.

PU/PIR

2.4 Polyurethane (PU) and polyisocyanurate (PIR) insulation are rigid plastic foam insulation products used in cavity wall, under floor and roof applications in building construction.[10] PU/PIR insulation has very low levels of thermal conductivity ("lambda") and therefore can meet the insulation standard (or "u-value") of a building's element at lower levels of thickness than other materials with higher lambda.

2.5 PU/PIR can be segmented into 'commodity' and 'specialist' (roofing) products.[11] In the commodity segment there are four producers active in the State;

- Kingspan,
- Xtratherm Limited ("Xtratherm"), part of Leanort;
- Quinn Therm Limited ("Quinn Therm"), Scotchtown, Ballyconnell, County Cavan, part of the Quinn Group, and,
- Ballytherm Limited ("Ballytherm"), Annagh Industrial park, Ballyconnell, Co. Cavan.

Kingspan is also active in the specialist segment in the State.[12]

EPS

[10] PU and PIR have similar levels of thermal resistance at similar thickness levels. The ratio of the key inputs, MDI and polyols, is higher for PIR than for PU. PIR differs from PU in that the MDI reacts with itself, and there is slightly better fire resistance. However, due to their largely similar thermal insulation properties, for the purposes of the Determination they are collectively referred to as PU/PIR.

[11] Specialist products refer to non-domestic applications such as industrial flat roofing insulation.

[12] Polycomp are a Dublin-based specialist insulation distributor that also produces a specialist roofing product in the State. At a meeting with the Competition Authority on 17 August 2006, Kingspan noted that Polycomp do not produce using a conventional 'laminator' production line, as used by all the PU/PIR producers in the State, but rather use a basic 'moulding' technology.

2.6 Expanded Polystyrene ("EPS") is the classic insulant. Polystyrene beads are expanded with steam and then moulded into blocks, cooled and cut into shape. Alternatively in expanded bead form, it can be blown into cavity walls. EPS has a lower lambda than PU/PIR and needs greater thickness to achieve the same u-value. A new EPS product known as 'Grey' or 'Platinum' EPS provides better lambda than EPS but lower than PU/PIR.[13]

2.7 There are a number of EPS producers active in the State:

- CRH plc ("CRH"), through its subsidiaries Aeroboard Limited ("Aeroboard") and Aircell Limited ("Aircell"), is the market leader;[14]
- Hytherm Limited, part of Leanort; and,
- Quinn Lite Pac Limited, part of the Quinn Group.

Mineral Fibres

2.8 Mineral fibres consist of products such as glass fibre (also known as glass wool) or stone fibre (known as rock wool) These products are manufactured from molten glass, stone or slag that is spun into a fibre-like structure with adhesive and oil. As with EPS, mineral fibres require greater thickness levels to achieve comparable u-values to PU/PIR. Despite this mineral wool continues to have a presence in roof insulation and is the leading insulation material in timber frame houses. The only Irish manufacturer of mineral fibres is Moy Isover Limited ("Moy"), a subsidiary of Saint Gobain.

Route to Market

2.9 EPS and mineral fibres are distributed through the same channels as PU/PIR although timber frame manufacturers tend not to use the builders' merchants route to market and instead purchase product directly from mineral fibre producers.

2.10 The route to market of insulation in the State consists of three 'levels' described in Figure 1 below:

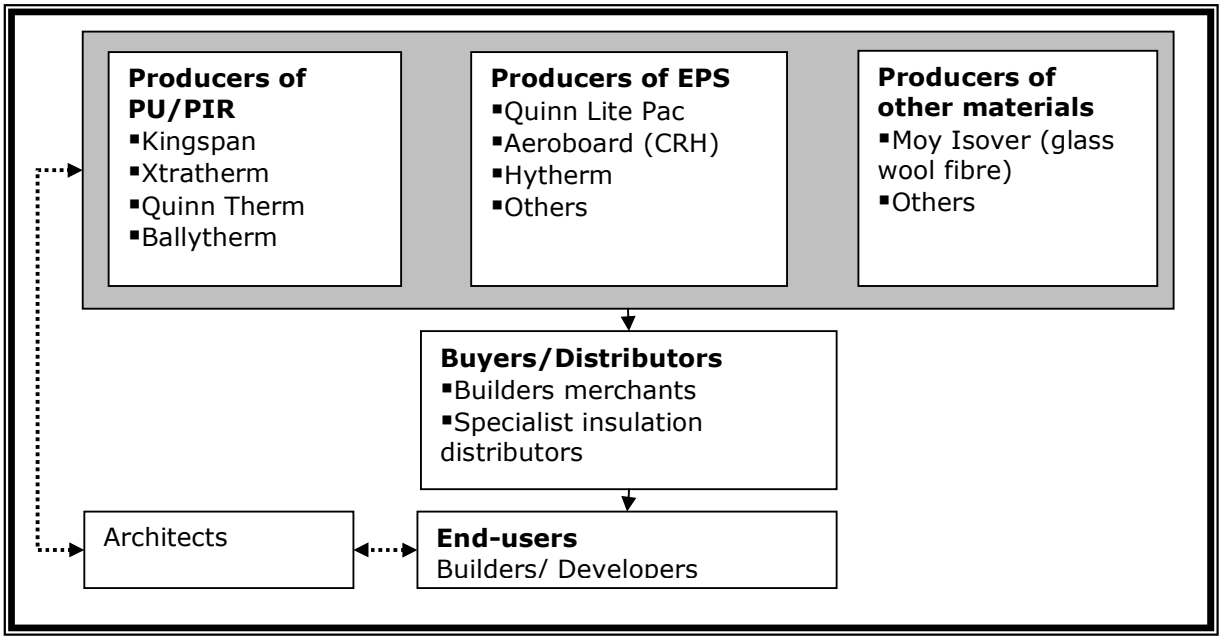
- Producers of insulation materials market their products to builders and architects;
- Distributors or builders merchants are primarily involved in purchasing commodity products from the producers and reselling to builders/developers. Some of the larger builders' merchants have staff trained to provide technical advice on how to satisfy building regulations with respect to thermal insulation. In some cases the producer suppliers directly to the construction site, but payment is still via the builders merchants; and,
- End user, typically the builder. Producers visit building sites and promote their products. The builder relies on the architect to

[13] Evidence from an EPS producer suggested that 95mm of platinum EPS would achieve similar a similar u-value to 60mm of PU/PIR.
[14] CRH has an EPS subsidiary in Northern Ireland which trades under the name Springvale EPS Limited.

recommend insulation products for a building's elements. The architect consults with producers regarding u-value calculations.

Figure 1

The Route to Market, Insulation Products, the State



Source: the Competition Authority

2.11 Specialist insulation distributors while also purchasing and reselling commodity products, have a greater presence in the specialist segment where they purchase specialist roofing product with industrial applications which they resell to roofing contractors.

Applications for Insulation Materials

2.12 The main applications of insulation in buildings are for the building's external elements, i.e., cavity wall, floor and roofs applications. PU/PIR, EPS and mineral glass wool products are available for each of these applications.[15]

Development of PU/PIR in Ireland

2.13 The demand in Ireland for insulation in general and PU/PIR in particular is relatively recent. Inserting insulation materials into buildings began during the 1970s. Initial products included aerated concrete blocks and polystyrene. The building regulations of 2002 and 2005 prompted a growth in demand for insulation and in particular PU/PIR which occurred at the direct expense of other thermal insulants.

[15] Kingspan provided data to the Competition Authority in the "Irish Market Model" that showed the amount of each insulation material that is used for each of the many roof, wall and floor applications. This model showed that other forms of insulation are used in the State, although with the exception of PU/PIR, EPS and mineral fibres, no other insulation material had a demand greater than 3.0% of overall insulation demand in the State. Data for 2006 were used.

The Regulatory Environment

2.14 The Department of the Environment, Heritage and Local Government ("Department of the Environment") prescribe the standard of insulation to be met in construction and do so by u-value[16]. This may be achieved in two alternative ways:[17]

- The Elemental Heat Loss method under which maximum u-values are prescribed for the main heatloss elements; floors (u-value 0.25), walls (u-value 0.27), roofs (u-value 0.16 to 0.20, depending on type of roof) and windows (u-value 2.2, with variation allowed depending on extent of glazing); and,

- The Overall Heat Loss method which sets out the maximum average u-value for all the elements of a building. In addition to not exceeding the maximum average value set it sets out maximum area-weighted average elemental u-values for floors (0.37), walls (0.37) and roofs (0.25)

2.15 At the EU level the 2002 Energy Performance of Buildings Directive ("the Directive") set out mandatory measures designed to improve the energy performance of buildings, one element of which is the improvement of heat retention.[18] The Directive is being implemented in Ireland through a combination of legislative measures and guidance documents. As regards insulation, the key provision of the Directive is the introduction of a building energy rating ("BER") which is a measurement of the energy efficiency of a building. All home owners will be required to obtain a BER certificate if they plan to sell or rent their house. The certificate will rate the building on the basis of its calculated energy use under standardised conditions. The calculation takes account of a wide range of factors, including the insulation characteristics of the building. The rating scale will be based on calculated annual energy use and will be similar to the familiar rating system for white goods.

2.16 The Directive also requires that the Member States ensure that new buildings meet a requirement expressed in terms of maximum energy use or maximum CO^2. As well as thermal insulation the calculated value must take account of complementary measures including:

- Improving the standard of windows and glazing;

- Improving the air tightness of dwellings;

- Introduction of condensing and other more efficient boilers;

- The use of other alternative energy sources; and,

- Education of home owners in energy conservation.

[16] The u-value is the insulation standard of an element (e.g., walls, floors, roofs etc.) and shows the rate at which heat flows through an element. For example the thermal resistance of each component of an external cavity wall, including the residual cavity, added together, is the total thermal resistance of the wall. When this figure is inverted the u-value is established.
[17] See Section 2.1 of technical guidance document to the Building Regulations 2005.
[18] Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings, OJ L 1, 4/1/2002, p. 65-71.

2.17 It is unclear what the effect of the implementation of the Directive will have given that Part L of 2005 Building Regulation is already a transposition of some aspects of the EU Directive. While it is difficult to predict with precision the impact of the full implementation of the Directive, several buyers have stated that it will result in an increased demand for PU/PIR.

Development of PU/PIR in the UK

2.18 The demand for insulation in the UK has followed similar trends to Ireland. For example Xtratherm's sales in the UK have more than doubled from €[.] in 2003 to €[.] in 2005.[19] Kingspan expect demand for insulation products in the UK to grow by [<10%] between 2006 and 2008. PU/PIR is expected to take market share off other insulation materials in the UK as it grows faster than the overall insulation market – Kingspan estimate that between 2006 and 2008, PU/PIR UK demand will increase by [20-30%], measured in m^2.[20]

Other Relevant Issue

2.19 Consumer demand for superior forms of insulation is not only derived from regulatory changes but also other exogenous factors. For example, rising energy costs manifested in recent increases in the electricity and gas prices are expected to further influence consumer demand for high performance insulation such as PU/PIR.[21]

[19] Paragraph 3.3 Board Paper, "Project Xtratherm Acquisition Opportunity" date not provided, Kingspan Confidential Annex 7.3 to the Notification Form 26 June 2006.
[20] Based on data provided by Kingspan as part of the Notification Form, 26 June 2006.
[21] On Friday 8 September 2006 the Commission for Energy Regulation published its direction to Bord Gáis Ireland Energy Supply on its application to increase revenues and gas tariffs to residential and small industrial and commercial customers (Non-Daily Metered or NDM sector). The direction allowed for a 33.08% increase in gas tariffs to domestic and small commercial and industrial customers effective from 1 October 2006.
On the same date the Commission also published its proposed approvals of ESB Public Electricity Supplier (ESB PES) Tariffs. Following a review of EBS PES's submission, the Commission is proposed to approve a 19.7% average increase in tariffs.

SECTION THREE: RELEVANT PRODUCT AND GEOGRAPHIC MARKET

Introduction

3.1 In this section the market is defined in terms of product and geographic dimensions. The undertakings involved argue for wide product – PU/PIR and other insulation products such as EPS - and geographic market – not only the State, but the UK as well. The Authority's view is that a narrower definition is appropriate: PU/PIR in terms of product and the island of Ireland in terms of geographic.

3.2 In considering whether a separate product or geographic market exists the Authority applies Small but Significant Non-transitory Increase in Price (SSNIP) test (also known as the hypothetical monopolist test).[22] The SNNIP test asks whether a hypothetical monopolist of product A, (e.g., PU/PIR), would be able to profitably and permanently increase its price by 5-10% above the competitive level, other things being equal. If a sufficient number of buyers respond to the price increase by purchasing another product, say product B, (e.g., EPS), then it is appropriate to include product B in the same relevant market as product A. The test is then reapplied to a hypothetical monopolist of both product A and B. The test is iteratively applied until a hypothetical monopolist of the smallest group of products could profitably increase the price of all products in the group by 5-10%. This group of products is defined as the relevant product market.

Relevant Product Market

Submissions of the Undertakings Involved

3.3 Kingspan and RBB have submitted that the relevant product market is broader than PU/PIR. They cite pricing trends and technical substitutability between insulation materials as evidence of a broader product market and also argue that the effect of the change in building regulations was to 'shift' the demand curve for PU/PIR rather that change the 'slope' of the demand curve.

3.4 In the economic report submitted with the Notification Form on 26 June 2006 ("the June Report"), RBB provide two pieces of evidence to suggest that the market is broader than PU/PIR:[23]

- PU/PIR prices have not increased in line with rises in the cost of key inputs MDI, polyols and facings; and,

- That selling price of PU/PIR only gradually declined following the entry of Xtratherm indicating that the price for PU/PIR was already constrained by 'other' insulation materials. It should be noted that prior to the entry of Xtratherm, Kingspan was the only producer of PU/PIR in the State. Kingspan argued that a steeper decline in price would have been expected if PU/PIR were a separate market since.

[22] Full details of the test are explained in the Authority's *Merger Guidelines* which are available on the website, www.tca.ie.
[23] See Confidential Annex 4.1 paragraph 2.3 to the Notification Form, 26 June 2006.

3.5 RBB argued in Annex 1 and 2 of the June Report and Section 4 of the RBB report of 1 September ("the 1 September Report") that PU/PIR is substitutable with other insulation materials within each of its applications.[24] Annex 2 of the June Report cites UK data to demonstrate that any building can be built entirely without the use of any PU/PIR insulation materials at all.

3.6 Furthermore, the undertakings involved provided data to the Competition Authority called 'The Irish Market Model' which provided Kingspan's estimates of the volumes and type of insulation used by application annually for 2004 to 2006. As with Annex 2 of the June Report, the data indicated that within each of PU/PIRs high volume applications, other insulation materials had a presence.

3.7 In Section 4 of the 1 September Report, RBB argue that a high own-price elasticity of demand for PU/PIR indicates that consumers can switch easily to other insulation products and that PU/PIR does not constitute a separate relevant product market for competition law purposes. In other words market definition depends on the slope of the demand curve.

3.8 RBB further argue that changes in building regulations specifying standards for building regulations has increased demand for all insulation including PU/PIR. They argue that the 'shift' in demand for PU/PIR has been greater than for other materials but that the own-price elasticity of PU/PIR has not changed.[25]

3.9 Data was provided by Kingspan estimating the amount of each insulation product that was used in the years 2004-2006 by insulation application. These estimates were outlined in the Irish Market Model in which RBB estimated the volume in m^2 of each of the insulation products used in roof, wall and floor applications over this period.[26] The data demonstrated that while there are many applications for which PU/PIR has the highest share, in m^2 of product, there no PU/PIR-only applications.

[24] Reference is also made to a report submitted by RBB on 17 August 2006, which is referred to as the 'August Report'.
[25] Essentially RBB contend that the effect of the building regulations has been to shift the demand PU/PIR by a greater amount than the shift in demand for all insulation but that the slope of the demand curve for PU/PIR has not changed
[26] The Irish Market Model also provided data on m^3 of insulation and value of insulation (in €). For consistency with other estimates throughout this Determination the Competition Authority has focused on m^2.

Table 2
Alternative Insulation Products to PU/PIR, by Application & Element[27]

Element	Application	Alternative insulation products to PU/PIR		
Roof	Flat roof over deck	EPS	Mineral wool[28]	Other[29]
	Rafter level – above rafters			Other
Wall	Partial cavity fill	EPS	Mineral wool	
	Framed construction		Mineral wool	
	Insulated plasterboard	EPS	Mineral wool	Other
	External wall insulation	EPS	Mineral wool	
Floor	Under slab	EPS	Mineral wool	Other

Source: Based on information provided by Kingspan

3.10 Table 2 above shows that in the State there are a number of other insulation products that are currently being used for the same applications as PU/PIR. The Competition Authority therefore considered the existence of a broad product market that would include those products that are also being used for each of the applications for which PU/PIR is used (i.e., those applications listed in Table 2 above).

3.11 While data provided by Kingspan suggested that blown cavity wall insulation systems are not currently used in the State, Xtratherm submitted that such insulation systems account for 60/70% of 'speculative development' in Northern Ireland and should be considered within the same product market as PU/PIR. To support this submission Xtratherm noted that the Irish Agrement Board have provided a number of certificates to 5 blown cavity wall products since 2005.

3.12 In its response to the Competition Authority Assessment Kingspan made a number of further submissions which can be summarised as follows:

- Choices over insulation products are part of the design of the building so are no switching costs between different insulation products;
- Different insulation materials are economic as well as technical substitutes;

[27] Xtratherm have noted that enhanced grey EPS can be used in full-fill cavity walls and that it is commonly used in Northern Ireland. However the only data on usage provided by either of the parties is the 'Irish Market Model' and 'UK market Model' provided by Kingspan which showed that blown EPS is not currently used in the State and accounted for less than 0.2% of total insulation demand in the UK in 2005. Source: Annex 2 of June RBB Report.
[28] 'Mineral fibres' includes mineral wool mats and mineral wool batts.
[29] 'Other' refers to any of the following; XPS, cork, phenolic, composite insulants, and aluminium bubble.

- A dynamic approach to market definition is required;
- The muted response of prices to Xtratherm's entry suggests a broad relevant product market

Information from Third Parties

3.13 While it is correct to say that there are a number of insulation materials that can also satisfy the same applications as PU/PIR there are significant costs associated with substituting between PU/PIR and EPS or mineral fibres. PU/PIR offers superior insulation properties to EPS and mineral fibres at significantly lower thickness levels.

3.14 Evidence from producers of other materials, buyers and architects suggests that the relative difference in thickness levels required to achieve comparable u-values has resulted in the creation of a distinct relevant product market for PU/PIR. Tables 3 and 4 below compare the thickness required by PU/PIR (Table 3) and EPS (Table 4) for floor, and wall insulation, together with the invoice cost per square $m.^2$

Table 3
PU/PIR: U-Value, Thickness, & Invoice Costs, Two Different Applications, the State, 2005

Application	U-value	Thickness	Invoice price in € per m^2
Floor	0.25	50mm	5.25-5.45
Wall	0.27	60mm	6.40-6.56

Source: Based on data supplied by Firm C, an Irish buyer

Table 4
EPS: U-Value, Thickness, & Invoice Costs, Two Different Applications, the State, 2005

Application	U-value	Thickness	Invoice price in € per m^2
Floor	0.25	100mm	3.59
Wall	0.27	95mm (platinum EPS)	6.80

Source: Based on data supplied by Firm C, an Irish buyer

3.15 The data in Tables 3 and 4 above are consistent with evidence provided by PU/PIR and EPS producers. The relative difference in thickness levels is even larger for glass wool with, for example, 250mm of product needed to achieve a u-value of 0.20 in an attic.

3.16 In order for a builder to use another insulation material the designs of the house may have to change. With respect to walls industry best practice is for external walls to consist of a 100mm outer block wall, a 100mm cavity and a 100mm inner leaf. Within the cavity best practice is to leave a 40mm space for moisture/ rainwater. In order to maintain these dimensions there is therefore only 60mm of usable space for insulation. EPS and glass wool do not have a product that can meet the wall u-value with 60mm of product.

3.17 In terms of prices, PU/PIR is more expensive than EPS and mineral wool (the invoice price for mineral wool is estimated to be €4.20 per m^2). If a hypothetical monopolist of PU/PIR were to increase the

price of the 50mm PU/PIR product by 5-10% this would equate to a price increase of roughly €0.25 to €0.55 per m^2 (using the prices in Table 3 above). For a builder to switch to another insulatant such as EPS he would have to compare the costs of changing the building design with the estimated savings accrued through switching to EPS. The costs of switching are likely to make a switch impractical.

3.18 Questionnaires were sent to architects to examine the extent to which a building would have to been altered to allow for the use of an alternative insulant to PU/PIR. An architect stated the equivalent to 50-60mm of PU/PIR in EPS and mineral wool would be 100-150mm and added that cavities, ceilings and internal floor plans would have to be increased to allow for larger thickness of insulation.

3.19 Data provided by Kingspan in the Irish Market Model shows a dramatic decline in the usage of EPS and a similar increase in demand for PU/PIR between 2004 and 2006 (Table 5). Firm C, a buyer of insulation in the State provided purchasing figures that further illustrate the growth in demand for PU/PIR at the expense of EPS (Table 6).

Table 5
The Pattern of Demand for PU/PIR & EPS, the State, Annual Changes in m^2, the State, 2004-2006

	2006 v 2005	2005 v 2004
PU/PIR	Increase [10-20]%	Increase [20-30]%
EPS	Down [0-10]%	Down [0-10]%

Source: Based on data supplied by Kingspan

Table 6
The Pattern of Purchasing PU/PIR & EPS,[30] Large Buyer, the State, Annual Changes in €, 2004-2006

	2006 v 2005	2005 v 2004
Purchases of PU/PIR	+9%	Data not available
Purchases of EPS	-11%	Data not available

Source: Based on data supplied by Firm C, an Irish buyer

3.20 Builders must increase the thickness of walls to facilitate EPS and mineral wool. Associated costs include increasing the footprint of the house or reducing the internal floor space. In view of the fact that research suggests that the proportion of the price of a house that is accounted for by the site in the State rose over the recent boom period from around 15% - a level normal by international standards – to around 40 to 50% in 2005, suggests that there is considerable incentive for the builder to use thinner insulation materials.[31]

3.21 In the Authority questionnaire to builders merchants, buyers groups, and specialist insulation distributors were asked how they would react to a price increase in PU/PIR. This question sought to identify what products buyers view as substitutes to PU/PIR. The responses

[30] It should be noted that the comparison is the first six months of 2006 compared to the same period in 2005. Demand for PU/PIR is proxied by business with Xtratherm, the largest supplier of PU/PIR to the buyer, and demand for EPS is proxied by business with Aeroboard, the largest supplier of EPS to the buyer.
[31] For details see Frank Barry, "Future Irish Growth: Opportunities, Catalysts, and Constraints." *Quarterly Economic Commentary*, Winter 2005, pp. 34-58. This paper maybe accessed at the ESRI's website: esri.ie.

of buyers are summarised in the Box 1 below. Of the eight responses six would not switch to another insulation product, and while two would investigate the use of other insulation products.

Box 1

Buyers Response to a Hypothetical Price Rise in PU/PIR

Response of buyers to question: "If attempts were made by all producers of PU/PIR to raise their prices how would your company react, would you instead supply another product that had the same applications as PU/PIR. If not, why not?"
Firm E: Would not change but would fight for price increase to be kept to a minimum
Firm F: Would try to change but would have to get specifier's support
Firm G: EPS/XPS costings would be considered
Firm H: There is no direct equivalent to PU/PIR
Firm I: Continue to supply
Firm C: Pass on to consumers
Firm D: Pass on to consumers
Firm J: Accept and remain the same

Source: Competition Authority Questionnaires

Review of Internal Documents

3.22 Internal documents submitted by Kingspan with its Notification Form confirm that the growth in demand for PU/PIR has come not because of a growth in demand for all insulation materials but at the expense of EPS. Paragraph 3.1 of a paper to the Kingspan board, states;[32]

> In 2002, driven by new building regulations as the market started to convert from EPS to PIR, Xtratherm expanded its factory at Navan to add manufacturing capacity for a new PIR product.

Paragraph 3.2 of a paper to the Kingspan board, states;

> [.] turnover growth over the period [.] was "driven exclusively by growth in PIR sales in the period as *customers converted from EPS"* (emphasis supplied).

View of the Competition Authority

3.23 The Competition Authority notes that mineral fibres are still being used in attics and some EPS is being used as under floor insulation. While it does appear that there are alternatives to PU/PIR, the cost associated with using glass wool or EPS instead of PU/PIR, in terms of changes to the building design, are such that there is unlikely to be a broad market for all insulation.

[32] Paragraphs 3.1 and 3.2 are taken from a Kingspan Board Paper, Project Xtratherm (no date0

3.24 As set out in paragraph 3.4 above, the undertakings involved made a number of submissions in favour of a broader market definition based on Kingspan pricing data from 2000, which can be summarised as follows;

- Kingspan's prices did not change significantly as a result of changes in market structure from Kingspan's existence as a monopolist to facing competition as a result of entry; and,

- The lack of an increase in price of PU/PIR following input price increases.

3.25 The submissions of the undertakings involved on the changes in Kingspan's prices as a result of entry were inconsistent with the pattern of price changes as there has been a substantial decline in the price of PU/PIR. As demonstrated in Annex 1 below, the price of Kingspan's [.] product fell by [0-10]% after Xtratherm's entry and by a further [0-10]% after Quinn's entry, leading to an overall price decrease of [10-20]% from Kingspan's alleged 'monopoly'. In respect of the [.] product Kingspan's price fell by [0-10]% after Xtratherm's entry and by a further [0-10]% after Quinn's entry. In other words, in Feb 2006 Kingspan's [.] and [.] prices were respectively [10-20]% and [10-20]% lower than in September 2002.

3.26 Notwithstanding that the price did fall significantly in response to entry and having considered the arguments in paragraph 3.4 above, the Competition Authority's view, supported by the evidence, is that:

- It is not correct to characterise Kingspan as having been a 'monopolist' before the entry of Xtratherm. It is the Competition Authority's view that the changes in regulation that occurred in 2002 (as implemented in 2003) were what drove the development of a PU/PIR-only market. Before the regulatory changes PU/PIR existed in a broad market and faced strong competition from other insulation materials. However the change in regulations which required more thermally efficient insulation materials meant that under existing building practices only PU/PIR could satisfy the required u-values;[33]

- The pricing data presented was invoice prices and did not include substantial end of year rebates granted to customers which as a percentage of total sales has been rising since 2002 as shown in Section 5 below;

- The market has been rapidly growing during the period in question. As data in the Section 4 shows, the market for PIR [measured in m^2 doubled between 2004 in 2006]. In a market that was expanding less rapidly there may have been an even greater need for Kingspan to react to the entry of Xtratherm (and later Quinn Therm) by drastically lowering its price (i.e., by more than the [10-20]% reductions presented in Annex 1).

- Since 2002 the price of the key input MDI rose by almost 70%, all of which was absorbed; and,

[33] Furthermore as the discussion on entry in Section 5 below notes, it was the regulatory changes which prompted entry into the production of PU/PIR. In fact Xtratherm's entry coincided with the regulatory changes and the development of PU/PIR-only market

- Xtratherm were capacity constrained upon entry. Xtratherm's oral submissions on 16 October were consistent with previous written submission that indicated that Xtratherm had a 'painful' learning process when they first entered and had to endure significant wastage.

3.27 In respect of timber frame houses it is possible that the market is broad enough to include PU/PIR and mineral wool as it clear that by volume mineral wool is the market leader in this segment. According to RBB's June Report, timber frame houses account for about 27% of new builds (an increase from 5% ten years ago).

3.28 In respect of masonry built houses, which account for the remaining 70% of new houses, it could be argued that there is a case to define a market by application. Table 2 above, based on Kingspan's view of the Irish insulation market, suggested that there is technical substitutability between PU/PIR and other insulation products. In other words, while PU/PIR may be a product of higher quality, these other products place a competitive constraint on the price of PU/PIR.

3.29 Whilst the intended uses of PU/PIR, EPS and mineral fibres are identical, the product characteristics in terms of thickness and the overall cost savings associated with using insulation of lower thickness suggests the market is for PU/PIR only. There are significant switching costs associated with substituting EPS for PU/PIR in for example the cavity wall. By using EPS a builder must widen the cavity and in doing so incur additional material and site costs. While a builder may instead choose to use the same thickness of EPS in cavity and use 'dry-lining' insulation inside the house this would reduce the internal floor space. Thus while it may appear that other insulation products are 'technical' substitutes, due to the costs of switching to another insulation product they are not 'economic' substitutes.

3.30 In examining the relevant product market the Competition has taken a dynamic approach. The Competition Authority looked at how both the 1997 and 2002 (amended in 2005) regulations affected demand for insulation in general and various insulation products in particular. It also examined how entry affected prices in a market, the, a priori hypothesis being that if the market were broader than PU/PIR entry into production of PU/PIR would not significantly affect the price of existing players. The Competition Authority also examined how regulatory changes affected supply of insulation materials and notes that two prominent EPS suppliers, Hytherm (i.e., Xtratherm) and Quinn Lit, entered production of PU/PIR as a result of regulatory changes despite there being no production synergies between PU/PIR and EPS. Furthermore the Competition Authority took a forward looking approach and looked at how future regulatory changes might affect supply and demand for insulation products

3.31 In respect of full cavity infill (i.e. blown bead), The Competition Authority acknowledges that such a practice is common in Northern Ireland. However unlike its equivalent body in Northern Ireland the Irish Agrement Board has not given a 'carte blanche' certification to suppliers and products in the State. Restrictions exist in respect of proximity to the see, exposure, height of the building and whether a building is 'brickwork' or 'rendered'. Data presented by Kingspan as well as evidence from Xtratherm suggests that blown bead systems

have an insignificant presence in the State. While building practices and habits may change at some time in the future toward full cavity infills for new builds, it is unlikely that over the next 2/3 years that a monopolist supplier of PU/PIR would be constrained from raising prices by 5-10% by substitution to blown bead

3.32 The view of the Competition Authority is that the relevant product market is for PU/PIR. Notwithstanding this view, in Section 4 below the pre and post merger concentration in terms of in both the narrow market broad markets and notes that there is a concentration concern even in the broader market.

Relevant Geographic Market

Submissions of the Undertakings Involved

3.33 Kingspan have submitted that the relevant product market is broader than the State and is wide enough to include the United Kingdom. RBB argue in the June Report that there are substantial trade flows between Ireland and the UK for insulation products. They note that 50% of mineral fibre is imported into Ireland from the UK and that over 10% of Irish PU/PIR output is exported to the UK.

3.34 There is general agreement that there are no regulatory barriers to trade between Ireland and the UK. The commodity PU/PIR products are essentially homogeneous. Products that satisfy quality levels in the UK are accepted in Ireland and vice versa.

3.35 RBB submitted pricing data to show the trend in Kingspan's UK and Ireland selling prices over the period 2000, Q2 to 2006, Q2.[34] This involves a comparison for Kingspan's [.] products in the UK and Ireland as well as a comparison between the [.] product sold in Ireland and the [.] sold in the UK.[35] After a period of parity in UK and Irish prices for [.] between 2000,Q2 to 2004,Q2, the relative price of UK [.] board increased by [10-20]% by 2005,Q4 before declining somewhat. The June and 1 September Reports attribute this pattern to the fact that Irish producers did not pass through the rise in input prices. However the undertakings involved argued that these input price increases were passed through in the UK. The lack of pass through in the State is attributed this to the anticipated entry of Quinn Therm which took place in 2004.

3.36 Further evidence to support the undertakings involved views of a broad geographic market was provided by Kingspan by reference of its decision to bring product from the UK rather than introducing a third shift in Ireland. In 2004 Kingspan opted to delay the introduction of a third shift until demand was sufficient to support this investment. Instead Kingspan brought product from their UK plant in Pembridge. Once demand had grown sufficiently in Ireland, a third shift was installed. Table 7 below outlines the volumes of product brought from Ireland as well as Kingspan's total production in Ireland annually for 2003 – 2006.

[34] See June Report and the 1 September Report.
[35] The discussion here refers to 50mm only since like is being compared with like. This is consistent with the discussion in the June Report and the 1 September Report.

Table 7
Kingspan, UK Imports & Production in the State, Annually, 2003-2006 in million m^2

Year	2006	2005	2004	2003
Volume of product imported from UK by Kingspan (in m^2)	[.]	[.]	[.]	[.]
Kingspan's total Irish production (in $m^{2)}$	[.]	[.]	[.]	[.]
Volume of product imported from UK by Kingspan as % of Kingspan's Irish production	[<1]%	[<10]%	[<10]%	n/a

Source: RBB June Report (Annex B) & RBB August Report (Table 1).

3.37 Kingspan further noted that Recticel, a Belgian producer, sells specialist roofing insulation in Ireland though a distributor in Cork indicating that Recticel could easily distribute commodity products in the State.

Evidence from Third Parties

3.38 Despite Kingspan's submissions on geographic market, independent evidence from third parties suggests that Ireland and the UK are separate geographic markets. The Competition Authority has received written responses to questionnaires from PU/PIR producers in the UK and Europe, builders merchants, and buyer groups as well as specialist insulation distributors.

3.39 Firm A, a large UK producer, sold and marketed PU/PIR product in the State between 2000 and 2004. In 2000 Kingspan was the only indigenous producer. Firm A left the Irish market after the entry of other indigenous producers which depressed Irish prices. Firm B, a large European producer is active in the State, but only in respect of specialist products.

3.40 Data provide by Kingspan showed that Great Britain ("GB") prices in June 2006 were [10-20%] higher than in Ireland, much the same as in April and May, but lower than the [10-20%] in March 2006.[36] This is consistent with evidence provided by Firm C, a buyer, which is presented in Table 8 below.

[36] Based on data supplied by Kingspan in a letter from Arthur Cox to the Authority dated 19 September 2006. The data refer to 50mm PU/PIR product.

Table 8
Difference in Irish and UK PU/PIR Prices, September 2006[37]

Product	Irish invoice price (in €)	UK invoice price (in €)[38]	% difference (relative to Irish price)
Kingspan TW50 60mm	6.56	8.21	25%
Kingspan TP10 80mm	10.50	10.80	3%
Xtratherm XTCW 60mm	6.40	8.30	30%

Source: An Irish buyer of PU/PIR

3.41 Irrespective of any price differences, there appear a number of other costs associated with bringing product from GB (or further) to Ireland that need to be taken into account in considering the economic feasibility of importation for foreign producers and Irish buyers alike. These costs include:

- Transportation costs;
- Storage costs; and,
- Marketing costs.

3.42 Freight costs to Ireland are high in relation to the invoice price. Firm A, a producer of PU/PIR, submitted that transport costs to Ireland are approximately €18/m^3 (€0.9/m^2 for a 50mm board). Firm B, a producer of PU/PIR, stated that freight costs to Ireland are roughly 125% higher than to the UK from their Belgium plant. Firm C, an Irish buyer, stated that transport costs from the UK may be as high €1.00 to €1.80 per m^2, roughly 20% of the invoice price.

3.43 There is an economic asymmetry between the needs of a buyer in Ireland and a foreign producer. An Irish buyer would want small quantities of product delivered to his site frequently. However the foreign producer would seek to reduce transport costs per unit by shipping sending large volumes to its Irish buyer. Somewhere in this relationship a storage cost must be incurred. Firm D, an Irish buyer, stated that storage costs at the retail outlet are their main problem. They also added that Irish producers very often deliver straight to site thus eliminating storage in many instances.

3.44 Allied to the storage issue Irish producers are already on the ground at building sites engaging with developers. Relationships currently exist between Irish producers and architects. Firm C, an Irish buyer, stated that "both Kingspan and Xtratherm have invested substantial resources in distribution and marketing of their products and, covering the Irish market with high customer visibility. Any entrant that wished to make significant sales would have to make a similar investment".

3.45 The same buyer also stated that when importing product into Ireland, they need to be able to offer it at a lower price to the local

[37] These are invoice prices per square meter.
[38] Based on Sterling to Euro rates prevailing 22/09/06

producer. If an Irish builders merchant were to offer an imported product to a builder it would need to do so at a lower price in order to overcome the relationships that currently exist in the sector. Alternatively the foreign producers could establish a marketing team and visit sites but this would require a degree of local knowledge and is an added cost of importation. However, this cost would not have to be incurred for well known firms such as CRH that already have an established reputation in the State and produce PI/PUR through its subsidiary EcoTherm Insulations Limited with manufacturing plants in the UK and Holland.

3.46 Overall Firm C, an Irish buyer, estimated that in order to overcome transport, storage and marketing costs the FOB price would need to be 20% less than in Ireland to trigger imports.[39] Irish prices are currently significantly [10-20]% lower than UK prices and the information provided by the undertakings involved covering the period 2000 to 2006 show Irish prices of 50mm PU/PIR falling more than 5% below GB prices for two quarters in each of 2002 and 2003.[40] Irish prices would have to not only reach UK price levels, but by a further 20%.

3.47 Irish builders merchant regularly import product form overseas. PU/PIR is not widely imported as it is a low value bulky product. Some specialist PU/PIR products are imported. Producers of specialist PU/PIR products compete on more than just price. Quality is the key spectrum of competition. Producers can therefore earn a premium that can not be earned when competing on commodity products. Furthermore not all of the Irish producers are active in the production of such specialist products.

3.48 Kingspan stated that 50% of Irish consumption of mineral fibre is imported. Mineral fibre refers to both glass wool and rock wool. Rock wool is a fundamentally different product with specialist sound and fire insulation properties. It is also significantly more expensive than PU/PIR. The only Irish producer of glass wool, Moy, produces at one plant in County Tipperary. Until very recently this plant was capacity constrained. Furthermore, unlike PU/PIR glass wool can be shrunk wrapped when transported.

View of the Competition Authority

3.49 Evidence to date suggests that prices in Ireland are lower than the UK. A pricing analysis of Kingspan's [.] product in Ireland and in GB which is presented in Annex B demonstrates that prices in GB have been higher than Ireland since Oct 2003 and that even when Quinn Therm entered, GB prices were [0-10%] higher than Irish prices for the same product. Today GB prices for the [.] product are [10-20%] higher than those in the State. In another comparison of prices, this time between the [.] products, Kingspan's GB prices are [40-50%] higher than those in Ireland.[41]

[39] Free on Board ("FOB") price refers to the value of exports when they are placed on a ship lorry or aeroplane to leave a country. It therefore includes the cost of production and inland transport to the port of embarkation, but does not include the costs of freight and insurance in getting the goods to their foreign destination.
[40] [.]
[41] It is should be noted however that Kingspan's comparable [.] products are a [.] product in GB and a [.] product in Ireland.

3.50 The relative difference in Irish and GB price levels, along with the associated costs of importation imply that an Irish buyer will only be indifferent between purchasing from an Irish producer and an 'importer' when Irish price levels rise to 20% higher than GB.

3.51 While both [.] and [.] have been active in exporting PI/PUR product to GB,[42] this was primarily an activity in brand building until a plant could be built in the UK.[43] Indeed [.] stated that in order to be considered a credible competitor to indigenous producers; one must demonstrate a commitment by investing in a local plant.

3.52 Kingspan's short term self-supply is an economically distinguishable activity from 'importation'. Kingspan already had access to the market through its relationships with builder's merchants, insulation distributors and builders. A foreign producer would have to incur costs to develop these relationships. Furthermore, as shown in Table 7 the volume of imports was small and temporary.

3.53 The view of the Competition Authority is that GB is not part of the same market as Ireland. Given the price differences that exist between GB and Ireland and the additional costs detailed above, a hypothetical monopolist of PU/PIR, on the island of Ireland, could profitably raise prices between 5 and 10% on a sustained basis – at least a year. We will return to the issue of imports in subsequent sections of the Determination.

[42] [.] currently exports [.]% of its output which equates to [.] million m^2. [.] exported similar volumes during the period 2002-2003.
[43] In a telephone conversation between the Authority and [.] on 18/09/06

SECTION FOUR: MARKET STRUCTURE

Introduction

4.1 Market structure can be characterised as the number and size distribution of firms. The initial impact of any merger is felt on market structure as two firms pre-merger become one firm post merger. In this section the pre- and post- merger market shares of Kingspan and Xtratherm are considered. However, attention is first devoted to the evolution of marker structure over the past several years.

Measuring Concentration

4.2 The market as defined in Section 3 above is the production of PU/PIR in the State. This section identifies those other producers – Quinn Therm and Ballytherm - who compete with the merging parties and looks and their market shares.

4.3 In trying to assess market shares, it is pertinent to select a relevant measurement parameter. The Competition Authority's guidelines identify three possible parameters:

- Volume as measured by the number of units supplied;
- Capacity as measured by the maximum possible volume; and,
- Value as measured by the revenue.

4.4 There is a difference of view regarding the levels of capacity in the industry at present.[44] Furthermore the Competition Authority does not have pricing data from the non-merging producers and is therefore not in a position to accurately estimate market share based on value. The best and most reliable metric available to the Competition Authority is market share by volume based on square meters of output (i.e., m^2).

4.5 Only output sold in the relevant geographic market are included in the calculation of market shares. Therefore output exported must be deducted from each firm's total output and any imports added. Exports are substantial compared to imports.[45]

4.6 Table 9 presents the market shares of PU/PIR producers in the State, based on output sold in the State, annually from 2004 to 2006.

Evolution of Market Structure

4.7 The evolution of market shares and the number of producers is consistent with the discussion in the earlier sections of the Determination. As market size has increased dramatically, particularly in 2006, entry and expansion of new entrants has taken place and the market share of the leading firm, Kingspan, has declined. By the end

[44] The issue of capacity is addressed in section 5 below.
[45] In this instance imports refer to self importation by one of the producers, i.e., bringing product from one's plant in the UK to sell in the Irish market. It does not refer to importation by producers who do not have plants in Ireland. The available evidence suggests that such imports are minimal and hence would not effect the results in Tables 9 to 11 below. The Competition Authority also regards exports as being committed exports and do not consider it likely that these exports could be easily diverted back to Ireland. See paragraph 5.18 below for further discussion of this issue.

of the period, Xtratherm, which entered in 2002, had a larger market share than Kingspan, [40-50%] compared to [30-40%]. Such a pattern is consistent with evidence from buyers of PU/PIR to be presented in the next section that Kingspan and Xtratherm are each others closest rivals.

4.8 It is important to note that the data presented in Annex C does not infer that an entrant can easily enter the market and rapidly take volume from the incumbent but rather that the entrants have benefited from entering a rapidly expanding market, and have taken a larger share of the 'new demand' than the incumbent.

4.9 In terms of summary measures of market structure, Table 6 shows that new entry and expansion has led to a decline in concentration whether using the market share of the leading two firms (C_2) or the HHI. In the latter case the measure of concentration has declined considerably from 4792 in 2004 to 3570 in 2006. No doubt if the table were extended to 2002 when Xtratherm entered the decline would be even more dramatic.

Table 9
Market Share (in million m^2 output) by Producer, PU/PIR, the State, 2004 to 2006

Producer	Market Share (%) 2004	Market Share (%) 2005	Market Share (%) 2006
Kingspan	[60-70]	[40-50]	[30-40]
Xtratherm	[30-40]	[40-50]	[40-50]
Quinn Therm	-	[0-10][46]	[10-20]
Ballytherm	[0-10]	[0-10]	[0-10]
Total	**100**	**100**	**100**
Summary Measures			
C_2	[90-95]	[90-95]	[80-85]
HHI	4792	4118	3570
Demand, the State (in million m^2)	[0-10]	[10-20]	[10-20]

Source: See Annex C below

The Impact of the Merger

4.10 Not surprisingly when the two leading firms merge in a concentrated market there is a substantial increase in concentration, as illustrated in Table 10 with respect to the merger being considered in this Assessment. Based on the market share figures in Table 9 for 2006, post merger the merged entity will have a market share of [75-85%], the HHI index for the market as a whole increase from 3570 to 6826, an increase or delta of 3256.

[46] See paragraph C.3 in Annex C below.

4.11 The Authority's merger guidelines set out a series of thresholds that can be used as a rough and ready method of screening mergers. The Kingspan/Xtratherm merger would fall in Zone C, since post-merger HHI is greater than 1800 and the increase in concentration or delta is greater than 100. Mergers cases falling in Zone C are characterised by the guidelines as those that "more usually be those that raise competitive concerns." (Paragraph 3.10).

Table 10
Market Shares (in million m^2 output), Pre & Post Merger, PU/PIR, the State, 2006

Producer	Market Shares Pre-Merger (%)	Market Shares Post-Merger (%)	Change in Summary Measures
Kingspan	[30-40]	-	
Xtratherm	[40-50]	-	
Merged Entity	-	[75-85]	
Quinn Therm	[10-20]	[10-20]	
Ballytherm	[0-10]	[0-10]	
Total	100	100	
Summary Measures			
C_2	[80-85]	[95-100]	+[15-20]
HHI	3570	6826	+3256

Source: Based on Table 9 above.

Sensitivity of Concentration Analysis

4.12 The data in Tables 9 and 10 are based on output that excludes producers' exports and includes imports. In order to test the sensitivity of the results, the post-merger HHI and the delta were estimated based on a producers' output produced in the State, irrespective of whether or not the output was exported to GB. The results were: HHI of 3321 and a delta of 2694.[47] Thus even if this alternative method of estimating HHI and the delta were used the merger would still fall in Zone C.

4.13 Section 3 above referred to the possible existence of a broader market than just PU/PIR (See table 2 above). This market would be wide enough to include those other products that are also used in the same applications as PU/PIR.[48] While the Competition Authority's preliminary view is that the market is PU/PIR only, it is relevant to test the sensitivity of the concentration analysis if such a market were to exist.

4.14 Table 11 below presents the pre and post merger HHI would be in such a market. For the purposes of this analysis the Competition Authority relied on the data supplied by Kingspan in The Irish Market Model for

[47] The HHI and the delta are measured based on the data in Table C.3, Annex C, below in the column headed 'Output'.
[48] These applications as presented in Table 2 above are: flat roof overdeck, above rafters, partial fill cavity, framed construction, insulated plasterboard, external wall insulation and under slab.

overall sales of EPS, mineral wool and other (as defined in Table 2 above).

4.15 The Competition Authority used data submitted in the Notification Form for Hytherm's sales of EPS in the State and aggregated them with Xtratherm's sales of PU/PIR to get Xtratherm's total sales in the broader market. It relied on evidence from Quinn Therm for Quinn Lite Pac's sales of EPS in the State and aggregated them with Quinn Therm's PU/PIR sales. It regarded the remaining EPS sales as a single EPS producer referred to as 'other EPS producer'.

4.16 With respect to mineral fibres the Competition Authority took the data provided by Kingspan and used RBB's June submission that 50% of mineral wool is imported into Ireland to estimate the sales of the State's only mineral wool producer Moy. The remainder are considered as one company and referred to as 'imported mineral wool'. All other insulation products that are referred to in 'Irish Market Model' as being used in the same applications are referred to as one insulation company 'other'.

Table 11

Market shares (in million m^2 output), Pre & Post Merger, Insulation Market, the State, 2006

Producer	**Volume of sales in the State (in m^2)**	**Market Shares Pre-Merger (%)**	**Market Shares Post-Merger (%)**	**Change in Summary Measures**
Kingspan	[.]	[20-30]		
Xtratherm/ Hytherm	[.]	[30-40]		
Merged Entity	[.]		[60-70]	
Quinn Therm/ Quinn Lite Pac	[.]	[10-20]	[10-20]	
Ballytherm	[.]	[0-10]	[0-10]	
Other EPS producer	[.]	[10-20]	[10-20]	
Indigenous mineral wool producer	[.]	[0-10]	[0-10]	
Imported mineral wool	[.]	[0-10]	[0-10]	
Other insulation products	[.]	[0-10]	[0-10]	
Total	[20-30]	100	100	
Summary Measures				
C_2		[60-65]	[70-75]	+[5-10]
HHI		2269	3971	+1702

Source: See text.

4.17 Under the alternative market definition the HHI and delta are both far in excess of the Zone C threshold outlined in paragraph 4.11 above.

4.18 Kingspan argued that market shares should be estimated based on capacity levels of each of the producers. As stated in paragraph 4.4 above there is disagreement on the exact levels of capacity in the industry. Nonetheless the Competition Authority has used data currently available to it, to test the sensitivity of its output-based concentration analysis by also analysing concentration by capacity.

4.19 Table 12 provides estimates of the HHI and the delta resulting from the merger. Again the findings confirm that the merger is a Zone C merger.

Table 12

Market Share (in million m^2 capacity), Pre & Post Merger, PU/PIR, the State, 2006

Producer	Capacity	Market Shares Pre-Merger (%)	Market Shares Post-Merger (%)	Change in Summary Measures
Kingspan	[.]	[20-30]		
Xtratherm	[.]	[40-50]		
Merged Entity			[60-70]	
Quinn Therm	[.]	[20-30]	[20-30]	
Ballytherm[49]	[.]	[10-20]	[10-20]	
Total	[20-30]	100	100	
Summary Measures				
C_2		[60-65]	[85-90]	+[20-25]
HHI		2975	4887	+1912

Source: Table 14 below**.**

Conclusion

4.20 However, just because a merger falls into Zone C does not mean that it will substantially lessen competition ("SLC"). As the Authority's *Merger Guidelines* point out factors that affect whether a merger in Zone C will raise competition concerns include low barriers to entry and the existence of an entrant already committed to production but not yet selling in the market. It is to these and other issues that attention in turned is Section 5.

[49] Due to very limited data the estimate for Ballytherm is a substantial overestimate. [….].

SECTION FIVE: COMPETITIVE ANALYSIS

Introduction

5.1. The purpose of this section is to analyse several market characteristics that are likely to prove decisive in deciding whether or not the proposed merger will lead to SLC, an issue dealt with in the next section. The characteristics are as follows:

- Existence of spare or excess capacity;
- Possibility of entry;
- Buyer power; and,
- Imports.

These characteristics were in part those identified by the undertakings involved, by third party submissions, and by the Authority. In some merger determinations it is necessary for the Authority to consider whether or not a merger creates any efficiencies. In the instant case the undertakings involved argue that efficiencies are created but in the UK rather than the State. This, of course, is not relevant to the Authority's evaluation which considers only the effect on competition in the State.

Excess Capacity

The Undertakings Involved Submission

5.2. The undertakings involved have made a number of submissions to the Authority on the levels of capacity in the market. The undertakings involved have argued there is significant excess capacity in PU/PIR production in Ireland at present and that a large proportion of this excess capacity is in the hands of Quinn Therm.

5.3. It should be noted that excess capacity in this context consists of existing PU/PIR producers adding an extra shift(s) to their current production schedules, **not** purchasing extra machines or extending the footprint of their factory. In other words, it consists of obtaining the maximum output that the producer can extract from their current production facilities.

5.4. At the present time:

- Ballytherm operates one shift;
- Quinn Therm and Xtratherm operate two shifts; and,
- Kingspan operates three shifts.

In the estimates of capacity set out below in Tables 13 and 14, it is assumed that output from existing capacity is maximised by operating three shifts, which consists of working the plant 24 hours a day for five

days a week. It is possible to add a fourth shift at the weekend,[50] but this is not considered in these estimates.

5.5. In the June RBB Report and the RBB Report of 4 September 2006 ("the 4 September Report"), RBB outline the relevance of capacity to any attempts by a merged party to increase its price. RBB note that the PU/PIR market is homogeneous, that there are low customers switching costs and argue that if competitors have cost effective spare capacity, the merged entity would not be able to sustain a price increase.

5.6. RBB in the 4 September Report quote the European Commission's 2002 Notice on horizontal mergers which has a section on, 'Markets where firms compete primarily in output/capacity.' Under this rubric the Commission comments as follows:

> 31. When rival firms [to the merged entity] have enough capacity, buyers will easily find alternative sources of supply as long as it remains profitable for rival firms to expand output. In this case, the post-merger price increase may be limited, and the Commission may see no reason for concern. However, it may be the case that competitors are unable or unwilling to expand output sufficiently to offset the output reduction from the merging parties. Such output expansion is, in particular, unlikely when competitors face binding constraints or if existing excess capacity is significantly more costly to operate than capacity currently in use.[51]

Thus the level of excess capacity can be a critical factor in determining the competitive implications of a merger.

5.7. Kingspan's estimates of the degree of excess capacity are presented in Table 12. It should be noted that it is assumed that the PU/PIR producers that are currently on two or one shifts (see paragraph 5.4 above) can easily, with little cost, expand output so that their excess or spare capacity is full utilised. In addition it is assumed that the producer is able to fully utilise the current shifts that they operate.[52] Finally, the estimates are based on Kingspan's view as to what each producer's product composition is in terms of product thickness, and assumes that this product composition does not change as capacity is brought on stream.[53] The data in the table refer to capacity that could be brought on stream in 2006,[54] not some future date such as 2007 or 2008.

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[50] A three-shift cycle refers to three 8 hour shifts per day from Monday to Friday. A 'fourth shift' refers to a further five 8 hour shifts during the weekend. This only leaves 8 hours in the week for maintenance.

[51] These Guidelines were issued under the 1989 Merger Regulation. (Commission, *Notice on the appraisal of horizontal mergers under the Council Regulation on the control of concentrations between undertakings*, 2002). Similar views are expressed by the Commission in subsequent guidance on horizontal mergers under the 2004 Merger Regulation. (For details see Commission, *Guidelines on the assessment of horizontal mergers under Council Regulation on the control of concentrations between undertakings*, 2004/C 31/03, paragraphs 33 to 35).

[52] [.].

[53] Each producer's output consists of a somewhat different set of thicknesses of PU/PIR. The larger the thickness (100 mm as opposed to 50 or 60mm) the slower the line speed and the lower the output measured in m^2.

[54] Quinn Therm for example estimates that it would take three months to add a third shift. Based on their response to an Authority questionnaire.

Table 13
Estimates of PU/PIR Production & Capacity, by Kingspan, the State, 2006

Producer	Total production 2006 (est.) (in million m^2)	Capacity (in million m^2)	Excess Capacity (in million m^2)	Distribution of excess capacity (%)
Kingspan	[.]	[.]	[.]	[0-10]
Xtratherm	[.]	[.]	[.]	[20-30]
Quinn Therm	[.]	[.]	[.]	[40-50]
Ballytherm	[.]	[.]	[.]	[10-20]
Total	[10-20]	[30-40]	[10-20]	100%

Source: RBB 1 September Report (Annex 1).

5.8. Kingspan's estimates are based on the following formula,

[....

...]

5.9. The data in Table 13, based on Kingspan's estimates, indicate that there is substantial excess capacity in PU/PIR in the State, mainly in the hands of Quinn Therm, who Kingspan estimate to have close to [.] million m^2. However, the undertakings involved also have considerable excess capacity of [.] million m^2. Both figures are substantial compared to the demand for PU/PIR in the State in 2006 at [10-20] million m^2. (See Table 9 above).

5.10. While the undertakings involved are in a position to present reliable estimates of their own production and capacity they may not have reliable information concerning their competitors.[55] Thus the Authority undertook further investigation.

Evidence from Third Parties

5.11. The Competition Authority sought information on output and capacity from other producers of PU/PIR besides Kingspan and from the small number of manufacturers of PU/PIR machinery. The results are presented in Table 14. Quinn Therm informed the Authority that their current maximum production, using three shifts, is [4-7] million m^2. This could be achieved within 3 to 4 months (i.e., end of 2006). Quinn Therm also added that their maximum production capacity with 4 shifts would be approximately [8-10] million m^2, which could be reached in 6 to 8 months (i.e., February to April 2007).[56]

[55] The estimates in Table 13 are drawn from Kingspan which as part of its due diligence would have access to the books of Xtratherm.
[56] The capacity figures presented by Quinn Therm were forward looking and assumed each product was produced at 'optimum' speed using self formulation.

5.12. Xtratherm's production and capacity levels are largely consistent with Kingspan's estimates in Table 13. Ballytherm's capacity was somewhat lower than Kingspan's estimate. The largest divergence occurs for Quinn Therm. It appears that Quinn Therm is not as far down the learning curve as Kingspan estimated.

5.13. Quinn Therm's laminator length at [30-35] meters is the same as Xtratherm's. Kingspan's is slightly smaller at [25-30] meters and Ballytherm's is [10-15] meters. The length of the machine – the laminator – that produces PU/PIR is not the factor that accounts for the difference in ease with which capacity is utilised.

5.14. What does appear to be the limiting factor is how fast the laminator can be run at, which in turn reflects the 'wet end', the part of the process that occurs before the wet chemicals are placed on the laminator. Depending on the level of technical knowledge producers with similar line lengths may produce at different speeds. Product thickness (e.g., 50 mm vs. 100 mm) also affects the speed of the laminator.

Table 14
Estimates of PU/PIR Production & Capacity, Own Producer Estimates, the State, 2006

Producer	Total production(est.) (in million $m^{2)}$	Capacity (in million $m^{2)}$	Excess Capacity (in million m^2)	Distribution of excess capacity (%)
Kingspan	[.]	[.]	[.]	[0-10]
Xtratherm[57]	[.]	[.]	[.]	[40-50]
Quinn Therm[58]	[.]	[.]	[.]	[20-30]
Ballytherm[59]	[.]	[.]	[.]	[20-30]
Total	[10-20]	[20-30]	[10-20]	100

Source: Based on estimates provider by the producers

5.15. Quinn Therm's estimates are based on an average speed of 20-25 meters per minute which is considerably slower than Kingspan's estimates of Quinn Therm's line speed. Despite this, Quinn Therm's estimate is a forward looking one and is based on self-blending, a technology that they will not have fully developed until the end of 2007 Q1. [60] Currently Quinn Therm, and Ballytherm, has a slower production process due to buying in ready blended chemicals (known as 'system blending') instead of blending chemicals in house like Kingspan and Xtratherm. Furthermore Kingspan's estimates of Quinn Therm appear to be based on the production of narrow width boards (50mm) which allow the line to run at quicker speeds. However, Quinn Therm's actual output consists of more than 50 mm PU/PIR, including significant amounts of 100 mm PU/PIR that run at much slower speeds.

[57] Xtratherm will sell approx [.] million m^2 of its Irish output in the UK in 2006
[58] Quinn Therm will sell approx [.] million m^2 of its Irish output in the UK in 2006
[59] The Competition Authority believes that this estimate of Ballytherm's excess capacity is a significant overestimate. See footnote 49 above.
[60] Firm P, a PU/PIR machine maker informed the Authority Kingspan and Xtratherm are the best in self blending, and that Quinn Therm, while number 3 is far behind the merging parties.

5.16. The Competition Authority also contacted Firm P, a manufacturer of PU/PIR laminators. Their response suggested that for a 50mm board the line could run at speeds of 30 – 40 meters per minute depending on production process with the lower bound representing system blending. Firm P informed the Authority that in their view Quinn Therm may take up to one year to be able to successfully self blend; a view consistent with Quinn Therm's prediction.

Demand and Capacity in GB

5.17. It has been submitted by the undertakings involved that Quinn Therm's exports to GB may be re-diverted to the island of Ireland if capacity expansions in Great Britain were to depress Great Britain prices. Furthermore Quinn Therm is planning to develop a plant in Great Britain which, the undertakings involved believes should be operational by mid-2008.

5.18. Quinn Therm's exports to UK appear to be an attempt to build market share in GB ahead of building a plant in the UK. This is the same strategy that Xtratherm followed before it built a plant in Chesterfield. It appears therefore that the optimal strategy for an entrant is to build capacity in Ireland and incur the shipping costs to GB for a 2-3 year period in order to develop brand before investing in a plant in GB. While Irish producers are currently compensated in some regard by higher prices in GB, this is an optimal strategy regardless of whether GB prices are higher or lower than Irish prices. If Quinn Therm were to discontinue shipping product to GB it would undermine future planned capital investments. Thus it seems unlikely that Quinn Therm would redirect exports to the Irish market in advance of establishing a plant in GB.

5.19. Quinn Therm has informed the Authority that decided to build a PU/PIR plant in GB. Quinn Therm have located a site, obtained planning permission and agreed to the purchase of machinery. The machinery will be delivered in June 2007, with production scheduled to start in 2007Q4. As the plant's output of PU/PIR increases then exports from the Irish plant will be phased out by mid-2008.

View of the Competition Authority

5.20. In considering whether or not excess capacity accounted for by the non-merging parties is able to exercise a competitive constraint on the merged entity, it seems reasonable to apply the test concerning entry. Thus for excess capacity to a be constraint, its utilisation must be:

- **Timely** – the capacity is considered timely only if it is brought on-stream within two years;
- **Likely** – in other words bringing the capacity will be profitable at existing (or lower) prices; and,
- **Sufficient** – the additional output from the capacity must return prices to their pre-merger levels. For this to happen capacity must occur on a sufficient scale.

Each of these three aspects of capacity is considered separately. It should be noted that market investigations suggest that the only

credible PU/PIR alternative to the merged entity is Quinn Therm, so the discussion will be confined to that undertaking.

5.21. In terms of ***timeliness***, there is little doubt that the some or all of Quinn Therm's additional capacity can be brought on stream within two years. Quinn Therm can:

- Add a third shift within 3 to 4 months and so increase output by [.] million m^2;
- Add a fourth shift within 6 to 8 months and so increase output by another [.] million m^2; and,
- Reallocate [.] million m^2 exported to GB to supply in the State between 2007Q4 to mid 2008.

In sum, over the period to mid 2008 Quinn Therm could increase capacity (output) by [.] million m^2.

5.22. In terms of whether it is ***likely*** that Quinn Therm will expand output by utilising its spare capacity some consideration of the demand for its PU/PIR is required. At the present time it appears that the buyers of PU/PIR frequently dual source, typically Kingspan and Xtratherm. The buyers like to be able to play one supplier off against the other. In addition, from a security of supply point of view, two major suppliers provide some degree of comfort.

5.23. Post merger the two major suppliers to buyers will be part of the merged entity. Under these conditions it seems reasonable to assume that buyers will seek a second independent source of supply.[61] Indeed one of the major builders merchants informed the Authority that this would be its strategy post merger. Under these conditions Quinn Therm would see a substantial increase in demand for its PU/PIR.

5.24. Quinn Therm stated to the Authority that if they received large orders from, for example, builders' merchants, they would supply such orders at current prices. Furthermore in answer to questions by the Authority, Quinn Therm's business model was to increase output in response to demand, as opposed to fixing a given level of capacity, and supplying that amount and letting the market determine the price. Of course, substantial extra demand would be needed in order to justify an additional shift given the non-marginal addition to capacity of such a shift.

5.25. The final aspect to be considered is will the increase in capacity be ***sufficient***. At the present time the merged entity supplies [.] million m^2 into the State (Table C.3 in Annex C). If we assume that a buyer(s) would have to offer Quinn Therm a substantial increase in business in order to attract favourable discounts and other terms and conditions, then sufficient could be considered between 40-50% of the current output of the merging parties sold in Ireland, [.] to [.] million m^2. The estimates set out above in paragraph 5.21 confirm that over the period 2006-2008 Quinn Therm would be able to meet

[61] The undertakings involved acknowledge, albeit indirectly, the importance of dual sourcing by buyers since post-merger they intend to retain both the Xtratherm and Kingspan brands.

this demand – [.] million m^2 additional capacity could be used to meet this demand by mid 2008; [.] million m^2 by mid 2007.

5.26. Of course it should be noted that these three factors – timely, likely and sufficient - are not independent of each other. If there is a strong likelihood that Quinn Therm will experience a substantial simultaneous increase in demand from several buyers post merger then this is likely to increase the rate at which the additional capacity would be brought on stream. In short, there is greater incentive.

5.27. In sum, on the basis of the evidence available to the Authority, Quinn Therm has capacity that is both timely and sufficient. However, the Authority is not satisfied that capacity expansion is likely and hence that capacity expansion will constrain a post merger price increase.

Entry

The Undertakings Involved Submission

5.28. The PU/PIR market has been characterised by a pattern of successful entry:

- Kingspan, pre-2000;
- Xtratherm, 2002;
- Ballytherm, 2003; and,
- Quinn Therm, 2004.

Since Kingspan began producing PU/PIR during the late 1990s there have been three successful entrants. Each of the entrants was able to successfully enter as a response to the expansion in demand brought about by the change in the building regulations in 2002 as well as the ongoing construction boom in the State.

5.29. Xtratherm had already been active in the insulation market since it had (and continues) to produce EPS and successfully managed to enter the PU/PIR market in 2002.[62] Quinn Therm had also been active in insulation products with lightweight concrete blocks and EPS. Ballytherm started when an ex-Quinn Group employee left to set up his own production facility.

5.30. Kingspan have argued that it is possible to enter on a small scale by leasing rather than purchasing land and machinery and using ready blended chemicals rather than incurring R&D costs to self-formulate.

5.31. Xtratherm provided data on their set up costs in GB in 2005. Xtratherm rented the factory and stated that their total capital costs of entry were €[.] million. They also noted that they entered GB in 1 year.

5.32. The undertakings involved have also identified the following 'potential entrants' into PU/PIR:

[62] Xtratherm had ordered their PU/PIR machinery in 2000 but entry was delayed until 2002 due to a fire in their plant.

- CRH, who own Aeroboard the largest supplier of EPS in the State and Ecotherm a producer of PU/PIR in Belgium and the UK; and,

- Moy, a producer of mineral fibres in the State and a subsidiary of Saint Gobain.

Each of these is an established insulation producer currently selling insulation products – but not PU/PIR – in the State. In the case of CRH they are producer of PU/PIR, albeit in the UK and Belguim.

Evidence from Third Parties

5.33. The Competition Authority received information on entry from other PU/PIR producers in the State, as well as those producers of other insulation products that were identified by Kingspan as potential entrants. Table 15 presents estimates of the costs of de novo or greenfield entry.

Table 15
PU/PIR: Scale, Cost & Time to Enter, by Producer, the State, 2006

Producer	Scale of entry	Estimates of capital costs of entry	Timespan for entry
Quinn Therm	Large scale	€15 million	2 years
Ballytherm	Small scale	€ 8 -8.5 million (in 2003)	18 months[63]
Firm M	Large scale	€14- 16 million	1-2 years
Firm N	N/Available	N/A	N/A

Source: Based on information provided by the producers.

5.34. Both Ballytherm and Quinn Therm entered using pre-blended chemicals although Ballytherm entered on a much smaller scale. Quinn Therm's Hennecke laminator is comparable in size and speed to Xtratherm's, however Ballytherm's line is only [10-15] meters and features a basic 'wet end' compared with its competitors.[64]

5.35. Ballytherm stated that an entrant would need experience of the production process to purchase second hand machinery.

5.36. A further issue that may increase the timespan to entry is the need for accreditation. Producers need to have an Irish Agreement Board (IAB) certificate but can not apply for accreditation until such time as product is being produced. Ballytherm stated that it took them a further 8 months after entry to receive the IAB Cert.

5.37. The Competition Authority also received evidence from CRH/Aeroboard on possible entry into PU/PIR. Aeroboard accepted

[63] Ballytherm had full planning permission on their site in Ballyconnell County Cavan. Ballytherm accepted that without the planning permission entry may have taken more than two years.
[64] Most producers pump chemical onto the laminator using fixed laydown 'heads'. Ballytherm are believed to be using a traverse laydown – essentially a wand that moves sideways dropping chemicals onto the laminator as it moves. The faster the line speed the faster the wand has to move. This is a limiting factor for Ballytherm since if the wand moves too fast it will give an unsatisfactory spread of chemicals. This ultimately means that Ballytherm's maximum speed is fixed at around 10 meters per minute.

that it had an advantage in that it has access to the technology within CRH. Furthermore, the Authority acknowledges that CRH would have access to the market through its relationships with its EPS distributors. However, CRH informed the Authority that it had no plans to enter PU/PIR within the foreseeable future in the State.

5.38. Evidence from Firm A, a GB based producer of PU/PIR, is that they would not consider entry in Ireland due to the existing industry excess capacity.

View of the Competition Authority

5.39. The Competition Authority's Merger Guidelines require the following three requirements to be met for entry to be able to constrain the merger entity raising prices post merger:

- Entry must be **timely** – entry is considered timely only if it occurs within two years;
- Entry must be **likely** – in other words will entry be profitable at existing (or lower) prices; and,
- Entry must be **sufficient** – Entry must return prices to their pre-merger levels. For this to happen entry must occur on a sufficient scale.

5.40. There appears to be consensus that de novo entry into production in Ireland would take up to two years (and possibly longer). This is at the upper bound of the Competition Authority's time horizon for ***timely*** entry. However, entry by an already existing producer of insulation products such as CRH is likely to take a shorter period. At the moment CRH are capacity constrained in GB so that they could not import PU/PIR to build market share ahead of bringing a plant on stream in the State.

5.41. The relevant question on likelihood is whether a firm would find it profitable to enter the market. The Competition Authority believes the size of the market to be approximately €[70-90] million.[65] Fixed set up costs may be in the range of €15-20 million.[66] At the upper bound of €20 million an entrant would need to invest one quarter of the market by value in set up costs.

5.42. Were it not for planning delays, Quinn Therm would have entered along with Xtratherm and Ballytherm during 2002/2003. The pattern of entry to date therefore appears to have been a once-off 'overshooting' based on the exogenous (regulatory) demand shift. Total sales in the state, as a proxy for market demand, in 2006 are estimated to be [10-20] million m^2 whereas capacity, as a proxy for total possible supply, is estimated at [20-30] million m^2. Due to this simultaneous overshooting of entry, supply has significantly exceeded demand and industry excess capacity represents a barrier to further entry.

[65] This figure is based on submissions by buyers and an estimate of total revenues provided by RBB in Annex 8 to its June Report.

[66] In paragraph 2.7 of the Notification Form Kingspan stated that the acquisition of Xtratherm's UK plant would save Kingspan €15 – 20 million in capital expenditure on a new site. This was also repeated in an analyst's report of Kingspan by Davy Stockbrokers who estimated that the Xtratherm deal would save Kingspan capital investment costs of €20 million.

5.43. There is a literature on excess capacity as a barrier to entry. The crux of this theory is that an entrant will recognise that there is significant cost effective spare capacity in the industry that can be utilised at a very short notice. In this instance an entrant considering entering the market post merger as a result of an increase in equilibrium prices would recognise that if it tried to enter and compete away any super-normal profits, the incumbents could quickly utilise spare capacity thus making entry unprofitable. Such an action could occur before entry thereby preventing it or immediately after. Incumbents in an industry earning super-normal profits, both with spare capacity would know that it is in their interest to strategically utilise spare capacity, or threaten to do so, to prevent profitable entry. Such a proposition is supported by evidence from producers the Competition Authority identified as potential entrants.[67]

5.44. Demand for insulation is a function of construction activity which may have peaked in 2006/2007.[68] Supply of insulation is currently being satisfied at present with four producers all of whom have some level of excess capacity.

5.45. Furthermore there is no evidence that any undertaking is considering entry into PU/PIR in the State. The Authority has contacted several possible entrants and all have stated that they do not intend to enter the State. This in contrast to GB where credible entry is expected over the next two years reflecting the different market situation. Thus entry is ***unlikely***.

5.46. There appears to be two entry models; a large scale entry (Quinn Therm and Xtratherm approach) and small scale entry (Ballytherm). The Competition Authority does not view the small scale option as being 'sufficient'. Furthermore due to some of the 'learning curve' issues that Quinn Therm appears to be encountering, it is not clear that large scale entry would be ***sufficient*** during the foreseeable future, except if an existing producer of PU/PIR outside the State, such as CRH entered the market.

5.47. In sum, the view of the Authority based on the available information is that entry into PU/PIR over the next two years could be timely and sufficient to offset any price increases post merger by the merger entity, Kingspan/Xtratherm, but due to excess capacity is unlikely.

Buyer Power

The Undertakings Involved Submission

[67] The theory of using cost effective excess capacity as a barrier to entry is not inconsistent with a proposition that a player in a market would not sufficiently utilise its excess capacity to prevent a competitor from increasing its prices. For instance Competitor A may find it profitable not to utilise a sufficient amount of its spare capacity if Competitor B raised its price as it may also want to benefit from higher prices. However when Firm C considers entering in light of the higher market prices, it will recognise that it will be in the interests of both Competitor A and B to utilise their excess capacity is reaction to entry.

[68] This is supported by data provided by Kingspan in the Notification Form on forecasted construction activity. In an internal document in Confidential Annex 7.3 Kingspan cited a report by NCB which showed that 2005 units were completed in 2005 and forecasted 79000 for 2006 and 2007 and 75000 for 2008 and 2009.

5.48. RBB argued in its June Report that the post merger behaviour of the emerged entity would be constrained by the presence of powerful customers with the ability to exert bargaining leverage.

5.49. Data on rebates was presented which showed an upward trend in rebates as a percentage of total sales from [.]% in 2000 to [.]% in 2005 (Table 16). Kingspan also provided data on the sources of these rebates. [.] currently receives a rebate in the order of [.]% and other large buying groups such as Firm G, and Firm F receive rebates in excess of [.]%.

5.50. It might be noted, parenthetically, that the rebates are consistent with increased competition as new firms entered and expanded and in order to secure market share reduced prices via secret discounts.

Table 16
Kingspan's PU/PIR Sales and Rebates, the State, 2000 - 2005

Year	Gross sales (€000s)	Rebates (€000s)	Rebates as a % of total sales
2000	[.]	[.]	[.]
2001	[.]	[.]	[.]
2002	[.]	[.]	[.]
2003	[.]	[.]	[.]
2004	[.]	[.]	[.]
2005	[.]	[.]	[.]

Source: RBB June Report (Annex 9, Table 18).

Evidence from Third Parties

5.51. The Competition Authority has spoken to all of the large buyers and sent questionnaires to builder's merchants throughout the State. Buyers raised concerns regarding the merger. Buyer groups like to have two large suppliers to ensure security of supply so as to maintain credible bargaining power. Buyers have raised concerns regarding price increases. Box 2 summarises the responses by buyers when asked if they had any concerns regarding the merger.

Box 2

Views of Buyers of PU/PIR on the Proposed Kingspan/Xtratherm Merger

Response of buyers to question: Do you have any concerns in relation to the proposed acquisition of Xtratherm by Kingspan? If yes, please list the concerns you may have.

Firm F: Price control concern. Possible stabilisation of prices.

Firm G: Consolidation is not good as it limits our ability to source from alternative suppliers. We have not taken a price increase from our supplier for a number of years and taking (Hytherm) out of the equation can only be bad for our business. (Hytherm) were instrumental in keeping prices at a competitive level. Home owners including first time buyers will pay higher prices.

Firm I: Kingspan is an extremely well run organisation. The merger will bring stability in the marketplace.

Firm H: It would be better if the transaction did not take place.

Firm C: The merger will eliminate the major constraint on Kingspan. Buyer power of Firm C and others will be reduced because of the creation of a producer with 80% market share. Quinn will have an incentive to match the price policy of the merged entity.

Firm D: Prices will increase, some retailers may look at importing

Firm J: The merger will lead to increased prices

Source: Buyer responses to Authority questionnaire

View of the Competition Authority

5.52. There are a number of large buyers of PU/PIR in the State, such as the Grafton Group, and Associated Hardware. The Authority's Merger Guidelines state, "Effective buyer power requires that buyers have alternative sources of supply …"[69] These buyers have to have the potential to play one producer off against another. Buyer power depends on low switching costs, availability of credible alternatives and lack of transparency in prices. All the evidence suggests that buyers can switch PU/PIR suppliers. There are no long term contracts and the product is homogenous. Rebates off list prices are not disclosed. Furthermore post merger there will be one credible supplier of PU/PIR other than the merged entity, Quinn Therm.

5.53. Buyers have indicated a concern regarding their ability to source product from other suppliers. Imports as described in section 3 above and in the paragraphs below are not viable in the foreseeable future. However Quinn is capable and willing to offset any supply contraction by the merged entity. The issue of whether buyer power will act as a competitive constraint will therefore be considered in Section 6 below

[69] Paragraph 4.10 of the Guidelines which maybe accessed on the Authority's website.

along with an analysis on the likeliness of Quinn Therm to sufficiently utilise its spare capacity.

Imports

5.54. As described in Section 3 above imports do not appear to be a competitive constraint for the following reasons:

- UK prices are currently higher than Irish prices;
- Transport costs represent a significant barrier to entry, the product is a bulky product of very low value;
- Storage costs further compound the transport costs; importers will want to send large volumes to lower the average cost per unit whereas buyers will want small volumes or financial support to store product at their sites;
- Access to the distribution network, importers will need to sell through the builders merchant route and this will require local knowledge; and,
- Marketing costs, Kingspan and Xtratherm have relationships with buyers, builders and architects. A foreign supplier would have to provide financial incentives to a builder's merchant to enable it to encourage builders to use the imported product, unless of course they already had a well established brand or reputation in the area of insulation.

SECTION SIX: COMPETITIVE EFFECTS

Introduction

6.1. In this section the issue of whether or not the merger will result in SLC is addressed. Both unilateral and co-ordinated effects were considered by the Authority. Since there were no concerns with respect to co-ordinated effects the discussion is confined to unilateral effects.

6.2. The Authority's *Merger Guidelines* define unilateral effects in paragraph 4.4 as follows:

> Unilateral effects refers to the general case of a market characterised by a non-cooperative oligopoly, i.e., a market with a relatively small number of participants, each of which maximises its own profits, but is taking account of the actions of other participants in the market. Unilateral effects arise where, as a result of the merger, the merged firm finds it profitable to raise price, irrespective of the reactions of its competitors or customers. The term unilateral effects also captures the situation where, as a result of the merger, the non-cooperative equilibrium changes, and some or all of the firms modify their behaviour.

Unilateral Effects

6.3. As described in Section 4 above the merger will create a market participant with a market share in excess of 80%. The large HHI and delta result in a 'Zone C' concentration. A concentration of this kind may give rise to competition concerns where as a result of the merger the merged entity can profitably raise its price, irrespective of its competitors and/or where as a result of the merger, some or all of the firms unilaterally change their behaviour. Both of these situations are referred to as unilateral effects.

6.4. The larger the market share the more likely the firm is to possess market power and the larger the incremental market share the more likely it is that a merger will lead to a significant increase in market power. The larger the increase in the sales base on which to enjoy higher margins after a price increase the more likely it is that the merging parties will find such a price increase profitable despite the accompanying reduction in output.

6.5. It is clear from an analysis of the evolution of market shares in Section 4 above that Xtratherm has taken considerable market share from Kingspan since its entry in 2002. It is also clear from evidence by Firms C, E and F, all large buyers who supply both Kingspan and Xtratherm product to builders, that greater volume is purchased from Xtratherm than Kingspan and in each case the difference was substantial.[70] Since entry Xtratherm's market share has risen to [40-

[70] Each of these buyers purchases greater than €2 million of PU/PIR per annum. It is important to note however that Firm D an independent builders merchant that responded to the questionnaire purchased 1-2% more volume from Kingspan than Xtratherm based on total annual purchases of PU/PIR of €750,000.

50]% while Kingspan's has declined to [30-40]%. This trend has continued despite the entry of Quinn Therm and Ballytherm.

6.6. Further evidence from buyers (outlined in Section 5 above) indicates that Xtratherm is Kingspan's closest competitor especially with respect to constraining Kingspan's ability to raise its price. Kingspan and Xtratherm have the closest business models and compete not just on price but also on pre and after sales service.

6.7. The concern is therefore that the internalisation of demand substitution between the merging parties will create a unilateral incentive to set a higher price post merger.[71] Given the closeness of competition between Kingspan and Xtratherm it is reasonable therefore to assume that if Kingspan were to attempt to increase its prices post merger that a significant amount of its sales would, other things being equal, be captured by Xtratherm, thus creating a strong incentive to increase price post merger.

6.8. Kingspan have already attempted unsuccessfully to substantially increase its price in 2004/05 due to increases in input prices. One of the reasons that the price rise was unsuccessful was the competition from Xtratherm. (See, for example, Box 2 above, Firm G).

6.9. The key question is whether it would be profitable for the merged entity to exercise market power by increasing prices for a sustained period. The ability of the merged entity to exercise market power depends on the alternatives that are viable for buyers facing the price increase**.**

6.10. It should be noted, however, that it would not be in interest of the market participants to compete vigorously on price where there are only two major suppliers, the product is homogenous and there is limited potential growth in the market. Price competition could trigger a price war to the detriment of all market participants.

6.11. The Competition Authority does not consider entry to be likely, nor does it consider imports to act as a competitive constraint in the foreseeable future. As noted in Section 5 above, the Authority is of the view that entry is unlikely given the level of excess capacity in the market in the hands of the merged entity and its main competitor, Quinn Therm. Also, the Authority does not consider imports an effective constraint on any exercise of market power by the merged entity given the considerably higher prices in Great Britain.

6.12. The Authority considered whether it would be in the interest of Quinn Therm, the main competitor of the merged entity, to constraint any exercise of market power. Quinn Therm could respond to a price increase by maintaining the current market price and thereby, increase it sales. As result, it would be unprofitable in these circumstances for the merged entity to exercise market power.

[71] Thus following a merger of A and B, A recognises that some of sales it would have previously lost following a price increase would be recaptured through B, and vice versa. Bringing A and B under common control reduces the opportunity cost to each of a price increase, and so results in both firms choosing a higher optimal price.

6.13. The Competition Authority does not consider entry to be likely, nor does it consider imports to act as a competitive constraint in the foreseeable future. Given that entry and imports are unlikely, buyer power depends on credible alternatives that are likely to utilise any spare capacity.

6.14. The Authority is of the view that that it is more likely that Quinn Therm would respond by accommodating at least to some degree a price increase by the merger entity. In other words, the merging parties raise price and restrict output, while the expansion of Quinn Therm is insufficient to offset the decline in the merged entities quantity decrease. Quinn Therm stated that if the market prices were to rise due to a contraction in output by the merging parties that it would seek to follow that price increase. Furthermore evidence by Quinn Therm suggested that it was endeavouring to increase the margin generated from PU/PIR from [..%] to [..%].[72]

6.15. If Quinn Therm's responses to a post merger price increase are confined to maintaining price at the pre-merger price or matching exactly the price increase of the merger entity, then Kingspan are correct that maintaining the pre-merger price could be more profitable for Quinn Therm and the price increase would not be sustainable.

6.16. However, a more profitable strategy for Quinn Therm is to partially match the price increase and increase market share/output. This is unlikely to lead to Kingspan reducing its price since it will still find it profitable to accept some loss of market share. A price war with a homogeneous product triggers a downspiral in prices which only benefits buyers. Eventually a new equilibrium will be reached in which prices are higher, Quinn Therm's market share is higher and output of PU/PIR overall is reduced. Such a view is consistent with the Authority's *Merger Guidelines* where unilateral effects are discussed (see paragraphs 4.4 to 4.16, especially 4.4 and 4.7).

Conclusion

6.17. In sum the Authority, having regard to the nature of the market under consideration which is characterized by a homogenous product, high concentration, high market share by the merged entity, a limited growth potential, limited import competition and sufficient excess capacity to prevent entry, believes that the merger will lead to a significant lessening of competition for the two following reasons:

- A vigorous competitor to Kingspan has been removed from the market; and,

- Post merger Quinn Therm is likely to accommodate the price rise of the merged entity.

[72] Quinn may be able to achieve [..%] cost savings from self formulation and this would help it to achieve some of its stated margin increase.

SECTION 7: DETERMINATION

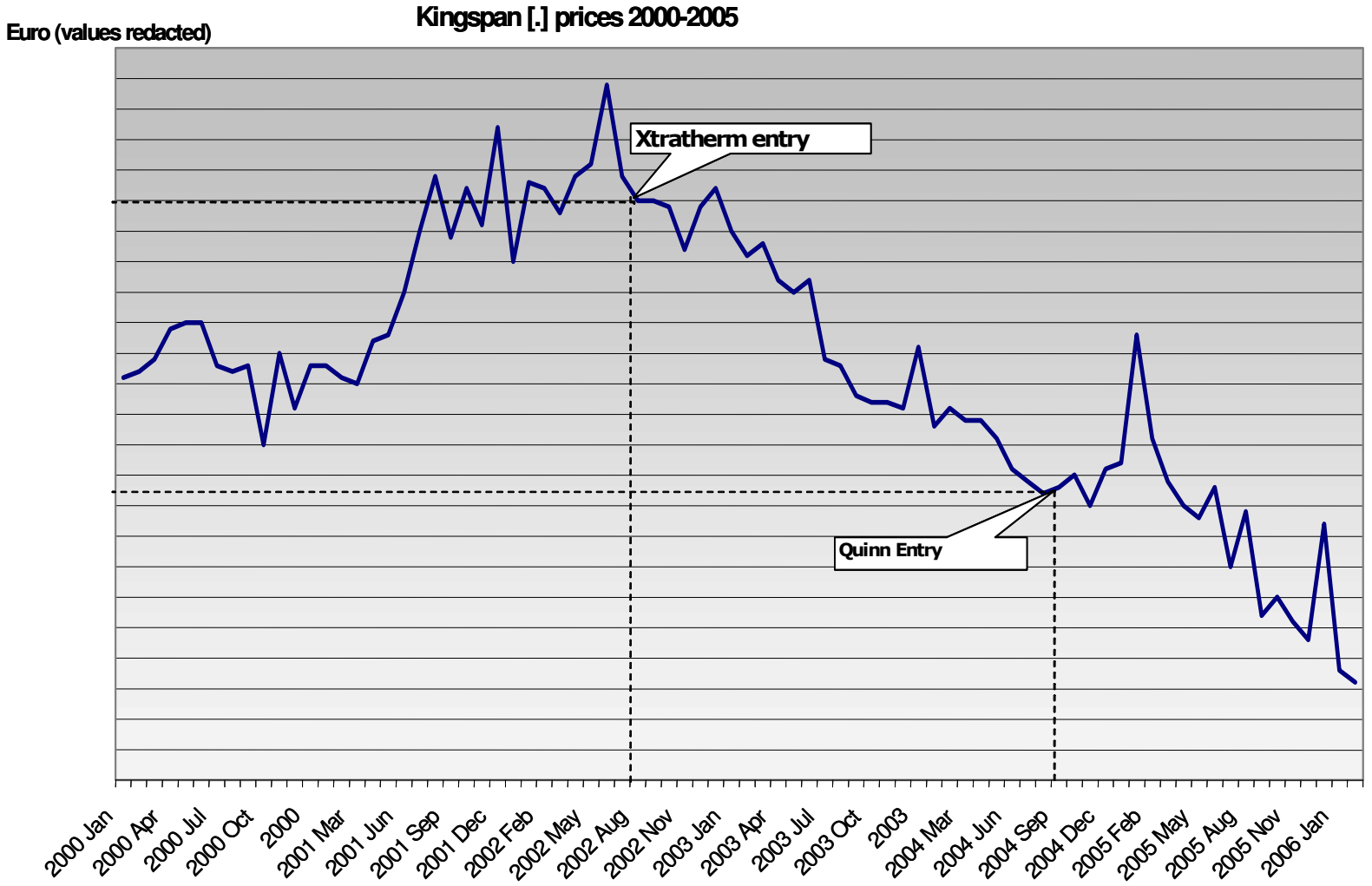
7.1. In light of the foregoing conclusions, and having completed its full investigation in relation to the proposed transaction, the Authority, in accordance with Section 22(3)(b) of the Act, has formed the view that the result of the proposed acquisition by Kingspan Group PLC of Leanort Limited will be to substantially lessen competition in markets for goods and services in the State and, consequently the Authority herby determines that the acquisition may not be put into effect. Before making a determination in this matter, the Authority, in accordance with Section 22(8) of the Act, had regard to any such relevant international obligations of the State, concluding that there were none.

For the Competition Authority

William Prasifka, Chairperson and Member

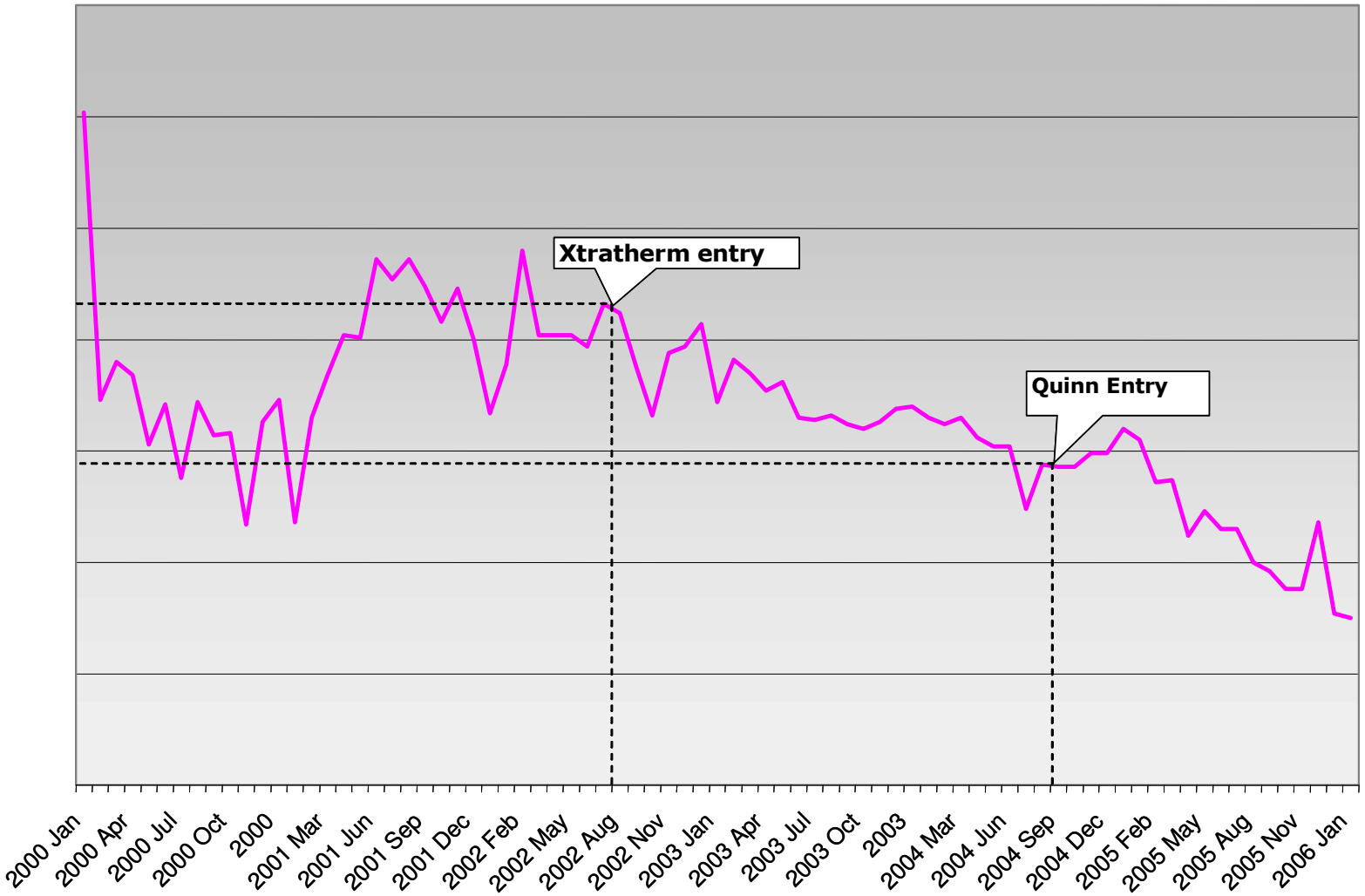
25 October 2006

ANNEX A: KINGSPAN PRICING DATA JANUARY 2000 TO FEBRUARY 2006

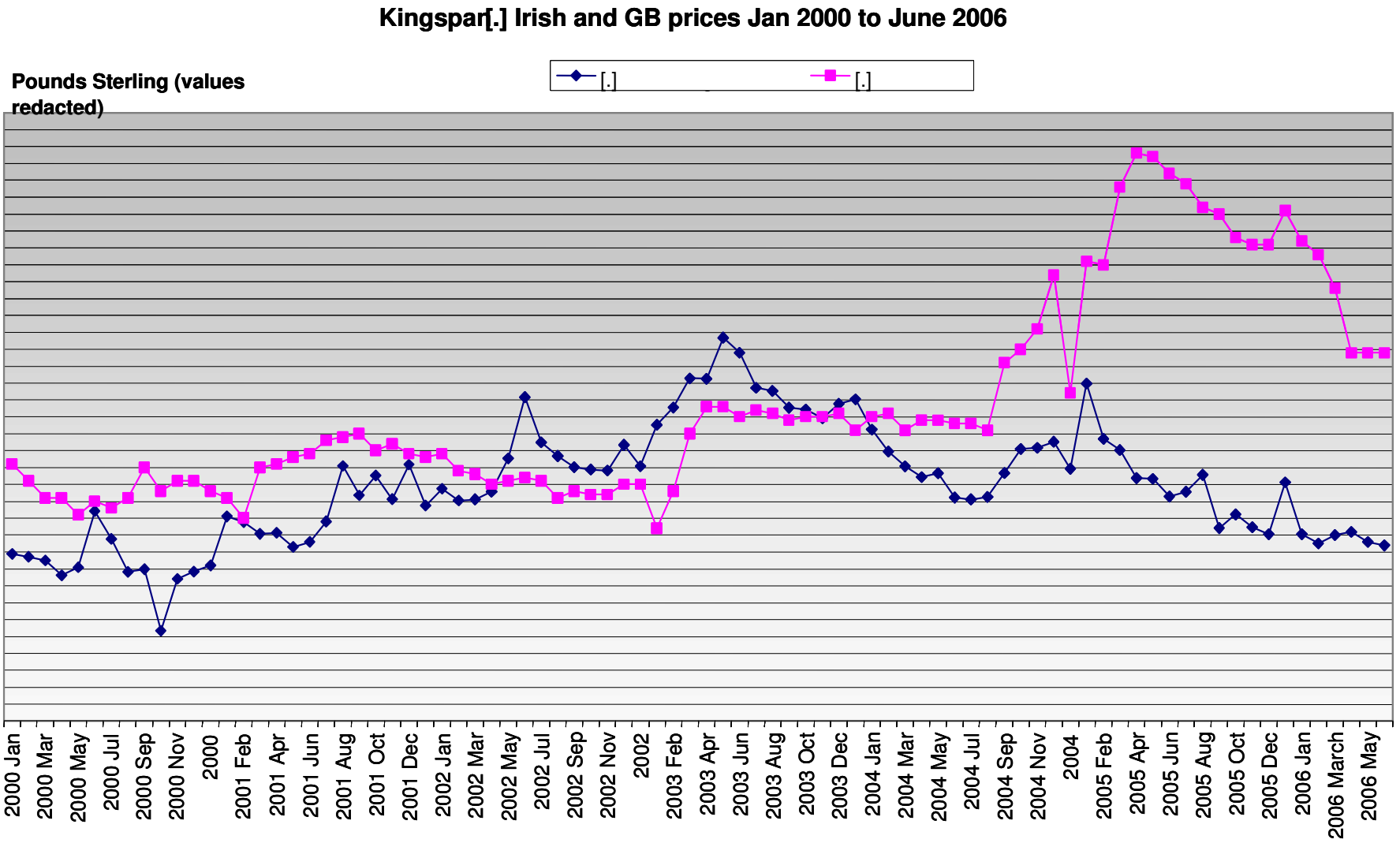


Kingspan [.] 2000-2005

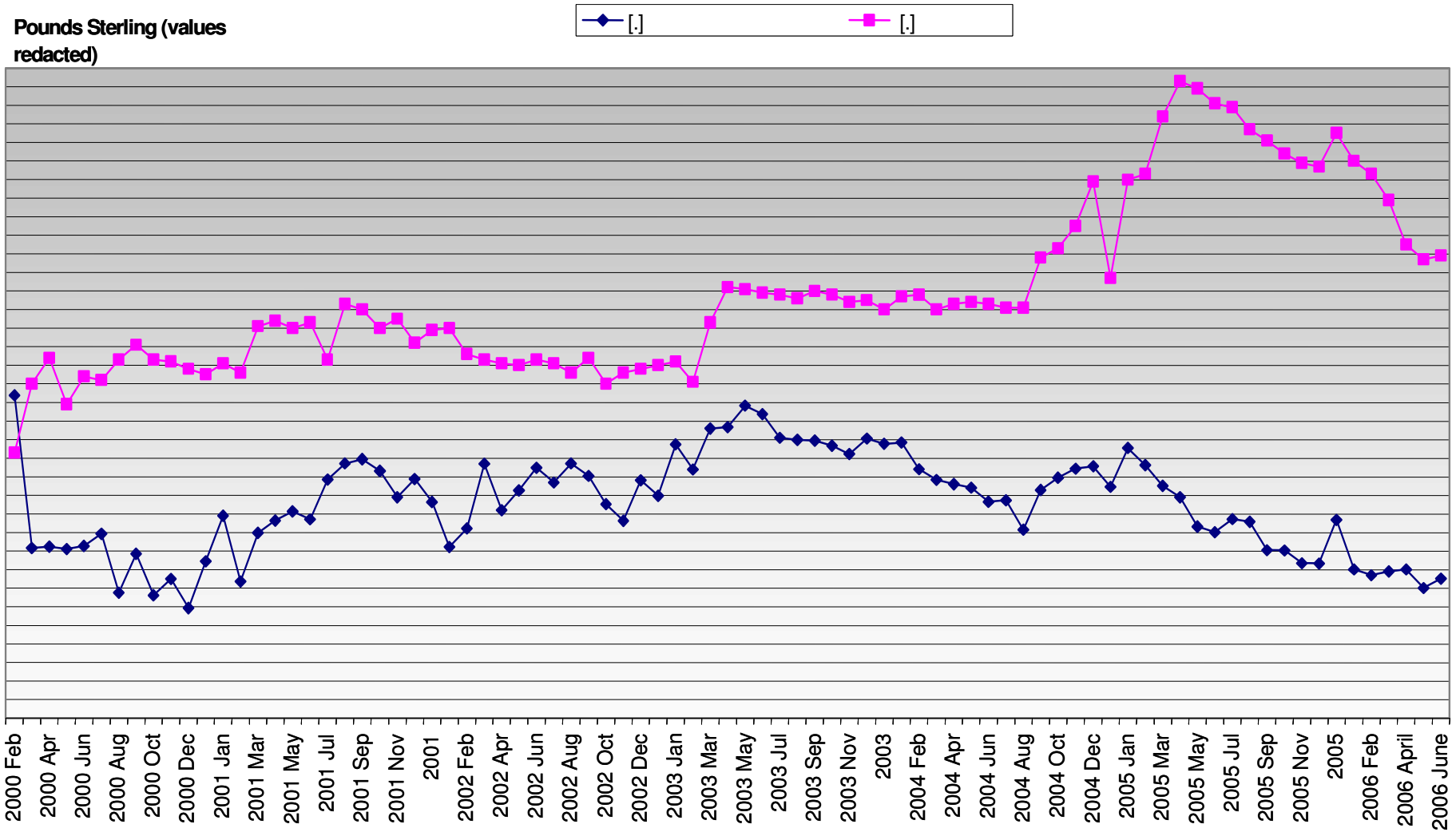
EURO (values redacted)



ANNEX B: COMPARISON OF KINGSPAN PRICES IN ROI AND GB



Kingspan [.] products in Ireland [.] and GB [.] Feb 2000 to June 2006



ANNEX C: Estimating the Market Shares of Producers of PU/PIR in the State

C.1 The market share of each producer is measured in m^2 of PU/PIR. These estimates were provided on a confidential basis by the individual producers to the Authority for 2006 and for 2004 and 2005 based on Kingspan estimates. Since the relevant market is the State is was necessary to exclude the producers' exports and add in any imports it may have been responsible for in that year. We know, for example that:

- Quinn Therm and Xtratherm exported substantial volumes to the Great Britain in order to establish its presence there ahead of any plans to build a plant in the local: and,

- Kingspan imported small amounts of PU/PIR from its plant in England prior to moving to a third shift in its plant in the State.

As a result adjustments had to be made to take into account such activities.

C.2 Tables C.1 to C.3 provide the results of this exercise for 2004 to 2006.

C.3 In responding to the Competition Authority's Assessment, Kingspan submitted that Quinn Therm's output in 2006 was [.] million m^2 and that its sales in the State were [.] million m^2. This would increase its market share to [.]% for 2005.

Table C.1
Market Share by Output (in million m^2), PU/PIR, the State, 2004[73]

Producer	Output (in million m^2)	Output exported	Volume of product brought from the UK	Volume of sales in the State	Market share %
Kingspan	[.]		[.]	[.]	**[60-70]**
Xtratherm	[.]	[.]		[.]	**[30-40]**
Quinn Therm	-				
Ballytherm	[.]			[.]	**[0-10]**
Total	[10-20]	[0-10]	[<1]	[0-10]	**100**
C_2	**[95-100]**				
HHI	**4792**				

Source: See text.

[73] Source: Table 15 of Annex 8 of the June RBB Report

Table C.2
Market Share by Output (in million m^2), PU/PIR, the State, 2005[74]

Producer	Output (in million m^2)	Output exported	Volume of product brought from the UK	Volume of sales in the State	Market share %
Kingspan	[.]	[.]	[.]	[.]	**[40-50]**
Xtratherm	[.]	[.]	[.]	[.]	**[40-50]**
Quinn Therm	[.]	[.]	[.]	[.]	**[0-5[**
Ballytherm	[.]	[.]	[.]	[.]	**[0-10]**
Total	[10-20]	[0-10]	[<1]	[10-20]	**100%**
C_2	**[90-95]**				
HHI	**4118**				

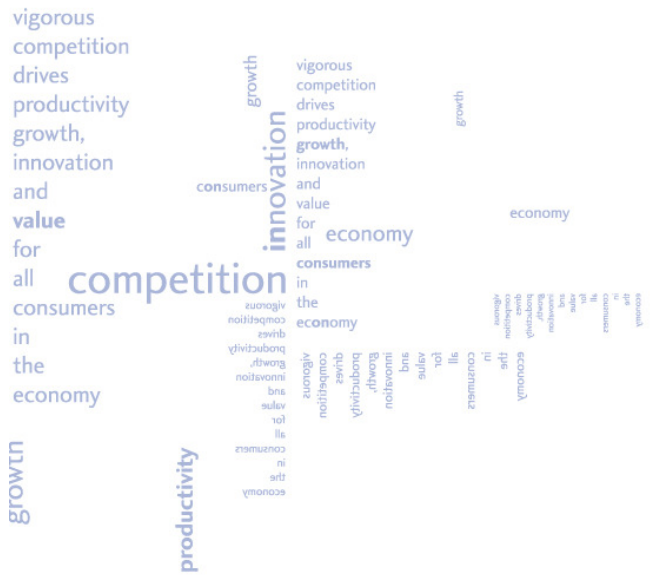
Source: See text

Table C.3
Market Share by Output (in million m^2), PU/PIR, the State, 2006[75]

Producer	Output (in million m^2)	Output exported	Volume of product brought from the UK[76]	Volume of sales in the State	Market share %
Kingspan	[.]	[.]	[.]	[.]	**[30-40]**
Xtratherm	[.]	[.][77]	[.]	[.]	**[40-50]**
Quinn Therm	[.]	[.]	[.]	[.]	**[10-20]**
Ballytherm	[.]	[.]	[.]	[.]	**[0-10]**
Total	[10-20]	[0-10]	[<1]	[10-20]	**100%**
C_2	**[80-85]**				
HHI	**3570**				

Source: See text

[74] Source: Table 14 of Annex 8 of the June RBB Report
[75] Source: Own output data provided confidentially by each producer
[76] See Table 5 above
[77] As estimated by Kingspan and provided in Annex 8 to RBB's June report



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