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**PERI-URBAN FARMLAND CONSERVATION AND  
DEVELOPMENT OF ALTERNATIVE FOOD NETWORKS: INSIGHTS FROM  
A CASE-STUDY AREA IN METROPOLITAN BARCELONA (CATALONIA, SPAIN)**

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**Abstract**

There has been a growing literature on alternative food networks (AFNs); structures that reconfigure the systems of production, distribution and consumption of food. Part of this literature emphasises the local scale and the idea of proximity. In a world that is increasingly urban, AFNs at a local scale can be more easily developed by linking peri-urban farmlands and cities. However, agriculture in the rural-urban fringe struggles to survive in the face of urban pressures and sprawl; a process which undermines viable agricultural production in the city's countryside. A widely used strategy to address these pressures has been farmland protection, undertaken in different ways depending on the legal framework of particular nation states. This paper considers farmland conservation and AFN development issues through a case-study of the Baix Llobregat Agricultural Park (BLAP) in metropolitan Barcelona. It concludes that AFNs in peri-urban areas are only possible if farmland preservation is guaranteed, and that the former does not come as a direct consequence of the latter. The specific conditions in which both can occur will be of interest for scholars as well as policy-makers and planners.

**Key-words:** peri-urban agriculture; farmland protection; alternative food networks; land-use policy; metropolitan area of Barcelona.

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## INTRODUCTION

Globally, there are now more people living in cities than there are rural dwellers. One of the consequences of this is the disconnection between places that focus on producing food (rural areas, see Bell et al., 2010) and places that consume most of the food produced, that is, urban areas (Knight and Riggs, 2010). Furthermore, as urban populations increase, a reduction in farmland is inevitable, particularly as urban settings tend to be based on prime agricultural soils (Bryant and Johnston, 1992). This urban encroachment has been reported in different parts of the world, including China (Lichtenberg and Ding, 2008), the European Union (EU) (EEA, 2006), the United States (US) (Alig et al., 2004) and Australia (Houston, 2005), and all these studies forecast continued farmland contraction at the expense of urban expansion. Worldwide, cities face two irrevocable challenges; their disconnection from food production areas and the destruction of farmland. This paper will consider policy responses to avert indiscriminate peri-urban farmland loss while ‘reconnecting’ urban farmlands with consumers, using a case-study example from the Barcelona peri-urban area.

An increasing interest in food quality, food trustworthiness and an appreciation of food socio-cultural traditions and especially the ‘reconnection’ of urban areas to nearby food production are all contributing factors to the growing literature around the so-called ‘alternative food networks’ (AFNs) (Wiskerke, 2009; Renting et al., 2003). ‘Reconnection’, an oft-quoted concept in AFN research (Morgan, 2010; Sánchez-Hernández, 2009; Fonte, 2008; Ilbery et al., 2005; Watts et al., 2005; Winter, 2003) is an aspiration of places known as ‘urban food deserts’, where links between the city and its nearby farmlands are replaced by industrial-scale production for export and mass consumption (Fonte, 2008; Breitbach, 2007; Haslam McKenzie and Stehlik, 2005).

Previous studies analysing cities’ heterogeneous food links with the surrounding land have been undertaken in Vancouver (Canada) (Condon et al., 2010), São Paulo (Brazil) (Blanc, 2009), Rome (Italy) (Sonnino, 2009), Seattle (US) (Jarosz, 2008), and Lyon (France) (Dufour et al., 2007). This literature however, pays limited attention to the conservation of farmland in the cities’ countryside. Dufour et al. (2007) analysed how *Coteaux du Lyonnais* provided Lyon with fresh food and this connection was reinforced through a branding promotion of Coteaux’s products, but their research did not consider land-use decision-making or the mechanisms by which land-use was secured for the purposes of food production. Condon et al. (2010) explained spatial planning and food management in metropolitan Vancouver, but they failed to link the concepts and did not examine the zoning mechanisms by which farmland could be

preserved. Another example is Jarosz (2008), who explored the provision of food in Seattle and the contribution made by proximate farmers to urban markets but did so without scrutinising land-use planning. Jarosz (2008, 238) observed that “protection of farmland is key to local food systems” but did not develop the point further. Follett (2009) and Condon et al. (2010) also concluded in their papers that farmland is essential for AFN development, but they did not mention how this might be achieved. In this paper, we aim to fill these knowledge gaps.

The aim of this paper is to bridge the gap between two critical issues of relevance for peri-urban areas: farmland preservation and AFN development, using a case-study from a farmland precinct near Barcelona, the Baix Llobregat Agricultural Park (BLAP, *Parc Agrari del Baix Llobregat*, PABL in Catalan), as an illustrative example of the integration of planning, farmland protection and AFN management. Condon et al. (2010) have suggested that by protecting farmlands on the fringe, AFNs will emerge. Based on the information derived from this case-study, such a statement seems naïve. Farmland protection in peri-urban areas is not a new issue, as will be discussed below. The AFN agenda has gained momentum, driven by increasing attention to access to healthy food, food security, food safety and the reduction in obesity rates (Pothukuchi, 2009; Donald, 2009; Cummins and Macintyre, 2006) which has motivated renewed attention to planning. The American Planning Association policy guidelines on food planning (APA, 2007), emphasise the protection of prime peri-urban farmlands and the introduction of food policies which aim to curb the creation of food ‘monocultures’ by big retailers. Some practical applications of planning approaches have been developed as design explorations (Weller, 2009; Viljoen, 2005), but overall, there is a general lack of examples of farmland preservation and AFN development in the literature. The case-study here analysed will identify specific implementation measures and will be of use to planners and policy-makers in a world dominated by urban centres which are rapidly reducing the supply of highly productive agricultural land. The focus of this paper is AFNs and planning, particularly within a European context where state intervention in land-use planning is common.

The remainder of this article is organised as follows. In the next section the peri-urban agriculture debates are presented, with a specific focus on farmland conservation. A background section contextualises the study and in particular explains the role and value of AFNs. The following two sections outline the case-study, first presenting the region and explaining the adopted case-study methodology, and then the implementation and development of the BLAP. The empirical research and theoretical implications are discussed and the paper concludes with planning recommendations.

## PERI-URBAN FARMLANDS: FROM CHARACTERISATION TO PRESERVATION

Since the beginning of academic interest in peri-urban agriculture, there has been concern about the reduction in farmland due to urbanisation. As early as 1940, Wehrwein (1940) noted farmland contraction caused by urban sprawl in New Jersey and New York. The same was reported by Wills (1945) in Sydney and foreseen by Deffontaines (1949) in Barcelona. The essential and distinguishing feature underpinning peri-urban or fringe farmland is its proximity to cities and, consequently, remote, possible or close urbanisation options (Paül and Haslam McKenzie, 2010). In this paper *peri-urban* and *fringe* farmlands are used interchangeably. In English it is usually referred to *the city's countryside* or *the rural-urban fringe* (Audirac, 1999; Bryant and Johnston, 1992). In French, the dominant concept is *agriculture périurbaine* (*peri-urban agriculture*), a term adopted by the FAO (Zezza and Tasciotti, 2010; Drescher, 2001) and other languages such as Spanish. The literature particularly that from the US, discusses the vulnerability of peri-urban farms to speculation as land value increases. Van Kooten (1993), Berry (1978) and Sinclair (1967) point to 'the impermanence syndrome' blaming zoning policies for contributing to farmers unwillingness to invest in their operations when higher value residential rezoning is possible, thus outstripping the value of farm production. Proximity of farms to urban dwellers create situations for heightened potential conflict; the possibility of unpleasant farm noises, sights and smells for urban dwellers and increased vandalism and protests against farmers, resulting in a long-standing 'negative narrative' (Alig et al., 2004; Sullivan et al., 2004; Daniels and Bowers, 1997).

Nonetheless, fringe farmlands have also been theorised with positive implications; a case in point being Von Thünen's 19<sup>th</sup> century seminal work on agriculture near cities. This 'positive' approach considers the advantages of market proximity and is based on the assumption that, due to the high value of the land, farmers have to invest more and work harder to balance urban pressures, leading to increased revenues (Bryant and Johnston, 1992); hence, the notion of "agricultural adaptation to urbanization" (Heimlich and Barnard, 1997). Positive and innovative behaviour by farmers in response to urban competition has facilitated their transition from conventional farming to alternative practices; for example, organic farming (Beauchesne and Bryant, 1999), direct selling by farmers to consumers rather than through supermarkets, specific labelling identifying product origin, etc., that is, the development of multiple AFNs. It is also true, however, that the nature of peri-urban farming has caused agricultural intensification and subsequent industrialisation (Bryant and Johnston, 1992), a trend contradicting the essential features of AFNs.

A characteristic of peri-urban farmlands is the inherent diversity of land-uses. Fringe agricultural lands are often adjacent to timberland, wildlife habitats, urban sub-divisions and motorways. This causes a blurred landscape that is neither urban nor rural (Gant et al., 2011; Bomans et al., 2010; Gallent and Andersson, 2007; Gallent and Shaw, 2007; Bengston et al., 2004; Robinson, 2004; Bryant et al., 1982). The literature has also focused on land-uses located on the fringe that are not usually found elsewhere, such as bulk-retail, warehousing and rubbish tips (Gant et al., 2011; Gallent and Andersson, 2007; Gallent and Shaw, 2007). This range of land-uses is referred to in Spanish or Catalan as 'peri-urban' (Abadia, 2002; Garcia-Ramon et al., 1995); henceforth, in this paper 'peri-urban land-uses' will adopt this meaning. Attention has recently focused on the proliferation of hobby-farming on the fringe, including the development of equestrian centres and land given over to grazing urban owners' horses ('horsification'), maintaining the rural character but limiting food production (Bomans et al., 2010; Low-Choy et al., 2008; Gallent and Andersson, 2007; Qviström and Saltzman, 2006).

Concerns about metropolitan farmland contraction have precipitated research on farmland preservation. Gómez-Mendoza (1987), Bryant and Johnston (1992) and Alterman (1997) identified a range of international land management tools, most of them based on zoning provisions. Logically, specific mechanisms are contingent upon each country having its own legal and regulatory context. The US literature on the topic is vast, but as Dissart (2006) explains, 'taking issue' implies public compensation if farmlands are to be protected. In other countries that is not applicable; for instance in Spain, as in most of the EU, public powers legally forbid urban development in farmland (Article 33 of the Spanish Constitution states that private property has a "social function"). Bengston et al. (2004, 273) summarised the US land management tools, outlining 30 mechanisms for "managing urban growth" or "protecting open-space", connoting them as "two sides of the same coin", and highlighting:

- The lack of empirical evaluation of open-spaces (including farmland) preservation policies. Other scholars agree; for example, Koomen et al. (2008) commented that there is insufficient explicit examination of plans or management for open-spaces preservation.
- Vertical and horizontal coordination is critical for successful implementation, but it is often lacking, suggesting the need for better governance arrangements between different agencies and spheres of government. A common criticism is directed at exclusive municipal participation when determining zoning issues in fringe areas, as local councils typically condone urban growth (see Gant et al., 2011 and Amati and Yokohari, 2006 for London's greenbelt; Koomen et al., 2008 regarding the

Netherlands; Vandermeulen et al., 2006 for Brussels' fringe; Paül and Tonts, 2005 for Barcelona's fringe). The usual planning outcome of such an approach is the establishment of urban growth boundaries (UGB) between the urban and farmlands, which are often modified over time (Gennaio et al., 2009; Koomen et al., 2008). UGB changes cause uncertainty for farmers regarding their long-term business continuity, often inhibiting investment in improvements and resulting in the sale of land to developers (Adelaja et al., 2011; Pendall et al., 2002); hence the 'impermanence syndrome'.

- The need for good governance is critical, underpinned by stakeholder participation throughout the planning process and implementation for attaining effective outputs. The requirement for "collaborative planning", in the words of Healey (1997), is strengthened by the oft-cited observation that the rural-urban interface is a "battleground" (Ambrose, 1992) or "contested" (Furuseth and Lapping, 1999), where multiple actors struggle over a valuable resource, land, with farmers, public agencies and the broader community, all perceived as rightful participants in determining its use (Bryant, 1995).

These considerations demonstrate that planning in itself – by means of preventive zoning arrangements – is not effective for the preservation of farmlands near cities. Gallent and Shaw (2007) showed how classical land-use policies such as greenbelts lack specific governance provisions and consequently fail to manage the complexities of fringe lands. It is evident that physical land-use plans do not prevent urban intrusion and are not sufficient if productive farmland is to be preserved.

### **THE EMERGENCE OF ALTERNATIVE FOOD NETWORKS (AFN)**

The literature regarding AFNs is a complex body of theoretical developments and there are debates whether AFNs are in fact *alternative* (Venn et al., 2006; Goodman, 2004; Robinson, 2004) or even *networks* (Bell, 2008). The perspective adopted here is that AFNs offer an alternative to the dominant industrial, conventional and bulk systems of food production, distribution and consumption. However, it is accepted that this is a contested term and that alternative and conventional food networks may not always be clearly demarcated (Blay-Palmer and Donald 2006; Ilbery and Maye 2005).

In general terms, AFNs are typified as short supply chains (Renting et al., 2003) with opportunities for consumers to connect with producers, allowing consumers to purchase fresher, safer and tastier foods whose origin is known and trusted. If the "modernist

paradigm” was characterised by a divorce between farmers and consumers, and between farmers and the food industry (and other food chains), AFNs represent “a critical process of reconnection” (Ilbery et al., 2005, 117). Renting et al. (2003) and Murdoch et al. (2000) describe AFNs as networks of, and relationships between, producers, consumers and other actors that embody alternatives to the more standardised industrial mode of food supply. It has also been noted in the literature (Wiskerke, 2009; Renting et al., 2003; Murdoch et al., 2000) that AFNs are diverse in nature and space but the central argument for AFNs is food quality; and hence, the notion varies between regions (Donald, 2009). Some key characteristics of emerging definitions of quality include consumers’ changing perceptions about mass-produced food and its associations with an ecological framework and some producers’ rejection of mass-produced food and their claims to supply food that is ‘regional’ through labelling (including the EU PDO/PGI Schemes<sup>1</sup>) (Sonnino 2009). Ilbery and Kneafsey (2000) state that food quality is socially constructed and defined in terms of association (with the place of origin), specification (raw materials, recipes or production), attraction (taste, texture...) and certification (a quality mark or label).

These approaches identify quality certifications, specifically with regard to the place of origin, as being of central importance in AFNs. However, although certification and quality are linked concepts and are often confused, they are not the same (Mutersbaugh et al., 2005). Certification can be global or local, geographical or not geographical, but those receiving major attention are the EU PDO/PGI schemes (Fonte, 2008; Brunori and Rossi, 2007; Trubek and Bowen, 2008; Ilbery et al., 2005; Parrott et al., 2002). It is evident in this literature that, because of the spatial diversity, regionally-based AFNs are not necessarily linked *per se* to the region itself, but the association is negotiated and contested. All this is consistent with a fundamental feature of AFNs: the assumption that AFNs ‘re-spatialise’ food (Renting et al., 2003; Parrott et al., 2002; Marsden et al., 2000). This is important in the context of the notion of ‘reconnection’, bearing in mind that conventional food is perceived as ‘placeless’ (Trubek and Bowen, 2008).

According to Renting et al. (2003) AFNs adopt plural morphologies and Sánchez-Hernández (2009) identifies thirteen basic types, ranging from PDO/PGI schemes to organic food, box-

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<sup>1</sup> PDO (Protected Designation of Origin) and PGI (Protected Geographical Indication) are regional products recognised by the EU. To attain this labelling, products must be distinctive and have either regional or local names. The designation is initiated at the regional or national scale and culminates in the EU official recognition. For PDO commodities, production, processing and preparation must take place in a given region, while for PGI recognition only one of the three phases is associated with the region. PDO is therefore stricter and more exclusive.



schemes,<sup>2</sup> farmers' markets, direct sales or fair trade. Follett (2009) classifies AFNs as 'weak' and 'strong', depending on the direct links and connections to production. Discussions between a reduced alternative food agenda focused on environmental issues (organic farming) and a wider alternativeness (social justice and equity, medium and small farms conservation, etc.) are perennial issues in AFN development (Morgan, 2010; Brown and Getz, 2008).

Another category linked with AFNs is regional/local food. Regional and local constructions are never neutral or taken for granted (Lois, 2009; Harvey, 1996). This debate has focused partially on the distance between consumer-producer determining the notion of 'local' which varies according to different commentators. 'Local' according to Morgan (2010) is a maximum of 30 miles but Kirwan (2004) suggests it is 50 miles and AMAP<sup>3</sup> associations in France extend the 'local' boundary to 100 kilometres. It is nonetheless evident that for an urban market, short distances between food producers and consumers are achievable in peri-urban farmlands.

Before going to the case-study, it is necessary to consider the specific Spanish AFN context. Situated in Mediterranean Europe, traditional foods have been less affected by large scale agricultural productivism, thus maintaining a culinary gastronomic tradition based on local products, which fits well with the definition of AFNs (Parrott et al., 2002). Historical legacies have contributed to the preservation of local food networks which in other regions have disappeared or never existed (Fonte, 2008; Renting et al., 2003). According to Parrott et al. (2002) and corroborated by Sonnino (2007) and Brunori and Rossi (2007) in Italy, Pouzenc et al. (2007) in France, and Armesto and Gómez-Martín (2006) in Spain, the association between *terroir* and tradition frames the notion of quality. Consequently, several products have been promoted for designation as PDO/PGI, most related to rural development initiatives. Renting et al. (2003) suggest that direct sales, a widely acknowledged indicator of AFN development, are more common in Southern Europe than in the North.

In Spain farmers' markets persist in most cities and public urban markets (managed by municipal councils) (Sánchez-Hernández, 2009). Unlike other countries (for example, the US and Australia), these are not novel. Generally there is limited literature regarding Spanish AFNs with the exception of information regarding the PDO/PGI areas (Armesto and Gómez-Martín, 2006; Sanz and Macías, 2005; Molinero et al., 2004), or discussion about the scope of organic farming (Armesto, 2008). However, studying food certification in Spain is internationally

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<sup>2</sup> Box-schemes are companies, cooperatives or groups that distribute food to nearby private consumers, often individual families, guaranteeing that products are fresh and produced locally. Usually boxes (crates) are distributed weekly, with a pre-negotiated price.

<sup>3</sup> *Associations pour le maintien d'une agriculture paysanne*, particular community organisations promoting local agriculture in France.

relevant for its particularities (Mutersbaugh et al., 2005, 383), not otherwise raised by other research based in North European and North American contexts.

## **CASE-STUDY AREA**

The BLAP is a consortium constituted in 1998 and formed by several public bodies including the Catalan Government, the Barcelona Provincial Council, the Baix Llobregat District Council and fourteen municipalities and a private farmers' union; a complex inter-agency arrangement.

The municipal level is empowered with urban and rural planning and control and is responsible for the delineation of urban growth boundaries. However, municipalities in the BLAP area do not manage their own municipal land-use plans; these come under the auspices of the Metropolitan Plan passed in 1976 at the end of Franco's dictatorship and hence without democratic participation or municipal consensus. The next tier of government is the district (*Comarca*), a cooperative level of municipalities, funded by the Catalan Government and municipalities. The Provincial Council (*Diputació*) is another cooperative level of municipalities, funded by the Spanish Government and the municipalities themselves. In general terms, both district and provincial councils have no clear responsibilities except to support municipalities in exercising their functions. The Catalan Government (*Generalitat*) is relatively powerful and has control over spatial (regional) planning and agriculture, while the Spanish Government has almost no involvement in these issues.

The BLAP area is situated on the southern edge of the Barcelona conurbation, with 2.5 million inhabitants (IDESCAT, 2010). As shown in Figure 1, it is almost entirely surrounded by urban lands, including Barcelona's conurbation to the north, and several different cities to the south. The entire metropolitan area of Barcelona has five million inhabitants (IDESCAT, 2010). The BLAP area is fragmented into fourteen municipalities, each with its own local council.

### **Figure 1. Location map.**

BLAP records show there are 621 farms in the area, mostly family-run, with approximately 1,200 farmers, 78% of whom are full-time. Approximately 900 are land-owners or the family of land-owners and 300 are wage-earner with no family ties.

In land-use terms, extensive fieldwork undertaken in 2007-2008 is summarised in Table 1. This data shows that two thirds of land is dedicated to agriculture, shaping a rural-dominant landscape, which is not always the case on the fringe. Vegetables and fresh fruit production

are dominant; the former historically distributed in the Delta and the latter in the Vall Baixa (Figure 1), although fruit production has diminished in favour of horticulture. Artichoke is the most important vegetable crop (covering 8% of the area), and chard, lettuce, cauliflower, tomato, cucumber and zucchini are also important. Contrary to international popular assumptions, these commodities do not attract subsidies or funds from the EU or any other government (Molinero et al., 2008). Of the remaining area, one fifth is natural area (mostly marshes, wetlands and the Llobregat river bed, partially zoned as protected natural space), almost 10% is infrastructure and 6% is idle land (although, as discussed later, some of this is used in a controversial way). The remainder of the BLAP is covered by 'peri-urban land-uses', as characterised in the earlier theoretical section of this paper: small industrial operations, residential (not farmhouses), hobby-farming and plots devoted to 'horse-culture'. These 'peri-urban land-uses' are concentrated in the southern area of the Delta, as well as in the Vall Baixa section, to the north (Figure 2). They are not permitted by BLAP planning and are therefore controversial. Farmhouses are permissible only if they pre-exist the BLAP planning guidelines. There are 73 farmhouses in this category and they occupy 1% of the land area. The majority of farmers live in neighbouring cities outside the farmlands, thus avoiding the temptation to develop farmhouses for urban purposes and the pressures associated with the 'impermanence syndrome' (van Kooten, 1993; Bryant and Johnston, 1992).

Table 1. Land-uses in the BLAP (2008).

Figure 2. Location of selected land-uses in the BLAP (2008)

In the past, production was mostly exported (Deffontaines, 1949) but now the BLAP estimates that 75% of production is consumed by metropolitan residents of Barcelona. Exportation largely ceased after the Spanish Civil War (1936-39) when access to external markets closed in the 1940s and 50s. Instead, production focused on local consumption (metropolitan Barcelona) which doubled in population from the Civil War period to the 1970s (from less than two million to more than four). Export markets were not recovered. Currently metropolitan consumers identify with the BLAP local products and, as will be discussed, appreciate the link with the place of production; and this link is being strategically developed by the BLAP. Fifteen percent of the total fresh vegetables supplied in 2007 to Mercabarna (the wholesale central metropolitan market where farmers sell their commodities, mainly to small and medium retailers, and public-owned suburban markets) comes from metropolitan farmlands and it is estimated that 60% of that was from the BLAP area (Paül, 2009). These figures represent a considerable contribution to the food supply of metropolitan Barcelona, and more so as

producers consume their own food and hence avoid foodmiles. Further, according to an internal survey conducted by the BLAP in 2005, 56% of farmers are direct sellers (mainly through stalls in suburban public markets or shops at home) and 44% sell their produce through wholesalers in Mercabarna. This survey also showed that farmers who sell direct had better returns than those who used intermediaries.

## **EPISTEMOLOGY AND METHODOLOGY**

This research is analytically embedded in an inductive approach, the aim being to generate, description, analysis and theoretical outputs through detailed empirical observations within a specific case-study area. The case-study is as an area where external and internal actors or stakeholders at several scales produce the space (Di Méo and Buléon, 2005; Harvey, 1996; Marsden et al., 1993; Santos, 1988). These actors are constantly interacting and competing, generating conflicting *raison-d'êtres* and governances (Brunori and Rossi, 2007). This approach is in line with AFN theory (Follett, 2009; Sánchez-Hernández, 2009; Watts et al., 2005) and the rural networking paradigm (Murdoch, 2000).

Two data collection methods were adopted for this research: documentary analysis and formal and informal interviews. Documentary analysis comprised the examination of land-use and management plans, public and BLAP internal documents (including assessments by the BLAP regarding the submission of planning applications), several reports and the BLAP magazine (two issues per year, 1998 to 2008).

Sixteen formal in-depth interviews were conducted in 2004-2005 with farmers (n=8), farmers' union staff (n=2) and environmentalists and other civil society stakeholders (n=8). Suitable interviewees were identified through the 'snowball' technique, as described by Hay (2005). The environmentalists and civil groups are particularly active in open-space preservation in Catalonia (Nogué and Wilbrand, 2010; Nel-lo, 2003). Semi-structured interviews were used in order to achieve a deeper understanding of interviewees' beliefs and values. They also provided the opportunity for the interviewer to gain clarification where necessary on contested issues (Ruiz-Olabuénaga, 2003; Taylor and Bogdan, 1984). The three key issues discussed were perceptions regarding:

- (i) the changes to farmland in recent decades and potential consequences in the future;
- (ii) land-use planning impacts on farmland; and
- (iii) the BLAP and AFNs and food-planning decisions.

The eighteen interviews ranged from one to four hours in length and, with permission, were recorded.

Between 2007 and 2009, informal interviews were conducted with BLAP consortium officers and agronomists (n=7) in order to complement and contrast earlier information obtained. The focus of these interviews was on planning and decision-making regarding food strategies within the BLAP consortium. Several formal meetings between officers, agronomists, farmers and public representatives conducted between 2006 and 2008 were also observed and recorded.

Data from these interviews and meetings were structured using open-coding, allowing comprehensive appraisal of the main points identified as critically important for the BLAP regarding farmland preservation and AFN development issues. The results are consequently an abstraction of the key themes raised by the interviewees. These include the origins of the BLAP and the development of the legal entity and subsequent land-use and management plans. The 'integrated' and organic farming associations became an integral part of the strategic direction adopted by BLAP including initiatives such as distinct labelling and brand promotion.

### **PARC AGRARI DEL BAIX LLOBREGAT (BLAP) DEVELOPMENT THEMES**

All interviewees considered the history of the region to be very important for understanding the BLAP. It came about as a consequence of a long-term claim by the *Unió de Pagesos* (UP, created in 1974), the principal farmers' union in Catalonia. At the conclusion of Franco's dictatorship, the 1976 Metropolitan Plan was passed and farmers considered this an unacceptable reduction in farmland which compromised their farms. This led, in 1977, to the *Save the Plain! (Salvem el Pla!)* campaign, promoting the positive contribution made by urban farmlands to the health and welfare of the metropolitan area. The campaign gained significant support from environmentalists and other civil organisations.

The first democratic elections for municipal councils took place in 1979. During the 1980s farmers, civil society organisations and elected councillors discussed a permanent framework for guaranteeing the right to farm without threat from urban areas and developers. Farmers wanted 'watertight' protection for their farmland and were concerned about (mainly) government proclamations to develop new infrastructure in their area (for example, a high-speed train, the redirection of the Llobregat River and an airport extension). In 1994-1995 farmers actively participated in the Strategic Plan of the Baix Llobregat District and attained a

broad consensus with stakeholders (including politicians) for permanent preservation of the remaining farmland. In 1996 the UP lobbied for political commitment and after considerable conflict, the Baix Llobregat District and the Barcelona Provincial councils conceded a permanent framework for farmland preservation and the concept of an 'agricultural park' materialised. EU funding was granted through the LIFE program<sup>4</sup> in 1996-1998 and this was used to develop concept plans for the establishment of the park and "pilot actions" such as hitherto unprecedented strategies such as rural policing and 'integrated' agriculture.<sup>5</sup>

The outcome of this process, particularly the concept plans, was the formation in 1998 of a Consortium called Parc Agrari del Baix Llobregat (BLAP, PABL in Catalan) created from the District and Provincial councils and the UP. Importantly for the farmers, this created a permanent legal entity and the fourteen municipalities subsequently joined. Initially the Catalan Government resisted joining despite having policy primacy in agriculture but eventually came on board in 2006. This private-public partnership between the farmers and the multi-levels of government enabled the farmers to have a permanent role in policy-making. In addition, the Consortium established a Participative Board with representatives from other farmers' unions or associations, and different civil society groups (environmentalists, universities, scientific academies, local studies groups, neighbours' associations). The Participative Board debate issues but do not have policy-making responsibility. Interviewees noted these governance arrangements were unusual in Spain, and although the operational management of the Consortium is complex, they agreed that it is representative of the stakeholders and that decisions are made by consensus. The UP insists that public officers working in the Consortium are committed to the future of agriculture in the area and consequently BLAP staff have a reputation for their enthusiasm for the future of peri-urban agriculture. Some non-staff interviewees consider this optimism to be crucial for BLAP sustainability.

Initially some farmers were resistant to the BLAP precinct, resulting in open confrontation. Anti-BLAP farmers presumed that the implementation of the BLAP should have been acknowledged by the Catalan Government and therefore that the BLAP lacked legitimacy. They also complained that the BLAP impeded further 'development' (urbanisation) of farmlands and

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<sup>4</sup> LIFE is the EU's financial instrument supporting environmental and natural conservation projects.

<sup>5</sup> 'Integrated' is "halfway between conventional and organic. It lays down technical rules for fertilisation and the use of phytosanitary products, as well as for soil conservation systems. However, unlike organic agriculture, it does not totally ban synthetic fertilisers or plant protection products" (Sanz and Macías, 2005, 484).

hence compromised their future off-farm earning capacity.<sup>6</sup> Meanwhile, pro-BLAP farmers, environmentalists and the Consortium argued that urban development should not have been possible since the passing of the 1976 Metropolitan Plan. Since the establishment of the BLAP, some earlier antagonists have subsequently changed their mind. They quoted three principal reasons for this; firstly, the foundation of a rural police force reduced agricultural theft. Secondly, road and irrigation channel improvements by the BLAP were perceived as positive actions and, thirdly, the inauguration of the Consortium headquarters in 2004 in a local farmhouse (Can Comas) was viewed as a commitment to place, and thus assumed by some initially reluctant farmers as an effective contribution to their businesses.

In 1999 a specific Land-use Plan for the area was drafted to provide general protection to the agricultural areas under the 1976 Metropolitan Plan and later ratified in 2004 by the Catalan Government after considerable debate. The Land-use Plan reaffirms that agriculture is the priority land-use in the area. The BLAP Consortium does not have the power to pass the Land-use Plan, and interviewees explained that negotiations with the Provincial Council and the Catalan Government were complex and difficult. Between the first draft and the final Land-use Plan, there were changes in the size of the BLAP precinct (Figure 3), reducing the area zoned as farmland outlined in the 1976 Metropolitan Plan. Interviewees attributed the shrinkage to some local councils which insisted on additional urban expansion.

**Figure 3. BLAP precinct shifting during the negotiations of the Land-use Plan (1999-2004).**

The Land-use Plan did not give planning powers to the Consortium, but it is mandatory for local councils to seek BLAP advice, which is given by way of assessments for planning applications (art. 20.2; PABL, 2004, 34). Some interviewees thought that this was, in land-use terms, a “pyrrhic victory” for the Consortium. Others were more optimistic and felt that this empowered the Consortium to advise against some planning applications and local councils (the level of government managing applications) subsequently rejected them based on the BLAP assessments. The latter interviewees believed that this has prevented considerable ‘horsification’ (development of horse-culture), hobby-farming, land plot fencing, and the serial re-application for ‘peri-urban’ uses.

Most interviewees extolled the lobbying role of the Consortium in planning terms. For example, in 2001 the Spanish Government announced a high-speed train line through the precinct which represented the most direct and cheap option, but which would have caused

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<sup>6</sup> Opponents to the BLAP appealed to the Spanish High Court arguing that the Consortium was illegal, but this was rejected in 2005.

farm fragmentation and loss of farmland. After considerable debate, the government agreed to build a four kilometre tunnel under the Delta fields and a two kilometre viaduct over Vall Baixa fields to preserve farmland (Figure 2).

Drafted in 1998, the Management Plan was passed in 2002 after a long consultative process including a survey delivered to farms. The Management Plan provides the guidelines for the Consortium to work by means of five strategies, fifteen aims and forty-nine actions (Appendix A). Interviewees expressed positive feedback about its content, but were doubtful that there are sufficient funds for the attainment of such a wide set of actions.

It is evident from interviewees that over the last decade BLAP management has adopted less ambitious goals from the original Management Plan. As noted by respondents, specific directions have gained momentum, particularly the development of marketing of agricultural products within strategies 2 and 3, aims 2.3, 3.1 and 3.3 (Appendix A). Some of these actions were included in the 2002 Plan, and those most valued by interviewees included upgrading the retail premises of direct-seller producers and the encouragement of local restaurants to use BLAP products (explicitly indicating the origin and FRESC labelling).<sup>7</sup> However, other marketing initiatives that were not envisaged by the 2002 Plan have been developed; for example, the design of a website (<http://www.elcampacasa.cat>) informing consumers which BLAP farmer produces what commodities, where they are located and where the products are sold, and the development since 2008 of a 'vegetable tourism' program offering weekend packages.<sup>8</sup> This strategy has attracted thousands of visitors and has been a successful strategy to promote BLAP products and the website.

Prior to the implementation of the BLAP, two local farm associations collaborated to hire the service of agronomists to advise on 'integrated' farming techniques. Respondents noted that these associations have benefited from the Consortium by means of indirect support (rather than subsidisation), especially product marketing. There are now three associations and, according to data provided by an interviewee, farm membership has increased (in one association, six-fold between 2000 and 2009). As noted by respondents, in the last decade the associations have evolved from 'integrated' production systems to fully organic agriculture, prompted by the AFNs's commercial successes and notoriety.

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<sup>7</sup> This campaign is called *Flavours of the Orchards (Els sabors de l'horta)* and began in 2003 with fifteen restaurants. In 2010 there are thirty-six participating restaurants. No funding is given to restaurants, but they are promoted through BLAP-provided brochures as offering BLAP products FRESC-labelled by tourism offices.

<sup>8</sup> This package includes: a visit to farms, the interpretation of a museum exhibition in Can Comas (which includes exhibits on FRESC and PDO/PGI labelling), a cooking and tasting workshop, and a restaurant meal using local produce.



The agronomists provide a fee for service to the farmers and there is continuous interaction between all of the stakeholders (farmers, BLAP officers, agronomists and technicians). The co-location of the agronomists and BLAP staff at Can Comas facilitates constant interaction and participation in activities organised by the Consortium, such as marketing workshops and technical knowledge exchange. In particular, some respondents have reported that the synergy generated in this “ideas-breeding ground” was the catalyst for the development by a farm group of a box-scheme company (with the direct participation of one of the advising agronomists in the company).

Most of the interviewees claimed that the creation of product identity using labelling was a critical element for the sustainability of agriculture in the BLAP. Interviewees claimed that ‘quality’ was an over-used marketing term and consequently in 1998 the BLAP adopted the label FRESC (meaning *fresh* in Catalan). The Consortium dictated that only producers in the precinct who distributed their produce fresh could use FRESC labelling. While there was some initial reluctance from farmers, many restaurateurs now seek out produce with this label. The FRESC label has been aggressively marketed through brochures, local displays, fridge magnets and annual calendars showing the food seasons.

Prior to the existence of the BLAP, the *pota blava* chicken, produced in the BLAP area, acquired PGI labelling from the EU (1996). The Consortium signed a collaboration agreement with the association of *pota blava* chicken producers to promote and market this product. Interviewees also reported that the Consortium has worked to attain the PDO label for artichoke, the largest crop of the BLAP (Table 1). To that end, BLAP has funded research to identify the unique features of this artichoke (particularly its characteristic salty taste) and since 2008, the Catalan Government is considering the application for PDO classification.

#### **DISCUSSION: THE PARC AGRARI DEL BAIX LLOBREGAT (BLAP) IN CONSERVATION FARMLAND AND ALTERNATIVE FOOD NETWORKS (AFN) CONTEXTS**

As noted earlier, this paper aims to highlight the critical relationship between farmland preservation and AFN development in peri-urban areas. It has been suggested that farmland protection on the city fringes will lead to AFN development (Condon et al., 2010), but based on the evidence from this case-study, such a statement seems naïve. The BLAP was not an imposed land protection device, but rather a farmer initiative to preserve their livelihood, the value of which was ultimately recognised and valued by governments and the broader community. It did not emerge as a counter to the ‘impermanence syndrome’ but rather, the bottom-up nature of the BLAP initiative was spontaneous and contrary to the more usual top-

down bureaucratic policy-making in Europe (Kazancigil, 2010; Brunori and Rossi, 2007). After years of campaigning and even bitter demonstrations, farmers' pleas were acknowledged by government. Critically, urban recognition of the value of open spaces, agricultural ecosystems and historical cultural landscapes prompted municipal and supra-municipal councils to protect peri-urban farmlands through the BLAP. Subsequently, BLAP was the impetus for the development of AFNs. These developments culminated in an exceptional urban-rural partnership, guaranteeing farmland protection and stability and were a departure from the usual arrangements. It was also the catalyst for the development of several other AFNs at the metropolitan scale.

According to the categories identified by Bengston et al. (2004), the collaborative nature of the BLAP not only brings horizontal and vertical governance to the various spheres of government, but also demonstrates cooperation between farmers and governments. In the case of the BLAP, a consortium was viewed as profitable for farmers, but it later showed a wider social benefit. In the beginning, the community implications were unclear, and in fact most of the initial BLAP initiatives were for farmers and their enterprises (road infrastructure, rural police), achieved through strategy 1 of the Management Plan (Appendix A). However, progressively the operations of the BLAP have evolved to a pro-AFN administration. It is not without criticism (Goodman, 2004) but AFN development is now acknowledged (Morgan, 2010; Follett, 2009; Donald, 2008; APA, 2007; Breitbach, 2007) as socially progressive and favouring sustainable cities and regions.

A case in point is land-use planning. Previous research has shown that traditional physical farmland preservation by way of tools such as urban growth boundary (UGB) and zoning are not effective. In this case-study, farmland was already zoned as agricultural and a UGB had been established through the 1976 Metropolitan Plan. However, from the farmers' perspective, this was not working because land was still being developed for urban purposes despite its apparent public-policy protection. The 2004 Land-Use Plan provided more protective clout, as expressed by one interviewee, it gave "protection over protection". The 'double' protection in the BLAP appears to be an effective strategy in the contested arena of the rural-urban fringe (Furuseth and Lapping, 1999; Ambrose, 1992; Bryant et al., 1982).

As was foreseen in international literature (Gant et al., 2011; Gennaio et al., 2009; Koomen et al., 2008; Vandermeulen et al., 2006), the case-study demonstrates an antidote to pro-urban growth action of local councils. Although some local councils did claw back some land for urban development (Figure 3), eventually there was mutual commitment to farmland preservation.

The continuous shifting of the UGB was identified by Adelaja et al. (2011) and Pendall et al. (2002) as a major factor for farmers' instability on the fringe. The explicit delineation of the BLAP UGB in 2004 arrested urban encroachment and safeguarded farm sustainability. This was an effective counter to any possibility of the 'impermanence syndrome', although in Spain, this threat is less common due to the land-use planning system which, theoretically, prevents the direct sale of farmlands to urban developers once these lands are legally classified as farmlands and the land-use cannot be changed (Paül, 2009).

In addition, interviewees commonly reported 'peri-urban uses', 'horsification' and hobby-farming as threatening to engulf the productive areas. Some literature has tended to accept these land-uses as typical of fringe localities and even laud its landscape contribution (Gallent and Andersson, 2007; Qviström and Saltzman, 2006). However, this research detects a common interviewee perception of them as a danger because they undermine farmers' viability. Gant et al. (2011) concluded that London greenbelt edge municipalities were to some extent favouring the existence and extension of 'peri-urban land-uses'. Conversely, the BLAP lobbied to avoid these developments and has even advocated non-renewal of existing licenses of 'peri-urban land-uses'. This has not been achieved by compulsory executive planning documents, but rather through advice-assessments; a flexible tool which in hindsight has been recognised by decision-makers as useful. In addition, as the high speed train line example illustrated, consistent and persistent action by the Consortium against major infrastructure installations which threatened peri-urban farmland was successful. Although not having planning powers, it achieved its results by lobbying local councils and governments, and through unified action. To sum up, farmers are often voiceless on the fringes (Hamin, 2003; Bryant, 1995; Bryant and Johnston, 1992), partially because of their demographic insignificance in a metropolitan area, but in the BLAP they have a loudspeaker.

AFN development has been another important achievement by the BLAP. Prior to the creation of the Consortium in 1998, direct sales to consumers were usual, a traditional form of marketing in the Spanish context rather than a formalised AFN (Sánchez-Hernández, 2009). There were two 'integrated' farming associations and, since 1998, AFN development has escalated with the conversion of these associations from 'integrated' farmers to organic farming methods, the development of a third association and the increasing number of farmer members of the associations. Furthermore, these associations set up four box-scheme companies and this pivotal shift towards more complex and evolved AFNs assuages Marsden et al. (2000) pessimism regarding the sustainability of AFNs over time. Although the consumer perspective has not been interrogated in this paper, the presence of an urban market with five

million people is an important reason for the consolidation of AFNs in the Barcelona metropolitan area, which is also the experience noted by Jarosz (2008) in Seattle. In addition, cultural and historical factors play an important role. Like other Mediterranean cities, Barcelona is a city with strong links to its surrounding countryside (Sonnino, 2007).

What has been the role of the Consortium in the AFN movement? Interviewees did not give an equivocal answer, but decisions such as co-locating the BLAP staff and agronomists in the same offices have been important. There has been no direct funding to farmers incentivising participation in AFNs, but in situ interaction has been a leitmotif for AFN transition. In addition, persuasive actions have taken place; for example, an abstract of the internal survey delivered in 2005 on farm commercialisation was published in the BLAP magazine highlighting increased profitability for farmers who utilised the direct-sale chain rather than Mercabarna chains. The article concluded by suggesting that “farmers should think about which is the best commercial outcome”.<sup>9</sup> The BLAP does not overtly oppose Mercabarna but subtly informs the farmers that there are marketing alternatives. Farmers ‘lose’ control of their product when selling through wholesale organisations such as Mercabarna and there is no contact between producer and consumer.

There were obvious BLAP pro-AFN actions cited by interviewees, such as the website <[www.elcampacasa.com](http://www.elcampacasa.com)>, the ‘vegetable tourism’ package and the FRESC label. All are marketing actions that not only encourage farmers to sell directly to the consumer, but also reinforce to farmers already direct-selling the value of pursuing alternative food production and distribution networks. The BLAP therefore assists AFN development in a flexible but deliberate manner, enhancing the transition from ‘weaker’ to ‘stronger’ AFNs in line with Follett’s (2009) theory. At an official level the 2002 Management Plan included an inferred AFN agenda (Appendix A), but over time this strategy gained momentum, thus reinforcing the rural-urban links which underpin the BLAP and which are delivered through AFNs. Renting et al. (2003, 408) insist that AFNs “must be based upon both institutional support and new types of associational development involving a range of actors operating within the chains and their surrounding networks”. Blanc (2009) warns however that a peri-urban location is not enough by itself to generate AFNs, despite the innovative character of peri-urban agriculture. This case-study shows that the character and the proximate urban market are important for AFN development, but critically, strategic decision-making is necessary to establish AFNs successfully.

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<sup>9</sup> *Notícies del PABL*, n. 16, p. 10 (our translation).

Focusing on labelling, the FRESC label explicitly identifies attachment to the production region, following Sonnino's (2009) and Ilbery and Kneafsey's (2000) classifications of food quality. Gordon (2004) argues that links between regions and food cannot be taken for granted. In the case studied, the BLAP is a recent demarcation that has generated its own 'regional' food and the respondents were confident it has become a recognisable brand. Although new, it has developed rapidly. This is not surprising given that other Mediterranean European labels based on production regions have a good reputation and are widely used, particularly for local culinary purposes (Trubek and Bowen, 2008; Parrott et al., 2002). Increasingly, local restaurants are demanding local products. Some farmers were initially reluctant to adopt the label, but they now recognise that it guarantees a certain quality and consequently gives access to specific consumers. This process is consistent with Mutersbaugh et al.'s (2005), Sonnino's (2007) and Fonte's (2008) observations on certification. Through the artichoke PDO application, the BLAP seeks a new regional construction of food by means of the EU PDO/PGI schemes, which is still to be officially recognised. Nevertheless, Ilbery and Kneafsey's (2000, 230) statement that most producers do not "associate quality with geographic origin, [nor] regard certification as being particularly important, useful or necessary" does not apply to the BLAP area.

In addition, this case-study is unlike other places where AFN research has been conducted (the US, Canada and Northern EU), partly because of its Mediterranean location (Renting et al., 2003; Parrott et al., 2002), and also because of its uniqueness. Barcelona is not a 'food desert' unlike many other cities, and so planning decisions which are relevant elsewhere such as those reported by Donald (2008) or APA (2007) are not evident here. Further, direct sales are common following traditional commercial practices (Sánchez-Hernández, 2009). However, as this research suggests, in Spain there is an emergence of a new wave of AFN which goes beyond the 'traditional' commercialisation forms. While food traditions and historical legacies are important they do not constitute an AFN, although some AFNs such as box schemes or organic farming are often spawned from them.

This paper has shown that peri-urban farmlands are not only areas where passive protection measures have been introduced to protect open-spaces (Koomen et al., 2008; Maruani and Amit-Cohen, 2007), but also different stakeholders have collaborated in dynamic and proactive ways to achieve a mutually satisfactory outcome. Further, the creation of the 'agricultural park', using an AFN agenda, has been a unique and successful combination of planning, marketing and policy-making strategies. Although it is not a statutory body but rather an "invention" as one interviewee described it, BLAP has a critical role for the sustainability of

Barcelona peri-urban farmland through the direct supply of quality food to urban markets, which at the same time underscores regional sense of place.

## **CONCLUSIONS**

This research has shown that effective farmland conservation is not achieved by simply using zoning restrictions. Different tools therefore need to be considered (Bengston et al., 2004) and it is sometimes necessary to duplicate planning procedures to achieve farmland protection. The fringe is an environment vulnerable to powerful spatial, economic and social forces and persistent and innovative efforts are essential if there is to be real commitment to preserve farmlands. It is important to address 'peri-urban' land-uses, 'horsification' and hobby-farming expansion to ensure viable farm output, particularly in places close to cities where the productivity of the soil and other natural resources is already well recognised.

As shown in this paper, once farmland protection is guaranteed, a strategy needs to be developed to sustain the status of productive farmland. Peri-urban agriculture can be innovatively managed through AFNs as the distance between the (urban) consumer and the (peri-urban) farmer is shortened. Local food is a logical way to reconnect urban dwellers with nearby food production. As argued in this paper, such an initiative requires active farmer involvement and key stakeholder participation resulting in mutual commitment. This research has shown how an organisation such as the BLAP Consortium has facilitated the development of AFNs. Importantly, innovative marketing was pivotal rather than structural investments and funding inputs. It has also been demonstrated that there was a strategic shift in management planning, but importantly the physical planning remained unchanged.

If there is no agricultural production near large conurbations, there are no opportunities for near-urban AFNs. Although Zezza and Tasciotti (2010, 212) were commenting on urban agriculture in developing countries when they stated "[t]he evidence presented seems strong enough to urge planners and policymakers to think twice before taking drastic action against agriculture, as it has often been the case in the past", the same applies in a global North, peri-urban environment. It has been argued that, without farmland stability and strong strategic support, AFNs cannot occur on the urban fringe. By combining AFNs and farmlands, this paper has presented an improved understanding of the rural-urban interface, thus going beyond traditional approaches which have focused on landscape, environmental and/or amenity issues. Rather than dwelling on the positive or negative effects of urban proximity to agriculture, this research has explored the opportunities presented through the development of AFNs for peri-urban agriculture. The economic and political context of the case-study

example described here is not unusual and the learnings from it are therefore generalisable and potentially transferable to other peri-urban food production areas.

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Appendix A. 2002 Management Plan: strategies and aims.

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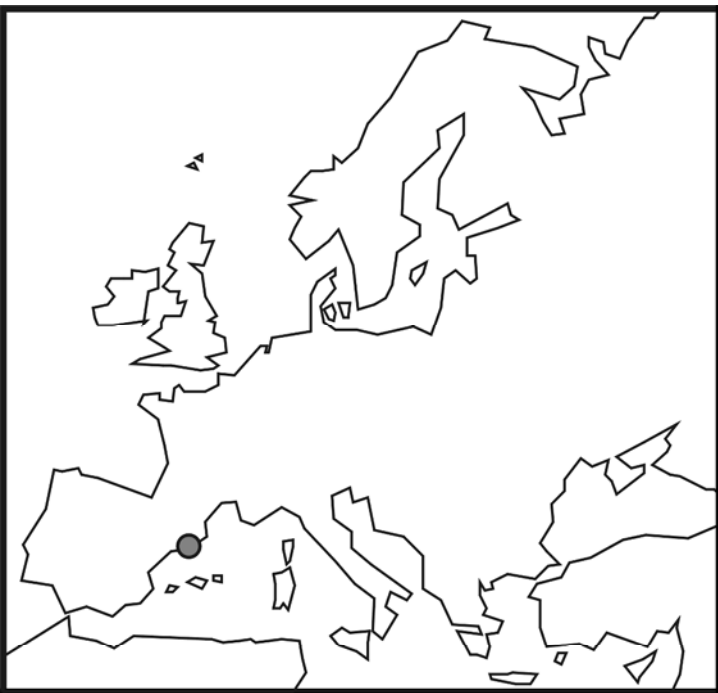
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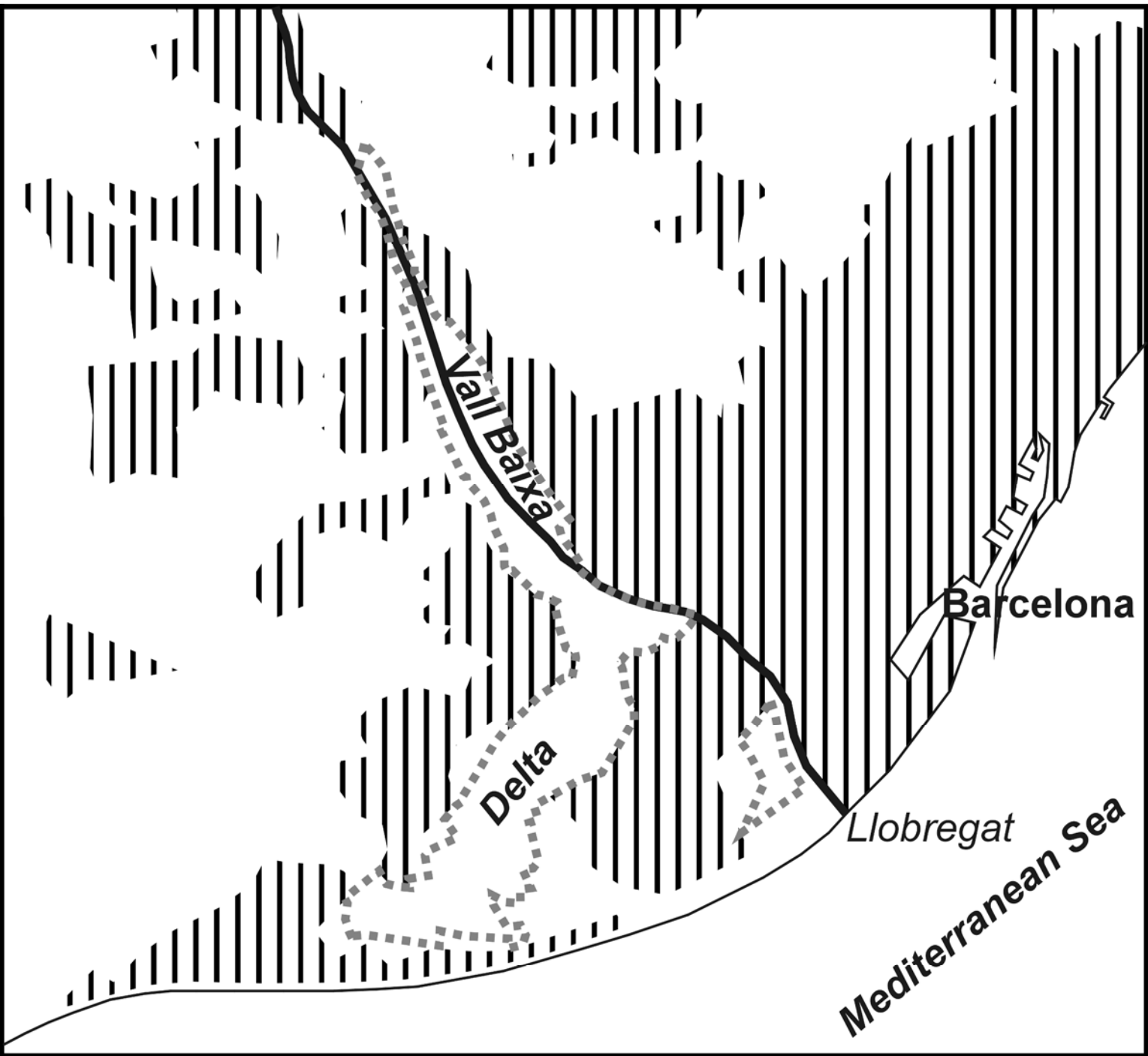
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Figure 1



- ||| Urban land-use
- PABL precinct



Location map.

**Table 1. Land-uses in the BLAP (2008).**

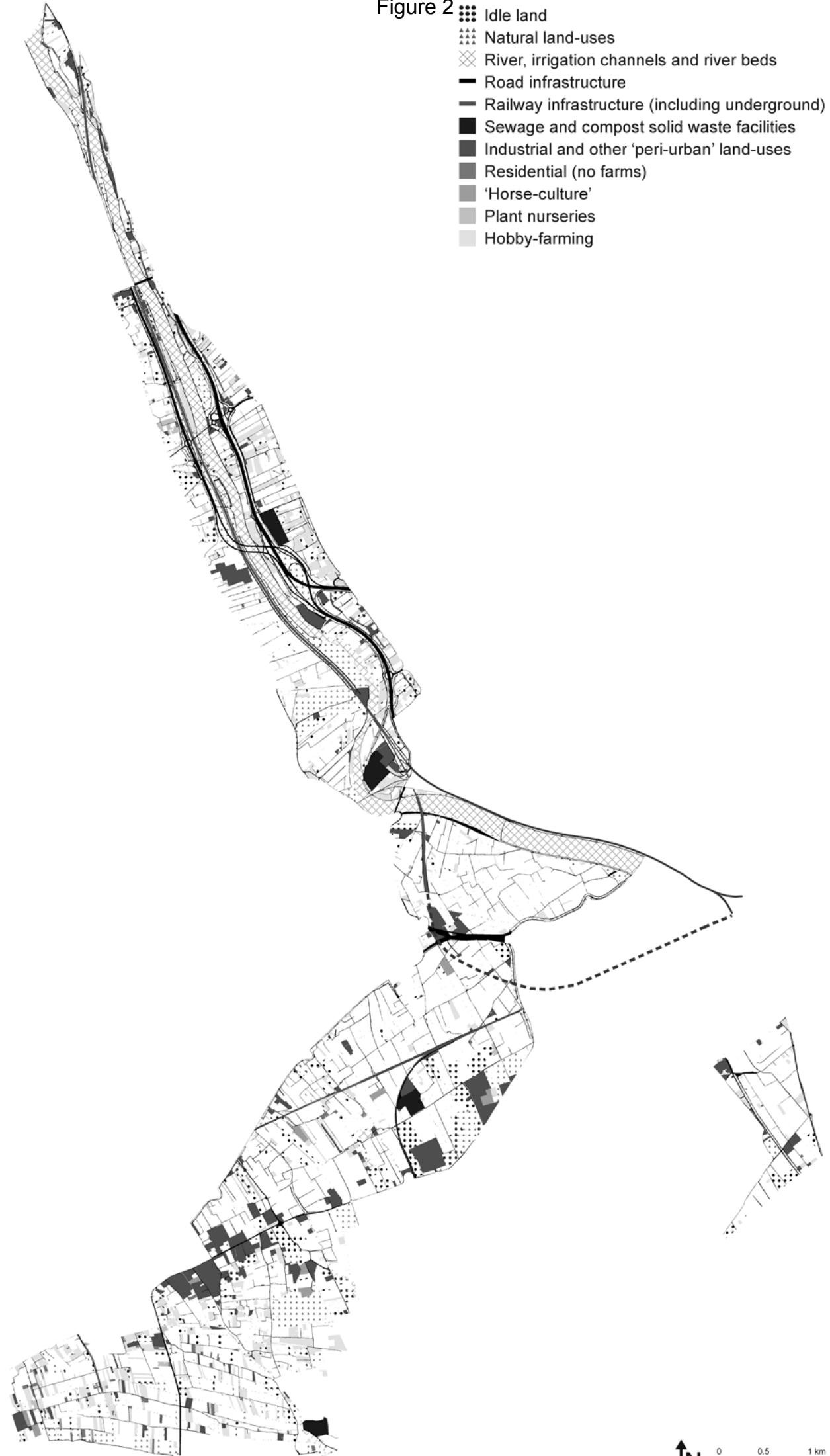
	hectares	%
Agricultural	1,878.61	56.03
Artichokes	279.28	8.33
Fruit trees	182.51	5.44
Chard	73.31	2.19
Farm buildings	31.71	0.95
Idle land	192.03	5.73
Natural land-uses (mainly marshes and wetlands)	338.18	10.09
River, irrigation channels and river beds	302.08	9.01
Road infrastructure	225.93	6.74
Railway infrastructure	42.41	1.26
Sewage and composting solid waste facilities	30.80	0.92
Plant nurseries	5.91	0.18
'Horse-culture' (equestrian centres and stables, and horse-grazing)	16.66	0.50
Explicitly unaccepted land-uses as per 2004 Land-Use Plan	288.25	8.60
Industrial and other 'peri-urban' issues	197.88	5.90
Hobby-farming	78.64	2.35
Residential (no farms)	11.73	0.35
	3,352.57	100.00

Source: Paül (2008).



Figure 2

- Idle land
- ▲▲▲ Natural land-uses
- ⊗ River, irrigation channels and river beds
- Road infrastructure
- Railway infrastructure (including underground)
- Sewage and compost solid waste facilities
- Industrial and other 'peri-urban' land-uses
- Residential (no farms)
- 'Horse-culture'
- Plant nurseries
- Hobby-farming



Location of selected land-uses in the BLAP (2008).

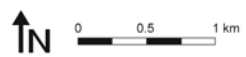
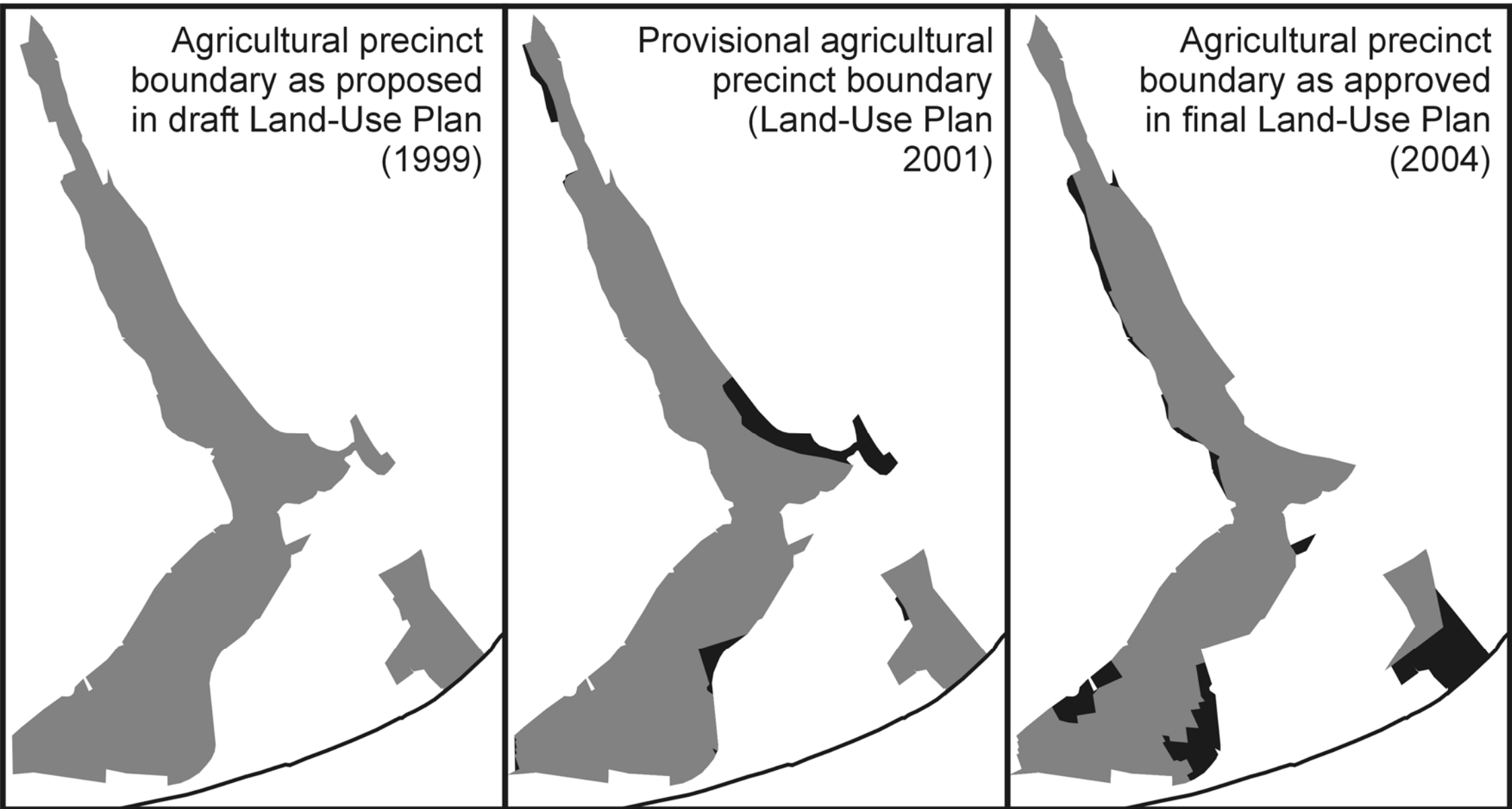


Figure 3



BLAP precinct shifting during the negotiations of the Land-use Plan (1999–2004).

## Appendix A. 2002 Management Plan: strategies and aims.

1	Increased efficiency through infrastructure and general services for farmlands	
	1.1	Improved road network efficiency
	1.2	Improved drainage network efficiency
	1.3	Improved quality of irrigation water and water distribution network efficiency
1.4	Guaranteed rural security	
2	Promotion of production and marketing systems that foster higher farm incomes	
	2.1	Introduction of new agricultural techniques, especially those that are environmentally-friendly
	2.2	Enhanced animal husbandry to increase viability (in compliance with current legislation)
2.3	Cooperation between farmers to enhance production and improve competitive market access	
3	Encourage the setting up of services and the modernisation of farms to increase viability	
	3.1	Promote the introduction and development of services to farm businesses to facilitate product value-adding
	3.2	Increased regulation of farmlands to enable development of agricultural businesses
3.3	Support farm restructuring to enhance viability	
4	Achieve a quality space that is integrated with the surrounding area in harmony with the natural environment	
	4.1	Improve relations between stakeholders in natural and agricultural areas, and reduce the impact of wild animals (limit wild animal access)
	4.2	Rehabilitation of degraded areas and transference or eradication of facilities unconnected with the agricultural environment
	4.3	Monitoring of land-use planning and environmental matters to PABL's environmental quality
5	Consolidate and raise awareness of the natural and cultural heritage of the PABL without interfering with agricultural activity	
	5.1	Enhance PABL's public areas and access
	5.2	Promotion of the PABL's productive, ecological and cultural values

Source: PABL (2002).