



Leo Cowie

Understanding the Airport City: An Analysis and Critique of Airport
City Development

Centre for Air Transport Management
Airport Planning & Management

MSc
Academic Year: 2024 - 2025

Supervisor: Henrik Rothe

August 2025



Centre for Air Transport Management
Airport Planning & Management

MSc

Academic Year 2024 - 2025

Leo Cowie

Understanding the Airport City: An Analysis and Critique of Airport
City Development

Supervisor: Henrik Rothe

This thesis is submitted in partial fulfilment of the requirements for
the degree of Master of Science

© Cranfield University 2025. All rights reserved. No part of this
publication may be reproduced without the written permission of the
copyright owner.

Academic integrity declaration

I declare that:

- the thesis submitted has been written by me alone.
- the thesis submitted has not been previously submitted to this university or any other.
- that all content, including primary and/or secondary data, is true to the best of my knowledge.
- that all quotations and references have been duly acknowledged according to the requirements of academic research.

I understand that to knowingly submit work in violation of the above statement will be considered by examiners as academic misconduct.

Abstract

Cities have always formed around transport hubs, and airports are not exempt from this maxim. The last 20-30 years have seen an exponential increase in the development of urban areas around airports, known as airport cities. These 'airport cities' offer an exciting vision of future living. However, there are problems associated with these developments and in the rush to assess the phenomenon, a fundamental questioning of if and how they should exist has been overlooked. Therefore, the aim of this thesis was to critically assess how, if at all, airport cities should evolve through understanding and analysing existing airport-centred urban development.

An examination of the minutiae of daily life in the airport city alongside strategic analysis offers a fresh approach to airport city research and enables conclusions to be made about the existence and development of airport-centred urban areas. To achieve this, two airport cities have been studied; the Circle at Zurich Airport and Munich Airport City, specifically the LabCampus development.

Through in-depth analysis and comparison of the two cases, this thesis found that airport cities can be best understood as extensions of the airport and are primarily 'cities' for work – the airport's unique advantages lending themselves well to this purpose. However, to transform into true 'cities', become more sustainable and overcome the challenges of airport-urban integration, a reconsideration of 'airport cities' is required.

It was concluded that airport cities need to be located in the main passenger flows and be integrated with the transport interchange of the airport to develop a better urban atmosphere, the Munich Airport Centre being highlighted as a good example of this. This, and similar examples, should be further studied as small-scale but high-quality airport-centred urban development that focus on retail, commercial and transport activities seem to offer the most viable and attractive way for airport cities to evolve in the future.

Keywords:

Airport-Centred Urban Development, Airport Real Estate, Airport Master Planning, Aerotropolis, Airport Urbanism, The Circle, LabCampus

Word Count:

16,049 Words

Acknowledgements

I would like to thank my supervisor, Henrik Rothe, for his support not only during this project but also over the entirety of my master's course – your enthusiasm for airport design is infectious and is a big part of what makes the Airport Planning and Management course at Cranfield so special. I would also like to thank Edgar Jimenez Perez, Darren Ellis and Thomas Budd for their respective inputs into this thesis and again, over the course of the year. Last but not least, I would like to acknowledge the individuals involved in the research, this project would have been almost impossible without your help.

Table of Contents

Academic integrity declaration.....	i
Abstract	ii
Acknowledgements	iv
List of Figures.....	viii
List of Tables	ix
List of Abbreviations	x
1 Introduction	1
1.1 Introduction to Airport Cities.....	1
1.2 Aims and Objectives	2
1.3 Thesis Structure.....	3
2 Background and Context.....	4
2.1 Chapter Introduction	4
2.2 Airport Cities: The Beginning	4
2.3 Airport Cities: The Development	6
2.4 Airport Cities: Current Reality	7
3 Literature Review	9
3.1 Chapter Introduction	9
3.2 Airport City Pre-Planning Considerations.....	9
3.3 Airport City Strategic Planning and Design	12
3.4 Airport City Evaluation and Future Development	16
3.5 Airport City Further Research	18
4 Methodology	20
4.1 Chapter Introduction	20
4.2 Part 1: Developing the Research Question.....	20
4.2.1 Research Issues	20
4.2.2 Topical Information Questions.....	20
4.3 Part 2: Research Design.....	21
4.3.1 Why Qualitative Inquiry?	21
4.3.2 Why Case Study?	21
4.3.3 What Type of Case Study?	22
4.4 Part 3: Case Selection	23
4.4.1 Theoretical Background	23
4.4.2 Why Zurich and Munich?.....	23
4.4.3 Case Boundaries.....	24
4.5 Part 4: Data Collection	26
4.5.1 Qualitative Data Collection Methods	26
4.5.2 Interviews	26
4.5.3 Observations	27
4.5.4 Supporting Qualitative and Secondary Data	27
4.6 Data Analysis.....	28

4.6.1 Choice of Data Analysis Technique	28
4.6.2 Within-case Analysis: Description of Cases	28
4.6.3 Cross-case Synthesis: Thematic analysis across cases	29
4.6.4 Presentation of Assertions	29
4.7 Ethics Approval	30
5 Results	31
5.1 Chapter Introduction	31
5.2 The Circle, Zurich Airport	31
5.2.1 Description	31
5.2.2 Illustrations	33
5.3 Munich Airport City	35
5.3.1 Description	35
5.3.2 Illustrations	37
5.4 Presentation of Qualitative Data	39
5.4.1 Visitor Numbers and Purpose of Visit	39
5.4.2 Rental and Financial Information	40
5.4.3 Airport City Access	42
5.4.4 Soundscapes	43
6 Discussion and Analysis	44
6.1 Chapter Introduction	44
6.2 Justification of Comparisons	44
6.3 Cross-Case Synthesis	45
6.3.1 What was the ambition of the airport city?	45
6.3.2 How have airport cities evolved?	45
6.3.3 Has the airport city been economically and financially successful? ..	46
6.3.4 Do airport cities support environmental and sustainability goals?	47
6.3.5 How attractive is the airport city as a place to spend time in?	48
6.3.6 Who benefits most from the airport city?	49
6.3.7 How might airport cities evolve in the future?	50
6.4 Presentation of Assertions	51
6.4.1 Case Studies	51
6.4.2 Should airport cities exist?	52
6.4.3 How should airport cities evolve?	53
7 Conclusion	55
7.1 Chapter Introduction	55
7.2 Main Findings	55
7.3 Implications	57
7.4 Research Limitations	57
7.5 Further Research	58
References	59
Appendix A Ethical Approval Letters	68
Appendix B List of Interview Questions	70

Appendix C List of Observations.....	72
Appendix D Zurich Airport 1:2500 Map	74
Appendix E Munich Airport 1:2500 Map.....	75
Appendix F Oliver (Zurich) Interview Notes	76
Appendix G Marco (Munich) Interview Notes.....	80

List of Figures

Figure 1 <i>Early Inner-City Airport Visualisations</i>	5
Figure 2 <i>Aerotropolis Schematic</i>	8
Figure 3 <i>Location of Zurich and Munich Airport Cities</i>	25
Figure 4 <i>Cross-Case Data Analysis Process</i>	28
Figure 5 <i>Vignette of an interaction in the Circle</i>	33
Figure 6 <i>The Circle Photo Gallery</i>	34
Figure 7 <i>Annotated Map of the Circle</i>	35
Figure 8 <i>Munich Airport City Photo Gallery</i>	37
Figure 9 <i>Annotated Map of Munich Airport Circle</i>	38
Figure 10 <i>Airport City Visitor Numbers and Purpose (per day)</i>	39
Figure 11 <i>Aviation v Non-Aviation Revenue Comparison, 2023</i>	41
Figure 12 <i>Transport Modal Splits</i>	42
Figure 13 <i>Soundscape Comparisons</i>	43

List of Tables

Table 1 <i>Models of Airport-Centred Urban Development</i>	14
Table 2 <i>Comparison of the characteristics of Zurich and Munich Airports and Airport Cities</i>	24
Table 3 <i>List of Interviewees</i>	27
Table 4 <i>Airport City Rental, Occupancy and Revenue Information</i>	40
Table 5 <i>Accessibility of the airport city</i>	42

List of Abbreviations

CBD	Central Business District
EU	European Union
EUR	Euros, The currency of the European Union
FMG	Flughafen Munich Group
GFA	Gross Floor Area
IRR	Internal Rate of Return
MAC	Munich Airport Centre
MAP	Million Annual Passengers
PA	Per Annum
SQM	Square Metres
TEUR	Thousands of Euros
TUM	Technical University of Munich
ZAEZ	Zhengzhou Airport Economic Zone

1 Introduction

1.1 Introduction to Airport Cities

‘The airport leaves the city. The city follows the airport. The airport becomes the city.’

This quote, found in the work of Kasarda & Lindsay (2011) and attributed to an unknown Dutchman involved in Amsterdam Schiphol’s Airport City, draws attention to the complexities and enormous opportunities inherent in airport-centred urban development. It also is foundational for this thesis, as it raises several important questions. Why is the city moving out towards the airport? Why did it distance itself in the first place? Is this a strategically planned move, or does it represent an unorganised, organic response to other factors? Should the city be moving back towards the airport?

As discussed by Mironov (2020), cities have always formed around transportation hubs such as harbours and later around railway stations. Therefore, it should not come as a surprise that cities are growing around airports as air travel makes global connections increasingly easy, for better or worse. The possibilities offered by these new cities are exciting; ‘global villages’, a term suggested by Mironov, could house new forms of highly connected, dynamic urban cultures that respond to modern development in science and technology (Urry, 2012).

In this context, the airport city phenomenon is an extremely interesting concept to study. It offers a lense through which this future transport-oriented development can be identified and studied, potentially being the nucleus of cities of the future (Bednarek, 2016). However, broadly speaking, airport cities of today have disappointed, with airport and city still be divided by ‘outside-the-fence’ and ‘inside-the-fence’ thought processes (McDonough, 2014). Again, like the quote above, this raises questions. What is slowing the progress of the airport city as a new urban form? Might it be that the friction between urban development and airports means that cities as we know them are incompatible with airports?

Complicating this issue, or perhaps stemming from this, is the difficulty found when attempting to define the airport city. Freestone and Baker (2011) collate and organise various definitions, evaluating airport cities according to the conflicting interests from an economic perspective and an urban perspective. Hirsch (2019) is also an influential figure in trying to address the problems found in airport city development. However, before trying to 'fix' existing airport cities, there must be broader concerns to consider regarding the nature of airport-centred urban development that relate to the questions raised above. These concerns necessitate a pragmatic and critical appraisal of the current state of airport cities. This is developed into a coherent analysis of how airports should evolve in the future, paying close attention to how airport cities function rather than a top-down approach based on the regurgitation of information from airport city developers and owners.

1.2 Aims and Objectives

As previously discussed in this chapter, the airport city phenomenon is relatively recent and displays complexities across multiple dimensions. This has led to the identification of a research gap discussed in further detail in the Literature Review. To address this research gap, the aim of this thesis is to critically assess how, if at all, airport cities should evolve through understanding and analysing existing airport-centred urban development, synthesising this information with existing literature on the topic. To achieve this aim, the following objectives have been set based on the methodology approach discussed in more detail in Chapter 4:

- 1, Understand selected existing airport cities through thorough and objective descriptions;
- 2, Thematically analyse the airport cities according to topical information questions, using existing literature to strengthen analysis;
- 3, Synthesise this analysis to develop assertions for airport city development.

1.3 Thesis Structure

The following chapter briefly reviews the history and development of airport cities, concluding with the current reality of airport-centred urban development. Chapter 3 reviews existing literature on the topic, summarising the contributions of a variety of academics, authors and observers. The discussion covers various airport city theories, such as Kasarda's Aerotropolis (1996) and Hirsch's Airport Urbanism (2019). It is structured according to the project life cycle of an airport city development and concludes with a discussion of research gaps.

Chapter 4 elucidates the methodology used to guide this thesis. There is a concise review of literature related to the overall methodological approach. The following narrative-style elucidation includes explanations of how and why Robert Stake's (1995) approach was adapted to suit the needs of this thesis.

The closely related Chapters 5 and 6 contain the results of the research and a discussion and analysis of these results. The results chapter, Chapter 5, addresses the first objective, to understand selected existing airport cities through thorough but objective descriptions. The discussion and analysis chapter, Chapter 6, addresses the remaining objectives, to thematically analyse the airport cities according to topical information questions and synthesise this analysis into assertions for airport city development.

The final conclusion chapter, Chapter 7, summarises the assertions developed in the previous chapter, explaining what this entails for airport operators, surrounding communities and airport planners. In addition, research limitations are discussed and areas for further research highlighted.

2 Background and Context

2.1 Chapter Introduction

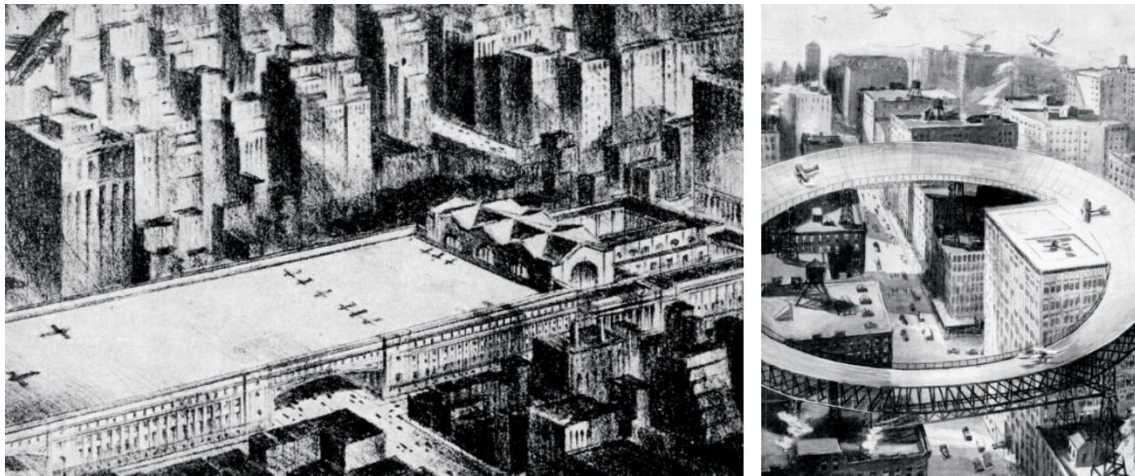
This chapter aims to trace the history of airport city development, starting with the earliest visions of integrated airport-railway stations dating back to the onset of powered flight to the airport-related urban districts of today. To achieve this, the chapter is arranged in three sections – the beginning, the development and current realities of airport cities. Woven into this history is a discussion of the advantages airport cities offer, along with some of their problems.

2.2 Airport Cities: The Beginning

To label airport cities as a recent phenomenon is only partially true. The onset of aviation in 1903 (Pai & Kondanda, 2003) led to an extraordinary period of aviation development, known as the Heroic Age (Mironov, 2020). During this period, in 1914, the visionary thinker Antonio Sant'Elia proposed a scheme for a combined aerodrome and rail station (Witt & Kwon, 2009), setting a precedent for future airport city models.

The next milestones coincided with the so-called Lindbergh boom of interest in aviation in the mid-1920's (Bednarek, 2000). With the airport concept now well-established, ideas for airport and city integration, and the rationale behind it, were further developed, primarily by well-known city planners (Bednarek, 2000). Futuristic visions of combined air travel and urban living fitted perfectly with modernist ideals of the time, propounded by influential figures such as Le Corbusier and Frank Lloyd Wright (Mironov, 2020). As noted by Witt and Kwon (2009), their schemes echoed that of Sant'Elia's, whereby aviation was essentially seen as part of a wider metropolitan transport network. In this sense, aviation was almost like a high-speed railway network of its time. However, Bednarek explains that planners and visionaries of this period largely failed to reconcile their visions of CBD or near-CBD airports with the realities of flight. They failed to understand the inherent danger of multiple accident-prone take-offs and landings within dense urban areas.

Figure 1 *Early Inner-City Airport Visualisations*



Note. Witt, A., & Kwon, H. (2022). The Past Futures of Aerotropolis. *Thresholds*, (50), 9-25. https://doi.org/10.1162/thld_a_00741. Copyright 2022 by MIT Press.

In this fertile period, other airport-centred urban schemes appeared, more closely related to today's airport cities than Sant'Elia or Le Corbusiers' proposals. One was Ford Dearborn Airport, a brainchild of Henry Ford (1863-1947). This project, built by Albert Kahn in 1926, integrated an airport with Ford's automotive factories in Dearborn, Michigan, mirroring the extensive development of industry seen around contemporary airports (Barrow, 2018). Another was John Nolan's 1928 diagram of a 'Hypothetical AAA Airport with Seaplane Basin', a plan that aimed to make the airport a centre of economic development by including all the usual facilities of an airport such as infrastructure links, parking areas, terminal buildings alongside a satellite town with apartments (Hirsch, 2019). Bednarek (2000) also found that airports of this time had started to charge fees for the leasing of facilities such as hotels and restaurants on their sites, something of a hallmark for airport cities as we know them today (Graham, 2008).

By the end of the 1930's, enthusiasm for CBD airport locations had waned, alongside a general increase in cognisance of the problems airports themselves bring. This was a result of multiple factors, such as noise concerns, the realisation that the primary role of airports would be to facilitate national and international links rather than just metropolitan transport and greater

understanding of the dangers of placing airports in urban areas (Bednarek, 2000). A key milestone of this period was a scheme to integrate airport and city by Nicholas DeSantis in 1939, a proposal labelled by DeSantis as a 'aerotropolis' (Witt & Kwon, 2009). City planners noted that high blighted districts had formed around railway stations and wanted to avoid the same problems with airports, leading to strong arguments to be made in favour of zoning, whereby airports could be placed outside the city free from encumbrances such as tall buildings and smokestacks (Bednarek, 2000)

2.3 Airport Cities: The Development

The next stage in airport city development was fuelled by the democratic age of air travel from the 1970s to the 1990's, where growing deregulation led to airfares becoming more affordable and the subsequent growth in aviation as a form of mass transport (Mironov, 2020). The influence of rapidly growing airports during this period on shaping urban transportation and land use patterns, as well as local communities, was being noted by authors such as Barrett (1987). This led to a realisation that airports could benefit from this influence, with sites close to the airport taking advantage of the connectivity and the reduced cost of intraregional movement (Kasarda & Appold, 2014). The airport hinterlands, as defined by Florido-Benítez (2021), became regions where companies located themselves to take advantage of these benefits (Kasarda & Appold, 2014). Particularly since the 1990's, airports have been developing business operations outside the immediate field of aviation to maximise their revenue from non-aviation sources, a form of vertical integration (Poungias, 2009; Appold & Kasarda, 2010)

A key work in this period was that of McKinley Conway (1980), who proposed the 'decoplex', a tranche of model airport communities with the runway conceived as the main street. The communities would range from small-scale business parks to fly-in residential developments. This is regarded as the first 'fully integrated, mixed-use' airport city concept and forms the basis for Kasarda's aerotropolis proposal (Freestone & Baker, 2011). Practical examples of airport cities from this period include the Amsterdam Schiphol's World Trade

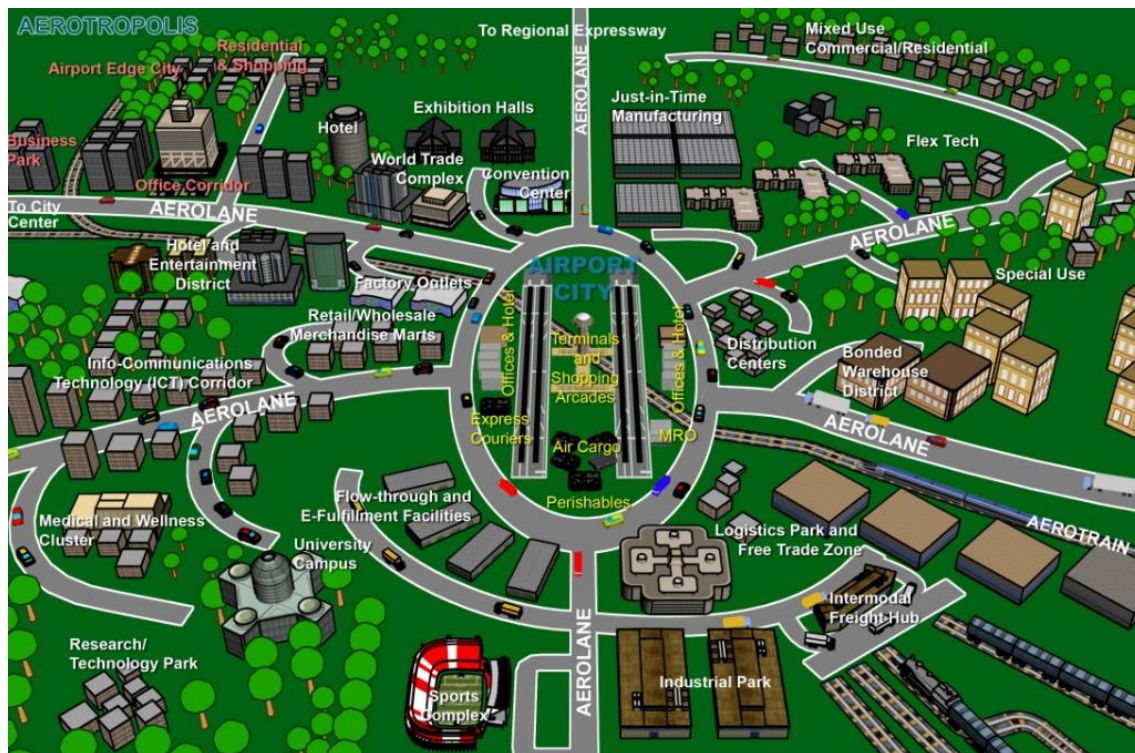
Centre (Hirsh & van der Horst, 2022), a development still studied as a 'pioneer' of airport-centred urban development (Conventz & Thierstein, 2011). Reflecting the evolution of airport cities from this period to today, the Schiphol Group in 1999 expressed a desire to go 'beyond the development of an efficient transport hub' and to 'work towards an airport city' (de Neufville & Odoni, 2013). This desire has manifested itself in Schiphol being considered the world's first aerotropolis-by-design, a concept driven by a realisation that the city inevitably grows out towards the airport (Kasarda & Lindsay, 2011; Schaafsma, 2010).

2.4 Airport Cities: Current Reality

Given the importance of non-aviation revenues (Graham, 2008), airport cities have become the benchmark development strategy for modern airports as they are an area which is less well-developed compared to other non-aviation revenue sources such as car parking (Kasarda, 2008). Furthermore, there are suggestions that air travel demand in high-income economies could be approaching saturation point, limiting possibilities for additional aviation revenue (Kasarda & Appold, 2014). Alongside this, airports are becoming more cognisant of the gravitational pull they exert, with more than 50% of Fortune 500 companies being located within 10 miles of a hub airport (Stilwell, 2013). Finally, urban leaders, especially in fast-developing and ambitious regions such as Seoul, South Korea, are building new districts near the airport to advance broader urban development goals (Hirsch, 2019).

Kasarda has proposed a universal ideal-type end point for his 'aerotropolis' airport city concept, which focuses on the functional value proposition (Kasarda & Appold, 2014). He posits that China is taking the lead in applying aerotropolis principles to foster these desired economic outcomes (Kasarda, 2018). In this work, he examines the Zhengzhou Airport Economy Zone (ZAEZ), a model aerotropolis development and one that has been very economically successful. However, this economic success comes at a cost, with even Kasarda himself lamenting the lack of urban atmosphere within the development and is not able to disguise the fact that the aerotropolis is essentially an enormous Foxcon factory, completely different from what one would imagine a 'city' to be.

Figure 2 Aerotropolis Schematic



Note. From Kasarda, J. D. (2018). China's aerotropolis: The Zhengzhou airport economy zone. *International Airport Review*, 13. Copyright 2018 by Dr. John D. Kasarda

Although airport cities have moved away from aerotropolis development as a go-to conceptual model, a trend encouraged by Hirsch (2019), there are issues endemic to all forms of airport-centred urban development. One of these is that development fails to fully address the consumer as a key stakeholder of airport cities, especially when the 'consumer is at the epicentre of the current technological revolution' (Brilha & Nobre, 2019). Furthermore, in their rush to take advantage of a revenue generating opportunity, airports that are ill-suited to airport city development are building them anyway (Poungias, 2009). As wisely noted by Wong (2006), hub status does not necessarily translate to significant airport-centric development.

3 Literature Review

3.1 Chapter Introduction

This chapter critiques the key literature on airport cities, attempting to dissect this complex subject area into three broad areas that approximately parallel the project life cycle of an airport city development. Key themes and areas of debate are reviewed in each area. The first area is airport city pre-planning considerations; issues and concepts to consider before any airport city planning takes place. The second area is airport city strategic planning and design; spatial models of airport cities, what activities take place in the airport city, contradicting theories of airport city development. The final area is airport city evaluation; an exploration of what drives success or failure of airport city development. The chapter is concluded by highlighting areas for further research.

3.2 Airport City Pre-Planning Considerations

The first issue for any airport city development, and one that has considerable influence on almost all factors discussed in this literature review, is to consider who plans, owns, and operates the airport city. This is an extremely complex discussion, as airports are more than simply 'autonomous domains'; what happens 'within the fence', i.e. the land directly owned by the airport operator, has enormous influence on what happens 'outside the fence', i.e. the surrounding region, and vice versa (Güller & Güller, 2001). In planning terms, traditionally airport planners are responsible for the airport and urban planners responsible for the city (Walker & Baker, 2010). As the invisible barrier dividing airport and city continues to crumble, an erosion amplified by the growing prominence of airport cities, it is overwhelmingly clear that an integrated approach to airport and regional planning is needed (Appold & Kasarda, 2010; Knippenberger, 2010; van Wijk et al., 2014; Walker & Baker, 2010). However, as Freestone and Baker (2011) note, a 'coherent vision of metropolitan and regional development within which aviation interests are realistically accommodated' is frequently missing.

Even if this 'coherent vision' were to be achieved in the form of a conventional land use planning procedure, the range of stakeholders involved in an airport city development may demand more flexibility than this planning form allows. In addition to aviation and urban development considerations, real estate, transport, and governance expertise is required. Examples of this include the interdependency of airport city and airport interchange and the integration of land-use and transport planning (Güller & Güller, 2001). For these reasons, Schaafsma et al. (2008) suggest that stakeholder-oriented plans would be a better choice for dynamic airport areas rather than less flexible end-state plans.

It is interesting to note that while calling for a more coordinated form of development planning, these discussions tend to approach the issue from the airport's perspective. Airport cities are primarily viewed as the domain of the airport and in practise, this is usually the case. As the landowner and primary beneficiary of the airport city, most airport cities are initiated and ran by the airport operator (Appold & Kasarda, 2010). However, due to the high investment required for airport city development and the lack of internal development expertise (Messer, 2012; Pongias, 2009), alternative development strategies have been employed. Messer (2012) and Reiss (2007) evaluate the different forms of land development such as land-lease and joint ventures. Messer concludes that the best option for most airports is self-development and posits that risk can be reduced through partnering with seasoned property developers. This takes a rather narrow perspective, with the conclusion primarily reached through an analysis of net present value. Reiss's (2007) conclusion is more nuanced, stressing the importance of thorough master planning and that any development 'must be considered as a piece in a larger puzzle'. This supports the calls for greater integration of airport and urban/regional planning as exemplar master planning would complement regional development plans.

The best example of this is at Amsterdam Schiphol Airport. The airport operator, the Schiphol Group, has a 'reputation as pioneer in the field of airport-linked spatial development' (Conventz & Thierstein, 2011). It has achieved this through high levels of collaboration with various levels of local, regional and

national government alongside financial institutions such as the national investment bank (Hirsh & van der Horst 2022).

However, as Schaafsma (2010) notes, pre-existing conditions at Schiphol were favourable for airport city development. The Schiphol Group owns lots of land in the vicinity of the airport, the airport is well-situated in the densely populated Randstad area, and it is well connected to the road and rail networks. The factors identified by Schaafsma reinforce a growing body of research assessing the critical factors the underpin airport cities' development. Peneda, Reis & Macário (2011) found that connectivity, economic potential of the surrounding area, commercial attitude of the airport operator, and a sustainable development context determine the success of an airport city development. They stress that these factors are mutually dependent. The theme of mutual dependence is continued in the work of Schubert (2014), who observes that developments are often hampered if some of the airport city driving factors he identifies (growing air traffic, regional economy, privatised airport operator, landside accessibility, real estate market, urban planning) are not present.

While these factors undoubtedly influence the success of an airport city development, the generalisation of these factors could lead to local market conditions being ignored or overlooked. Pougias (2009) argues that a purpose-designed approach is essential, and this has to be tailored to the airport's specific circumstances (traffic volume, traffic structure, competitive situation). He even goes as far as to state that 'not every airport is an appropriate location for an airport city'.

The competitive situation that Pougias alludes to is also considered by Appold and Kasarda (2010), who state that airport cities 'will need to differentiate themselves by focusing on the needs of their passengers, shippers, enterprises, and area residents' to gain market advantage. Furthermore, they note that airport cities are also competing with each other rather than just competing to attract companies and visitors from their local area (see also Thierstein & Conventz, 2014). Competitive analysis theories have been applied to competing airport cities (Wang & Hong, 2011) but the lack of accessible quantitative data is

a restriction in this area. Pounghias (2009) explains that if the concept of the airport city is right, the airport's general competitive position is strengthened.

A key area of debate is how the 'city' element of airport cities is considered. The definition provided by Pounghias in the previous chapter is consistent with the consensus found by Peneda, Reis & Macário (2011). They summarise that the city element merely refers to the variety of land uses present, mirroring the variety found in actual cities. They also explain that different groups have different perspectives. Architects and urban planners question if airport cities can be considered cities at all (Schlaack, 2010). Güller and Güller (2001) provide an answer, stating that airport cities must show the qualitative features of a city, such as density, access quality, environment, and services. Airport operators tend to view the airport city as a real estate development; the 'airport city' term is merely a marketing tool (Peneda, Reis & Macário, 2011). Schlaack (2010) agrees, arguing airport cities lack 'important city characteristics such as density, heterogeneity, mixed-use, public amenities, design quality'. Finally, economists simply see airport cities as the grouping of economic functions around the airport, rejecting any urban dimension (Peneda, Reis & Macário, 2011).

3.3 Airport City Strategic Planning and Design

The range of factors and stakeholders influencing airport-centred urban development discussed so far manifest themselves in a wide range of spatial configurations (Peneda, Reis & Macário, 2011). They highlight geographical scale, the airport operator's business approach and the maturity of commercial activities as significant factors determining the form of airport cities. Scholars and observers from a variety of backgrounds have suggested an 'array of neologisms' (cf. Lang, 2003) for idealised spatial constructs that attempt to classify, and thus better understand, spatial elements of airport urban development. Freestone and Baker (2011) provide the most comprehensive overview of these spatial constructs, but the work of Betz (2010) is also informative. In order of scale, from smallest to largest, they are:

Airport City: As mentioned in Chapter 1, the concept of airport cities as they are understood today dates back to the 1970's (Conway, 1980). However, as a spatial configuration, the widely accepted classification comes from Güller and Güller (2001) who they define the airport city as a group of operational and commercial activities within, or immediately adjacent to the airport platform. They explain that typical components would include hotels, conference centres, offices, shopping and entertainment facilities as well as cargo, logistics and distribution facilities arranged in way that show the qualitative features of a city. Schubert and Conventz (2011) also note that these facilities would be functionally and organisationally closely connected with the airport.

Airport Corridor: The airport corridor is a phenomenon observed by Schaafsma (2010) where there is a distinct ribbon of urban development between the airport and city centre. He suggests that a good example of this phenomenon is seen in Amsterdam, particularly the Zuidas area. They take advantage of, and grow alongside, the typical well-established airport-CBD transport conduits (Freestone & Baker, 2011).

Aerotropolis: Although it could be argued this concept originated in the work of Conway (1980), the well-known American urban economist John Kasarda has been advocating the aerotropolis since the early 1990's (Kasarda, 1991). He considers this a new urban form, describing it as a dispersed, low-density airport-linked metropolis, based on wide, efficient transportation corridors that radiate out from the airport which takes the role of the city centre (Kasarda 1996, 2000, 2008). The economic logic underpinning the aerotropolis is time-cost access gradients, assuming that the connectivity is the most important commercial real estate organising principle (Kasarda, 2008; see also Schaafsma, 2003). Like "Airport City", the phrase "Aerotropolis" has been inconsistently appropriated as a marketing slogan by many airports (Freestone & Baker, 2011).

Airea: The airea, proposed by the architect and author Johanna Schlack (2010) is similar to Kasarda's aerotropolis but has a more regional rather than airport-centred presence. She describes it as a 'configuration of spread islands within

the wider metropolitan area' and is characterised by a significantly higher level of investment activity and greater pressure for development. The relationships between 'islands' and with the airport itself are complex and nuanced (Freestone & Baker, 2011).

Table 1 summarises the key characteristics of each spatial model.

Table 1 *Models of Airport-Centred Urban Development*

	Definition	Location	Lead Actors	Key Text
Airport City	Planned mixed-use development of airport site	Airport Land	Airport owner-lessee	Güller & Güller (2001)
Airport Corridor	Coordinated infrastructure and commercial development	Airport-CBD Axis	Private developers; public infrastructure authorities	Schaafsma, Amkreutz and Güller (2008)
Aerotropolis	Time-sensitive scatter of airport-oriented zones	Airport-centred metro	Private market	Kasarda (1996, 2000, 2008)
Airea	Discrete spatial clusters of airport-related development	Metropolitan subregion	Private market	Schlaack (2010)

Note. Adapted from "Spatial planning models of airport-driven urban development" by R. Freestone and D. Baker, 2011, *Journal of Planning Literature*, 26(3), 263-279. Copyright 2011 by SAGE Publications.

Of these spatial models, the aerotropolis has become pre-eminent. Kasarda has sought centre-stage attention for the concept, and many airport-centred developments turn to it for guidance (Freestone & Baker, 2011; Hirsch, 2019). However, recent works have discredited the aerotropolis for numerous reasons. To briefly outline some of them, Freestone and Baker (2011) criticise the concept's one-size-fits-all approach, with the great variety seen in airport size

and type rendering the concept irrelevant for many developments. Charles et al. (2007) note that the concept has an economic 'focus' based on a non-renewable resource (oil), the concentration of infrastructure around a transport hub is a security concern and rejects Kasarda's assumption that the importance of seaports and railway hubs in global cargo flows will decline. Although these issues are largely true of all airport-centred development models, the larger scale concepts such as the aerotropolis have a greater relevance. Aerotropolis developments are regarded as unattractive, producing an 'anodyne suburban landscape of commercial campuses, chain hotels, and generic commercial structures' (Freestone & Baker, 2011). The urban activist Jane Jacobs warns that a 'great blight of dullness' is produced by an over-emphasis on concept-driven, fast track development (Jacobs, 1961). Even Kasarda (2008) recognises problems with his concept, noting that growing congestion on transport infrastructure due to nearby development can cause arterial bottlenecks.

Leading the rebuttal is Max Hirsch, who proposes replacing the aerotropolis concept with airport urbanism, both a planning theory and practical development model (Hirsch, 2019). Through his own research, Hirsch identifies that there are two overarching success factors in airport city development – customer focus and collaboration. These two factors are the 'guiding principles' of airport urbanism, which enable the airport to best respond to their own unique situation.

A strand of discussion worth highlighting is the type of activities that take place within the airport city, and the extent to which these activities are related to the airport. To define the term 'airport-related' activities in a commercial context, Schaafsma et al. (2008) suggest airport-related companies are those 'that have their business at the airport (such as airlines) or use the airport intensively (such as the head offices of international companies)'. The consensus is that a broad spectrum of non-aeronautical activities is found within the airport city (Kasarda, 1996; Stevens, 2006) and that airport cities are a favourable location for retail and services because the good ground transport infrastructure and residential

patterns allow for easy work force and consumer access (Appold & Kasarda, 2010).

Airport cities have been found to have four major development directions: shopping malls; commercial offices; air cargo facilities; and tourism, leisure, and health facilities (Schaafsma, 2010). The exact level of airport-relatedness would often be determined by these development directions. Due to the high levels of noise and congestion surrounding airports, airport cities tend not to feature residential activity although there are signs at developments such as Helsinki Vantaa's Aviapolis that this is changing (Hirsch, 2018).

3.4 Airport City Evaluation and Future Development

A common problem found with airport city developments, and one alluded to already, is the disconnect between city/regional planning and airport planning (Walker & Baker, 2010). Often city authorities fail to understand how airport-centred development benefits urban areas and that there are worries that airport cities draw activity and investment from city centres (Appold & Kasarda, 2010; Sonnenburg & Braun, 2017). As Appold and Kasarda explain, this creates mistrust that hinders collaboration at the airport city strategic formulation stage, resulting in, at best, missed opportunities for the airport city to complement other urban formations and at worst, dysfunctional projects. Due to the lack of urban planning expertise within the airport operator, economic pressures and land constraints airport cities are too often developed where there is room, not where connections are (Güller & Güller, 2001). Finally, the regional-scale airport city models (aerotropolii, airport corridors, airea) tend to feature linear rather than clustered development which leads to internal walkability problems and urban sprawl on a city/regional level (Kasarda, 2008).

Another issue that is increasingly coming to dominate airport city planning is sustainability, given airports find themselves 'at the epicentre' of the debate about the 'global environmental consequences of aviation' (Freestone, 2009). Fundamentally, airports and cities are seen as incompatible. This is due to a reliance on non-sustainable fuels and noise, air quality and congestion issues (Charles et al., 2007; Schaafsma, 2010). Schaafsma suggests that Michael

Porter's shared values principle can be applied for the airport city to benefit society and improve environmental performance while reinforcing the airport city concept. Ultimately, Freestone urges airport cities to envisage a scenario whereby rather than merely preventing incompatibility, they promote compatibility in the 'fullest sense of environmentally sustainable development'.

An area extensively examined in airport city literature is the factors that drive successful airport-centred developments, even if these success factors are rarely quantified. A broad study is provided by Betz (2010) who suggests 8 strategic-level success factors ranging from shareholder structure to leadership. Several academics, including Pongias (2009), concur with Hirsch's airport urbanism approach, whereby any project must be geared to the airport's specific circumstances. Pongias further expands on the broad factors mentioned in Betz's work, urging that it is important to establish a high-level management team to assume responsibility for airport city processes and that there is 'no alternative' to long-term integration of the airport city in the overall airport strategy. Interestingly, he also notes that airports should seek to gain a competitive advantage by developing a unique selling point, something achieved at Athens airport. Locations with direct airport access are found to generate significantly higher property values compared to locations in the airport area without direct access (Hirsch & van der Horst, 2022).

Within the success factors area, a theme which keeps reappearing is the physical quality of the airport city. This can be from an economic standpoint; Hirsch and van der Horst (2018) remark that a view of 'dingy warehouses and highway off-ramps' from an airport office building is unlikely to commandeer high rents. From the perspective of urbanism, airport cities have struggled to exist autarkically due to insufficiently developed infrastructure, poor design qualities and the lack of amenities (Conventz, 2010). Hirsch and van der Horst elaborate on this supposed lack of amenities, questioning if the airport city offers places where employees can exercise during their lunch break or run errands on their way home. They note that Amsterdam Schiphol and Zurich Kloten airports recognise that these kinds of amenities drive employee

satisfaction. Although airports are trying to move away from private car access (Budd et al., 2016), Messer (2012) stresses that adequate car parking must be available, alongside easy road access.

Appold and Kasarda (2010) advocate that form-based codes, which specify the appearance of buildings and other architectural features, are used to improve the physical quality. Architectural features can be employed to improve the environmental quality of the airport city. A study by Lugten (2019) found that street canyons and building geometry can reduce noise levels from aircraft while vegetation and natural features can lead to a perceived reduction in noise and improvement in soundscape.

However, it is observed that good planning alone isn't enough for the airport city to rival the city in terms of desirability (Hirsch, 2018; Reiss, 2006; Schaafsma, 2010). Schaafsma notes that while airport cities offer the most efficient points of interaction, the real challenge is to make them more than just that. Hirsch reflects that an 'element of fun' is missing from Helsinki Vantaa, one of the most highly respected airport cities in the world. He explains that there needs to be a focus on things that people enjoy doing in their free time, rather than just providing the basic functions of work, home and infrastructure. The issue is summarised well by Reiss, who links enjoyable urban environment to more successful airport cities.

3.5 Airport City Further Research

Scholars and observers, several who are consultants advising airport city projects themselves, largely focus on trying to 'fix' the problems of airport-led urban development. Is it easy to understand why so much attention is lavished on the problems as they are complex subject areas with an array of stakeholders to navigate and factors to consider. However, in the rush to assess the phenomenon of airport cities, a fundamental questioning of if and how they should exist has been overlooked. What if these problems have a deeper cause than errors in their planning and design? Does the airport's desire to increase revenue simply override any underlying concerns about the co-existence of urban life and airport operations?

These issues are partially appreciated; the incompatibility of urban life in airports has been recognised for decades (Bednarek, 2000) and qualms raised about the environmental impact of airport cities, more relevant now than ever given the current climate crisis. The need for closer integration between city planning and airport planning is frequently expounded, with some thought given to if and how the city can benefit from airport-centred urban development. However, as of yet, this discussion has not coalesced into a holistic analysis of how these issues should shape airport city planning. Therefore, research is required that starts by pragmatically investigating urban life in current airport cities in order to inform more broad conclusions to be made about the existence and development of such airport-centred urban areas.

4 Methodology

4.1 Chapter Introduction

This chapter outlines the methodology used in this thesis. The first section clarifies the research question, develops the related research issues then introduces the topical information questions that guide this research. The following two sections discuss qualitative research, the case study method and address case selection. Data collection and analysis methods are then explained. The chapter ends with a short statement regarding ethical approval.

4.2 Part 1: Developing the Research Question

4.2.1 Research Issues

As outlined in the previous chapter, to address the research question ‘how, if at all, should airport cities exist?’, a good starting point would be to pragmatically investigate urban life in current airport cities. An examination of the minutiae of daily life in the airport city alongside strategic analysis offers a fresh approach to airport city research and enables conclusions to be made about the existence and development of airport-centred urban areas. Given the far-reaching impacts they have on the surrounding region, the overarching aim of any future airport city development must be to benefit the city as well as the airport economically, socially and environmentally. Therefore, this work focuses on the complex relationship between airport and city, particularly considering whether airport cities are best understood as extensions to the airport or independent city quarters. These research issues address the major perplexities raised by the research question (Stake, 1995). Out of these research issues, topical information questions were developed which act as calls for information helping to guide the research process and narrow the focus of the study (Stake, 1995).

4.2.2 Topical Information Questions

- 1, What is the ambition of the airport city?
- 2, How have airport cities evolved?
- 3, Do airport cities support environmental and sustainability goals?

- 4, How attractive is the airport city as a place to spend time in?
- 5, Who benefits most from the airport city?
- 6, How might airport cities evolve in the future?

4.3 Part 2: Research Design

4.3.1 Why Qualitative Inquiry?

The intricate social, historical, economic and personal contexts that influence airport city development demand a holistic investigation that seeks to understand these complex interrelationships. Therefore, early in the research design stage, it was clear that qualitative inquiry as defined by Denzin and Lincoln (1994) would be most suitable for this project given its emphasis on 'holistic treatment of phenomena' (Schwandt, 1994) and it being particularly suited for why and how research questions (Ragin, 1998; Yin, 2018). This approach also fits with the author's constructivist worldview (Searle, 1995). As noted by Creswell and Creswell (2018), all research approaches lie on a continuum and this is true of this work; quantitative data will be obtained. However, the underlying desire is to understand and break down the contextual threads that make airport cities so complex, not to explain and control them. This desire for understanding versus explanation is the fundamental separation between qualitative and quantitative inquiry (Stake, 1995). Furthermore, one of the research aims is to develop an impression of urban activity within the airport city which can be achieved by *thick description*, a description of particular perceptions of the actors involved rather than an objective description of the case complexities (Geertz, 1973). This is a technique typical in qualitative research (Stake, 1995).

4.3.2 Why Case Study?

The work of Creswell (1998) is regarded as the most complete overview of qualitative analysis methods (Yin, 2018). Indeed, for this study, this work proved invaluable in the selection of case study (defined by Yin, 2018) as the chosen method. Out of the five methods Creswell identifies (biography, ethnography, case study, phenomenology, grounded theory), he suggests that the researcher

should assess the central purpose for the method. For the case study, the central purpose is to study a 'case' bounded in time and place, a purpose well suited to this research. The selection of case study was confirmed according to the criteria proposed by Yin (2018), who deems case study relevant when the focus of the study is to answer 'how' and 'why' questions, and there is a desire to cover contextual conditions. There are issues associated with case study as a method, notably the applicability of generalisations from a single case, high cost in time and the production of new puzzles instead of solutions to old ones (Stake, 1995; Yin, 2018). However, case study is an effective method for the refinement of understanding and certain generalisations can be drawn from the continued reappearance of themes (Stake, 1995). Furthermore, case study research relies on multiple data sources which enhances data credibility (Yin, 2018).

4.3.3 What Type of Case Study?

There are two key approaches that guide case study methodology: that of Robert Stake (1995) and of Robert Yin (2018). Yin's emphasis on existing theory is ill-suited to this work; there is a lack of scientific theory related to the development of airport cities to test or refine. Overall, it was felt that Stake's approach was more relevant, given its focus on holistic comprehension and its compatibility with progressive focusing (Stake, 1995). However, for reasons discussed later in this chapter, Yin's methods have been applied for analysing data.

For this research collective instrumental case study as defined by Stake (1995) was the chosen technique. Instrumental inquiry enables the research question to be answered by insights gained through the study of a particular case. Therefore, the research question is dominant, not the case itself (Stake, 1995). To respond to the research question with more robust and reliable conclusions, it was decided to study two cases, which Stake refers to as collective case study. Although this requires more extensive resources and time (Baxter & Jack, 2008), the additional depth of understanding it offered was crucial for the validity of the study.

4.4 Part 3: Case Selection

4.4.1 Theoretical Background

According to Stake (1995), for collective instrumental case study, the criterion for case selection is to first maximise what can be learnt then some concern should be given to representation and typicality of the case. Creswell and Creswell (2018) agree, stating that the 'idea behind qualitative research is to select sites that will best help the researcher understand the research question.' The choice to use purposeful sampling over theoretical sampling as defined by Creswell (1998) was relatively simple as this study makes no attempt to develop new theory.

4.4.2 Why Zurich and Munich?

Based on the above criteria, the decision was taken to use the Circle at Zurich Airport and Munich Airport City as cases. Practically, both airport cities are relatively close to one another and close to the author's location which allowed in-person visits to be made to both while minimising cost and time expenditure. Interviewees within the airport operating companies expressed enthusiasm about participating. Both these factors maximised what could be learnt from the cases.

Considering typicality and representation, Zurich and Munich were good cases to study because both airports are broadly similar yet their respective airport cities display notable conceptual differences. These enable interesting comparisons and contrasts to be made thus addressing the research question with a deeper level of insight. Table 2 summarises these similarities and differences. Amsterdam Schiphol's World Trade Centre was also considered but was too distant from Zurich/Munich and was developed in the 1990's which may affect perception of it today (Hirsh & van der Horst, 2022).

Two cases is a small number to draw conclusions from but to do any more would mean the depth of analysis would be affected, and the accuracy of conclusions depends on the depth of analysis.

Table 2 *Comparison of the characteristics of Zurich and Munich Airports and Airport Cities*

	Airport Passengers 2023	Based Carrier; Type	Global Cities Index Rank	Airport City Completed	Airport City Spatial Model
Zurich	28,885,506	Swiss Airlines; Full Service	16	2020	True Airport City
Munich	37,037,070	Lufthansa; Full Service	22	2023	Mainly Airport City; shows features of Aerotropolis*

Note. The data for Zurich Airport Passengers is from *Zurich Airport Integrated Report 2025*, by Zurich Airport, 2025. The data for Munich Airport Passengers is from *Munich Airport Integrated Report 2024*, by Munich Airport, 2024. The data for Global Cities Rank is from *Global Cities Index*, by Oxford Economics, retrieved on 19 July 2025. Copyright 2025 by Oxford Economics. The date of Zurich's Circle completion is from *About the Circle*, by the Circle, 2025. The date of Munich Airport City's completion is from *AirportAcademy Munich Airport*, by Auer Weber, retrieved on 19 July 2025. The evaluation of the spatial models is the author's own work.

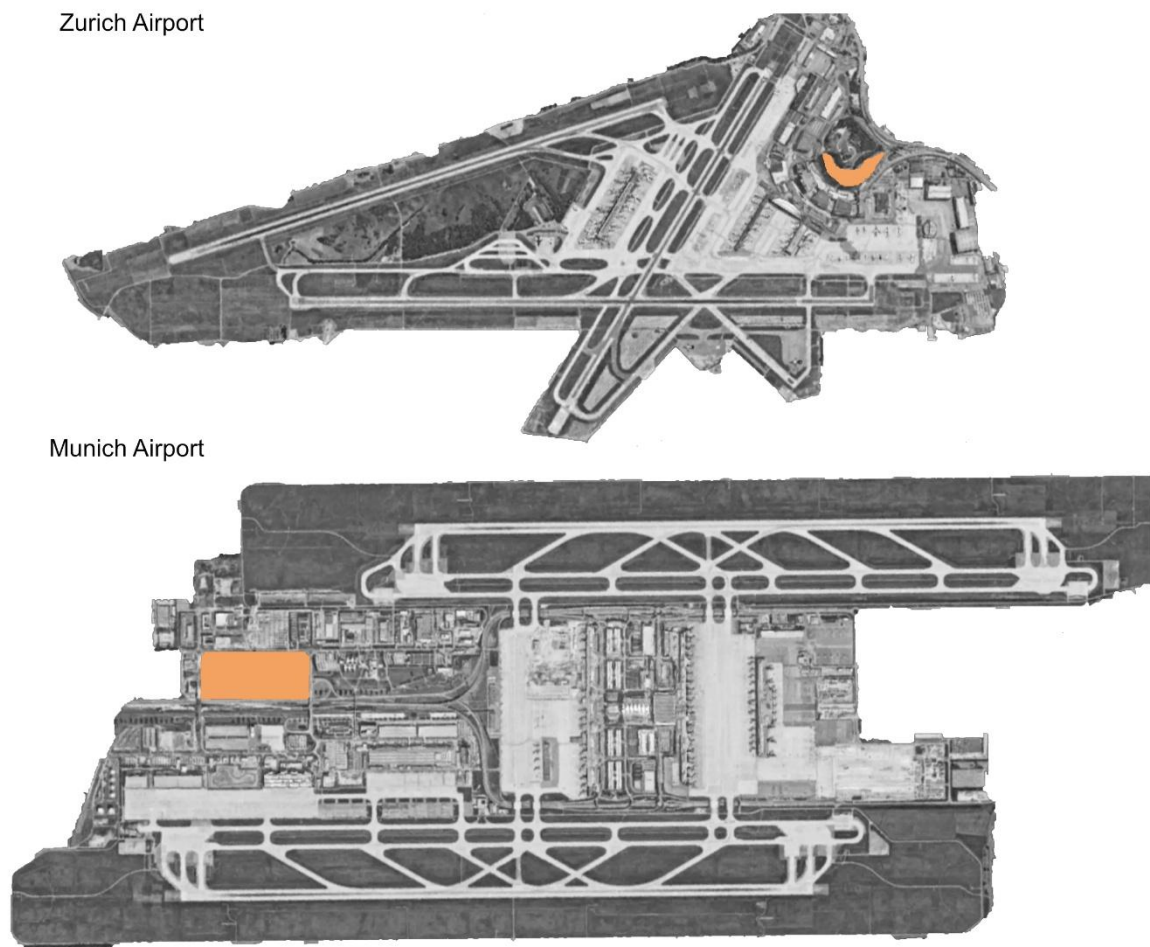
*Munich Airport City shows some aspects of the aerotropolis and airport corridor, for example a lack of walkable access to the airport terminal. Although this is a gross simplification of the models, it does enable some analysis of airport city compared to aerotropolis in relation to the research question.

4.4.3 Case Boundaries

A brief note should also be made regarding case boundaries which encourage concise, focused study (Stake, 1995; Yin, 2018). For this research 'case boundaries' have been interpreted primarily as geographical and physical boundaries. The selection of both cases adheres to Güller and Güller's (2001) definition of airport cities, that is 'a group of operational and commercial

activities within, or immediately adjacent to the airport platform'. Figure 3 shows the extent of Zurich and Munich airport cities for the purposes of this research. Although references have been made to the Munich Airport Centre (MAC), this is a separate area of Munich airport city and is not included in the case. Including it will mar the clarity of comparisons between cases as it is as much a transport hub as an airport city (Munich Airport, 2024).

Figure 3 *Location of Zurich and Munich Airport Cities*



Note. Map showing Zurich (Top) and Munich (Bottom) airport cities, highlighted in orange, within airport boundaries. Both airports drawn at the same scale for ease of comparison. Author's own work.

4.5 Part 4: Data Collection

4.5.1 Qualitative Data Collection Methods

This research collects evidence from interviews, direct observations, personal observations, digital materials, and the review of documents. This is a varied and seemingly disconnected mix of data sources, yet this approach is recommended for qualitative research and case study in particular. First, the strengths of one method can compensate for weaknesses of another (McNeill, 1990). Second, relying on multiple sources of data is necessary to develop both in depth and contextual understanding of the case (Yin, 2018). Finally, by gathering and comparing different sources of data regarding the same issue, a process known as triangulation, the construct validity of the case study is strengthened (Yin, 2018). Because this process takes time (Stake, 1995), it has only been done when the data is contestable, such as the number of visitors to the airport city. When the data is uncontestable, such as office rental prices, it is not required (Stake, 1995).

4.5.2 Interviews

Interviews were identified early in the process as a key research method. Several of the research issues, such as future plans and visitors per day, required 'inside' knowledge of the cases beyond which could be gathered from direct observation or a review of secondary information. The providing of historical information and insights are two strengths of the interview method (Creswell, 1998; Creswell & Creswell, 2018). Two interviews were conducted, both with members of the real estate teams at Zurich and Munich Airports. Both interviews were face-to-face, the interview with Zurich in-person and the interview with Munich online. As advised by Stake (1995), a short list of 10 issue-oriented questions were prepared and shown to the interviewees prior to the interview. These questions, which can be found in Appendix B, guided the interview but allowed plentiful space for the interviewee to imbue their own unique experiences and understanding into the responses. One weakness of the interview method is that the responses are subject to bias of the

interviewee. This was an issue; by nature of their roles, the interviewees were not impartial observers and this partially clouded their responses.

Table 3 *List of Interviewees*

	Pseudonym	Position
Zurich Airport	Oliver	Property & Portfolio Management
Munich Airport	Marco	Senior Manager in Real Estate Division

Note. Full interview notes can be found in Appendix F and G.

4.5.3 Observations

As noted by Yin, observation is an excellent data collection method as case study often takes place in real world setting of the case (Yin, 2018). Three ten-minute observations were carried out at 9am, 12am and 3.30pm by the author at key locations in the airport cities to determine how many people visited the airport city and the purpose of their visit. This allowed the quantitative data provided by the interviewees regarding this to be triangulated. To increase the accuracy of this data, more time than available was required, which is a common limitation of direct observation (Yin, 2018). The soundscapes at the airport terminal, city centre and airport city were quantified using the ISO 12913 perceived affective sound quality process (Axelsson et al., 2010; Mitchell et al., 2022). Personal observations capturing the author's own feelings while interacting with the spaces were also made which have been used to develop vicarious experiences for the reader (Stake, 1995). A list of observations made can be found in Appendix C and all processes were replicated at both sites to maintain consistency of data collection.

4.5.4 Supporting Qualitative and Secondary Data

To develop full understanding of the cases (Stake, 1995), other data collection methods have been employed. One of these is audiovisual materials, such as photos. These reveal the unique complexity of the case (Stake, 1995) and strengthen the reader's vicarious experience. Secondary data as defined by McNeill (1990), such as the annual reports of the airports, have also been

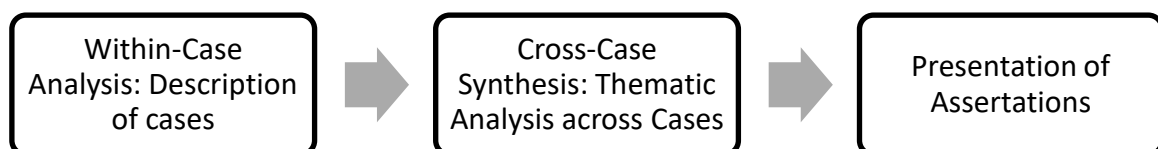
studied. Finally, record has also been kept of the author's personal interactions with users of the airport cities to be developed into brief vignettes that illustrate aspects of the case. Caution was taken while selecting particular interactions as there is a tendency to select moments that 'coincide with the researcher's predilections' (Stake, 1995).

4.6 Data Analysis

4.6.1 Choice of Data Analysis Technique

The general approach to data analysis is an inductive method of collating, reviewing and categorising data into increasingly more abstract units of information. This approach is common among qualitative researchers (Creswell & Creswell, 2018). In this work, Stake goes on to propose several specific data analysis techniques but as mentioned earlier in this chapter, one of Yin's (2018) methods has been used as his are better developed for analysing multiple case studies. In particular, his method of cross-case synthesis stood out as being very suitable for this work for several reasons. First, it is best applied to case studies that consist of two cases (Yin, 2018). Second, it is different from other research syntheses which implicitly depend on reductionist orientations, thereby ignoring the holistic nature of the case. Instead, cross-case analysis seeks to retain the integrity of the entire case (Yin, 2018). The method will be conducted from an inductive perspective (Azungah, 2018) because generalised assertions must be made in order to answer the research question. Figure 4 summarises the data analysis process.

Figure 4 *Cross-Case Data Analysis Process*



4.6.2 Within-case Analysis: Description of Cases

The first stage of cross-case synthesis is a description of the cases (Yin, 2018). Although the uniqueness of each case is critical to understanding the case

(Stake, 1995), Stake's flexible approach that allows for this uniqueness was adapted so the research results are understood in a coherent manner. The resulting 'within-case' analysis (Creswell, 1998) starts with a factual, objective description of each case. This is then supplemented with illustrations, photos and vignettes in an attempt to develop a thick, emic description (Stake, 1995). Alongside triangulation, developing this thick description is the second procedural concept recommended by Creswell (1998) to validify qualitative study as it allows readers to 'transfer information to other settings and determine whether the findings can be transferred because of shared characteristics'. Finally, the quantitative data gathered is presented with the results from each case next to each other to better enable comparisons to be made. The within-case analysis uses information found from secondary sources, information discovered and observed by this author and what others have found, i.e. from the interviewees.

4.6.3 Cross-case Synthesis: Thematic analysis across cases

Building on the discussion of the issues and topical information questions earlier in this chapter, the cross-case synthesis examines to whether these issues appear to be replicative across the two case studies (Yin, 2018). Usually, the most important features will come from highly replicative reappearance (Stake, 1995). Although this may seem reductionist, the aim was to think upward conceptually (Yin, 2018) and the use of topical information questions is necessary to provide a foundation for this. As Robert Yin notes, the integrity of the case is always preserved and no conclusions are reached simply through a numeric tally of variables.

4.6.4 Presentation of Assertions

Finally, the synthesis is interpreted and conclusions are arrived at, known in this thesis as assertions. Assertions reflect patient, thorough case study work and imply an understanding that other interpretations exist than those of the author (Stake, 1995). These rival interpretations are referenced but it is not necessary to resolve them as they help understand the case (Stake, 1995) and this is outside the remit of this thesis; the aim is simply to display sensitivity to

contradictory interpretations (Yin, 2018). Strong, plausible and fair arguments supported by data are presented that address the research question. Attempt is made to balance the author's assertions with scope for the reader to develop their own naturalised generalisations. Naturalised generalisations help to overcome the limitations of making generalisations from such a small sample size of two cases (Stake, 1995). Finally, to address internal and external validity, there is a discussion of comparability between the cases to warrant common findings (Yin, 2018).

4.7 Ethics Approval

Ethics approval was granted on the 16th of June 2025 for this study by Cranfield University (CURES reference: 25698/2025). To reflect the evolution of the study, the title was changed on the 7th of August 2025 with the change being approved the following day. Approval letters can be found in Appendix A.1 and A.2 respectively. Informed consent was obtained by ensuring that all interviewees signed the Informed Consent form. This also made them aware of how their data would be stored, used and destroyed.

5 Results

5.1 Chapter Introduction

This chapter aims to provide a factual, objective foundation for further discussion and analysis. This is achieved through a brief history and description of both airport cities followed by a presentation of quantitative data gathered through the research process. The descriptions are based on a review of secondary data and information provided in the interviews, interspaced with personal observations. The maps and vignette develop the description. The quantitative data presentation is organised according to themes so comparisons between both cases can be more easily made, with data primarily from the interviewees and numerical observations by the author.

5.2 The Circle, Zurich Airport

5.2.1 Description

Zurich Airport began to plan its airport city, to be known as the Circle, during the 2000's, with Riken Yamamoto winning the architectural competition for the project in 2009 (Schmutz, 2020). At the time, observers were unsure whether the airport company could afford to develop the Circle itself (Poungias, 2009) and linked the impetus for the project to a lack of developmental land within the city itself (Schubert, 2014). This fits in with Schaafsma's (2010) favourable pre-existing conditions for airport city development. Oliver (Property & Portfolio Management at Zurich Airport) supported this, explaining that many commercial buildings in Zurich centre lacked the open, spacious floorplans desired by companies for their offices. However, he identified the main driving factor for the Circle to be a desire to increase revenue. The land which the Circle occupies has always been owned by the airport and was previously a car park. When asked about the potential revenue loss from car park to airport city, Oliver stated that the car park revenue was not 'commercially important' for the airport.

The Circle was officially opened in November 2020 and is jointly owned by Flughafen Zurich AG (51%) and Swiss Life AG (49%) (Z2). According to Oliver, Swiss Life were chosen as project partner because alongside their investment

into the 1.5 billion CHF project, they provided real estate 'know how' developed from their record of managing real estate projects in Switzerland. Within Flughafen Zurich, the real estate division is responsible for the Circle as well as terminal and hangar buildings (Zurich Airport, 2025). The real estate division work with Colliers, an international commercial real estate agent, to lease out the ground floor spaces and Axentica, a local real estate firm, for the office spaces.

From the airport, the outward leaning continuous glass and steel façade gives the Circle a slightly forbidding, aloof appearance as shown in Figure 6. However, behind this façade, the development is broken up into six different modules that form a sequence of meandering spaces which evoke the Old Town in Zurich (Archello, n.d.). In this way, Yamamoto has created an inner-city atmosphere on a footprint of just 37,000 m² (Schmutz, 2020). During his visit, the author was impressed by the way that the mass of the development blended into the hillside park behind it and felt this was like Zurich itself, where the city is bounded by the River Limmat valley.

These six modules house a range of purposes. Oliver explained that the Circle is primarily inhabited by commercial tenants with Microsoft, Oracle and SAP all locating their Swiss headquarters at the Circle which in turn has attracted smaller tech-related companies. There is also a medical and pharmaceutical 'cluster' including an outpatient branch of Zurich University Hospital and Novo Nordisk. The office occupancy rate is approximately 95% (Oliver, personal communication, July 22, 2025). There are numerous gastronomy options, several shops including a 600sqm luxury watch store and two hotels, Hyatt Regency and Hyatt Place. Finally, one module is devoted to a large convention centre which Oliver noted is a catalyst for airport city success; 'when there is a convention, the hotels are fully booked and retail and gastronomy gets a boost'. Generally, much like in actual cities, the ground and first floors of the buildings are reserved for retail and gastronomy purposes, while the floors above it are office spaces.

In addition to the connectivity offered by the proximity to the airport, the Circle has excellent connections to the public transport network, sharing the airport's bus, tram and train infrastructure. The city centre is a ten-minute train ride away with trains running every fifteen minutes (Zurich Airport, n.d.). In Switzerland, Zurich Airport can be reached by the highest number of people within thirty minutes – whether by car, bicycle, train, or bus (Oliver, personal communication, July 22, 2025) – giving it an obvious competitive advantage compared to other locations in Switzerland. Furthermore, the Circle operates almost entirely without fossil fuels and has been certified with the LEED Platinum sustainability label (Zurich Airport, 2025) which is another attraction for companies looking for new office space. Oliver confirmed this, stating that 'Novo Nordisk only locate themselves in offices that have the LEED platinum certificate'.

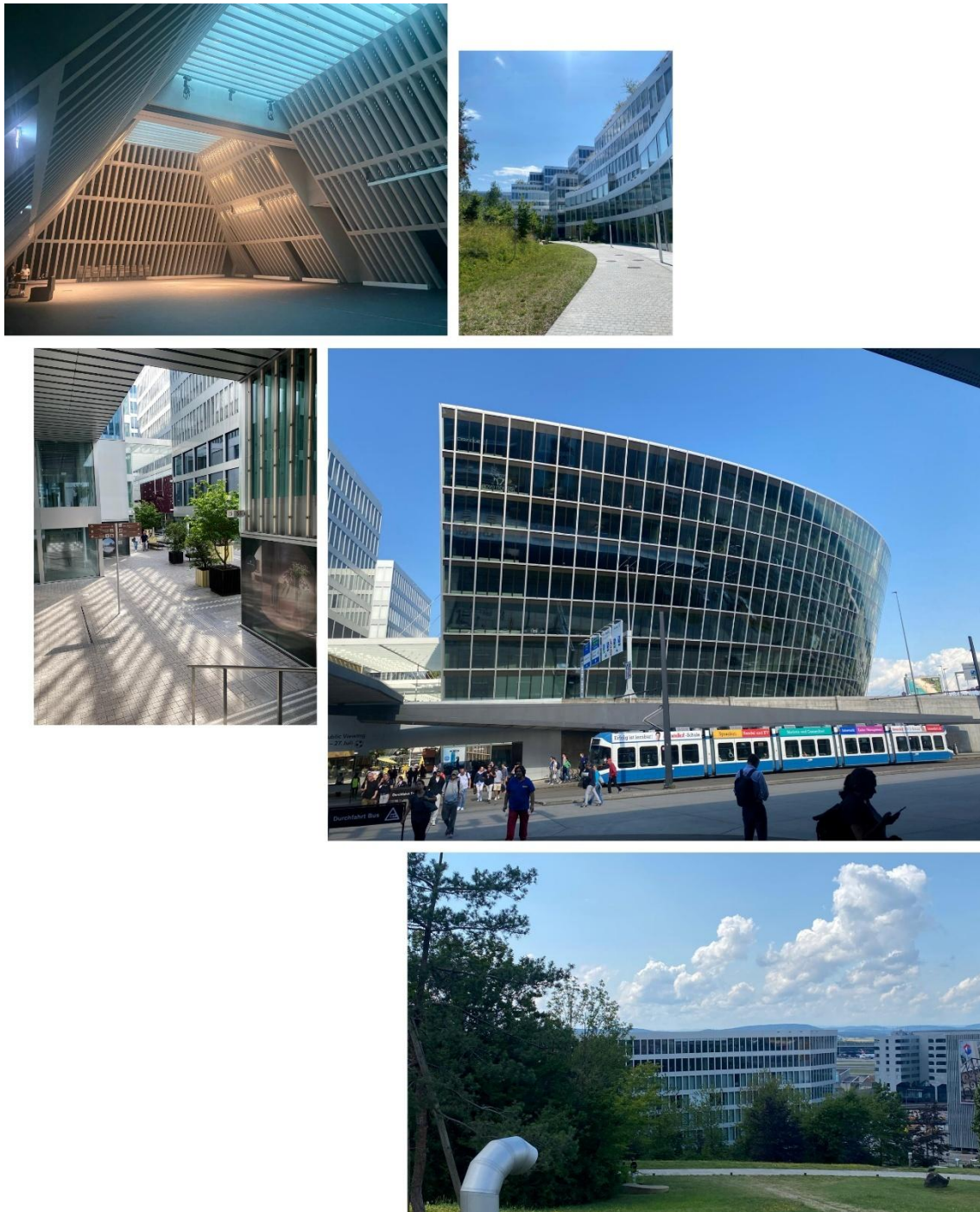
In the future, there are no plans to expand the Circle although Oliver mentioned there are plans to rebuild the landside shopping and transport hub. As part of this, a new underground connection between the Circle and the landside hub will be built to increase footfall in the Circle.

5.2.2 Illustrations

Figure 5 *Vignette of an interaction in the Circle*

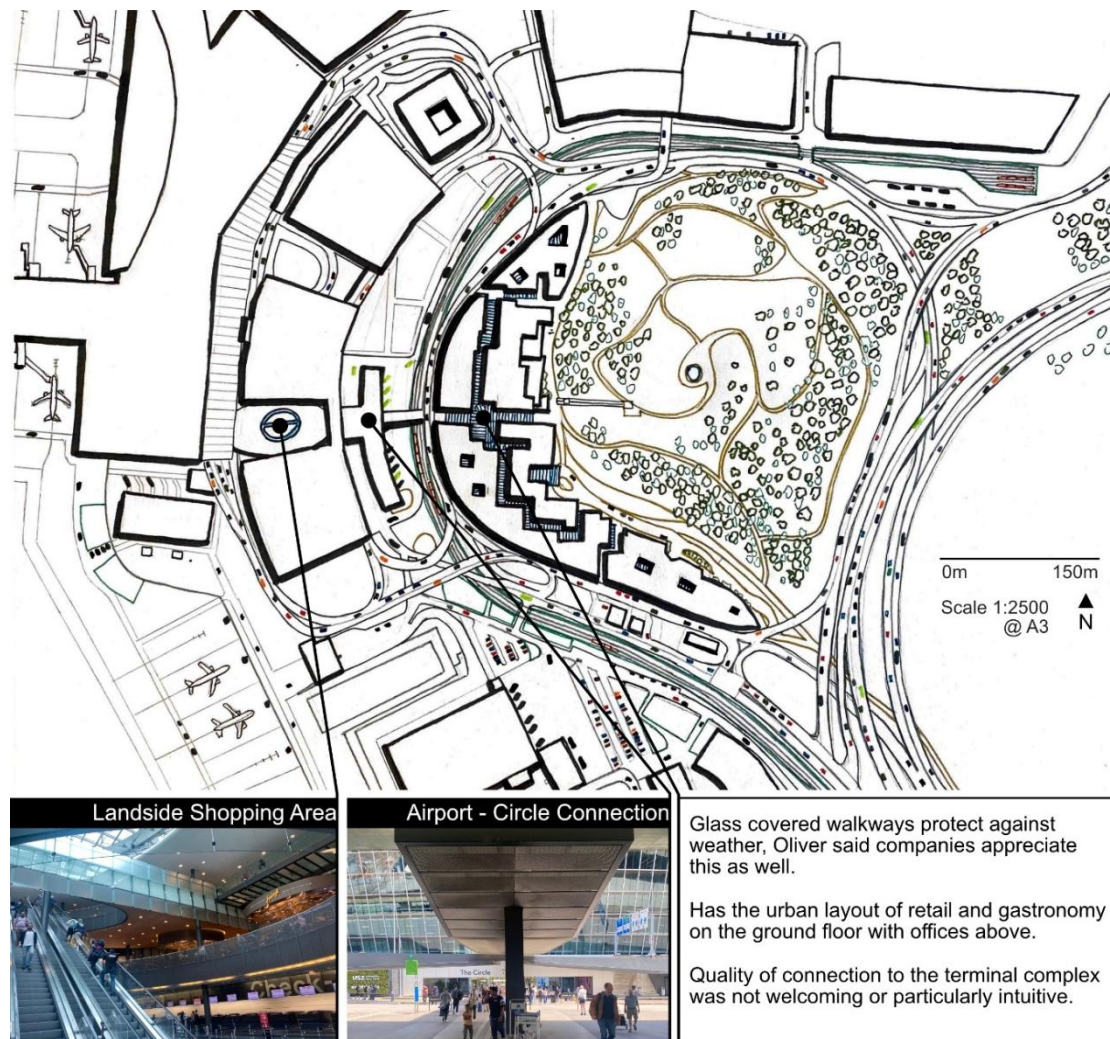
When conducting observations in the central area of the Circle, this author was approached by an elderly American tourist. As a retired academic, this person was interested in the activities being carried out but admitted that he was lost; he knew his hotel, the Hyatt Regency, was in the Circle somewhere but it was not clearly signposted or marked. Fortunately, this author was more than able to assist given his extensive knowledge of the Circle by this point. Despite this minor mishap, in true American fashion, he remained remarkably positive, describing the airport city as 'very nice and very modern'.

Figure 6 *The Circle Photo Gallery*



Note. Top left: Convention Centre. Top right: Space between the Circle and the park. Middle left: Inside the Circle. Middle right: Façade from the terminal complex. Bottom right: Aspect from the park. Author's own images.

Figure 7 Annotated Map of the Circle



Note. For the complete unannotated map, see Appendix D.

5.3 Munich Airport City

5.3.1 Description

Munich Airport in its current location was opened in 1992, 28.5 kilometres away from Munich city centre (Munich Airport, n.d.). Marco, a senior manager within the real estate division of Flughafen Munich GmbH (FMG), described the airport as featuring a 'textbook' layout of two widely spaced parallel runways with ample space in between for current and future terminal expansion. When built, today's airport cities were only just beginning to be conceived (de Neufville & Odoni, 2013) and the space to the west of the terminal complex consisted of

open grassland and some interim parking. However, as outlined by Marco Munich Airport realised it could utilise this area to deliver additional revenue in the form of real estate income concurrent with the growth in non-aviation income since the 1990's. These efforts were consolidated into the Real Estate Development Strategy 2014 – 2025, a document that defined which areas of airport land were necessary for future operations and which were left for non-aviation growth. From this, the idea to develop the western 'airport entrance' area as an airport city was born.

The western airport city masterplan calls for 'quadrants' housing a variety of purposes, including hotels and office spaces (H5). So far, there is one hotel, Novotel, with another (Ibis Styles) being built adjacent to it. Within the next three to five years, Marco said an events arena is due to open, being developed and operated by LiveNation. However, the focus of this case is on LabCampus, which is described as a 'unique innovation centre that is an ideal environment for cross-industry and cross-company collaboration' (Munich Airport, 2024). There are two LabCampus buildings, Lab 48 and Lab 52. According to Munich Airport's 2023 Annual Report, Lab 48 opened at the beginning of 2023 and offers 30,000 sqm of flexible office space. Current tenants include German air traffic control, Amplimind and Exotec. Marco mentioned that the Technical University of Munich (TUM) have also agreed to locate themselves there at the end of 2025. Lab 52, also opened in 2023, provides 14,000 sqm of office space and seminar rooms bringing the total floor area of LabCampus to 44,000 sqm. The main tenant of Lab 52 is the AirportAcademy, FMG's training and education centre.

A feature of the airport city area is piecemeal real estate development of available land rather than one overarching consolidated 'airport city' project like at the Circle. Because the capital demands are typically smaller for this type of development and the airport has real estate expertise in-house, the airport city is developed and managed solely by the real estate business division within FMG. However, Marco explained that the high number of ongoing real estate projects (including T1 refurbishment, T2 expansion) at Munich Airport is placing

strain on the division. Therefore, LabCampus has been established as a wholly owned subsidiary of FMG, a commercial structure that more easily allows for a third-party to invest in or help develop the LabCampus project in the future.

Marco stated that the airport city has a number of benefits that makes it attractive to potential tenants. First, the airport location itself offers excellent domestic and national connectivity. Second, the road network has ample capacity to handle additional traffic. Given the airport's distance from the city and physical size, a representation which can be seen in Figure 9, there is space to grow and expand the airport city as required. Finally, the quality of architecture is extremely high, with the buildings being attractive places to work and built to meet net zero standards (Auer Weber Architects, 2025).

In the future, Marco confirmed the arena is expected to be a centrepiece of the airport city, hosting 120-130 events per year. This, together with the arrival of TUM as a key tenant, is expected to drive enormous growth in footfall and activity within the airport city. Consistent with FMG's strategy of identifying and taking advantage of specific business opportunities to increase revenue, a serviced apartment building with 220-240 apartments is due to open adjacent to Lab 52 which will be primarily targeted at meeting the needs of long-haul airline crews.

5.3.2 Illustrations

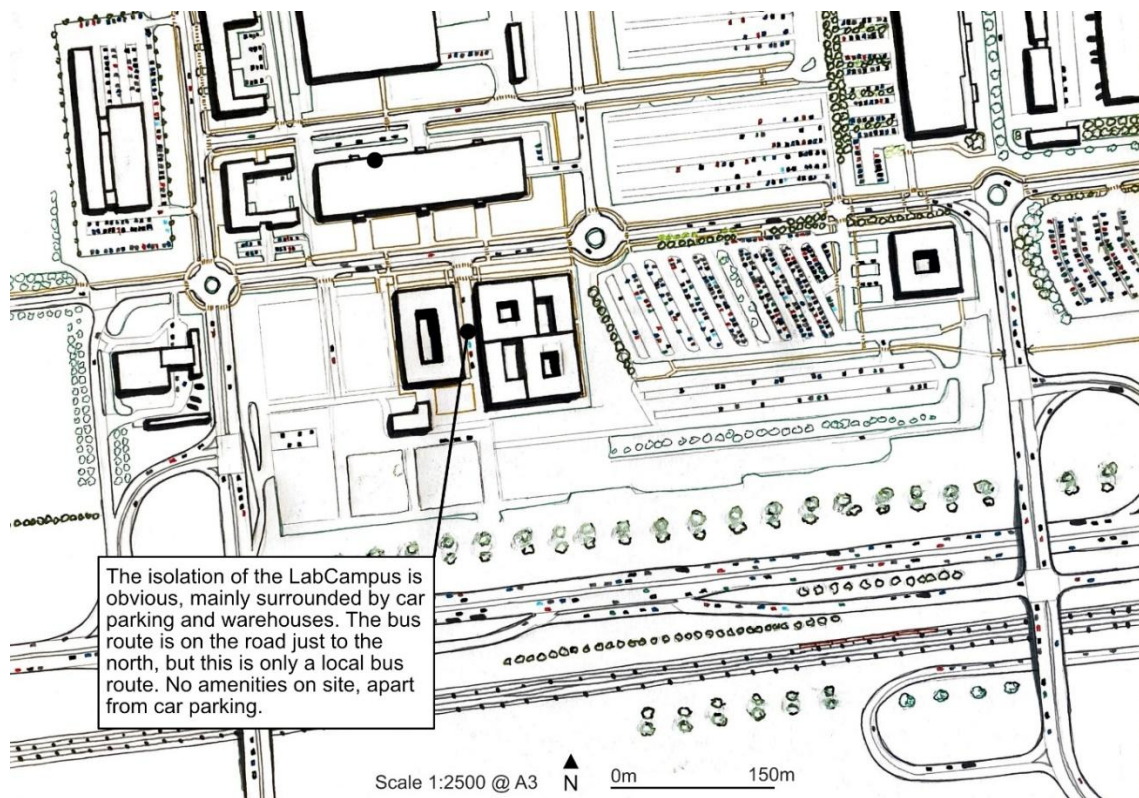
Figure 8 *Munich Airport City Photo Gallery*





Note. Previous page top left: Airport City Masterplan. From *LabCampus West, Munich*, by KCAP, retrieved on 31 July 2025. Copyright 2025 by KCAP. Remaining photos Author's own images. Previous page top right: Lab 52 interior. This page bottom left: Lab 52 exterior. This page bottom middle: Lab 48 interior. This page bottom right: General view of LabCampus.

Figure 9 *Annotated Map of Munich Airport Circle*

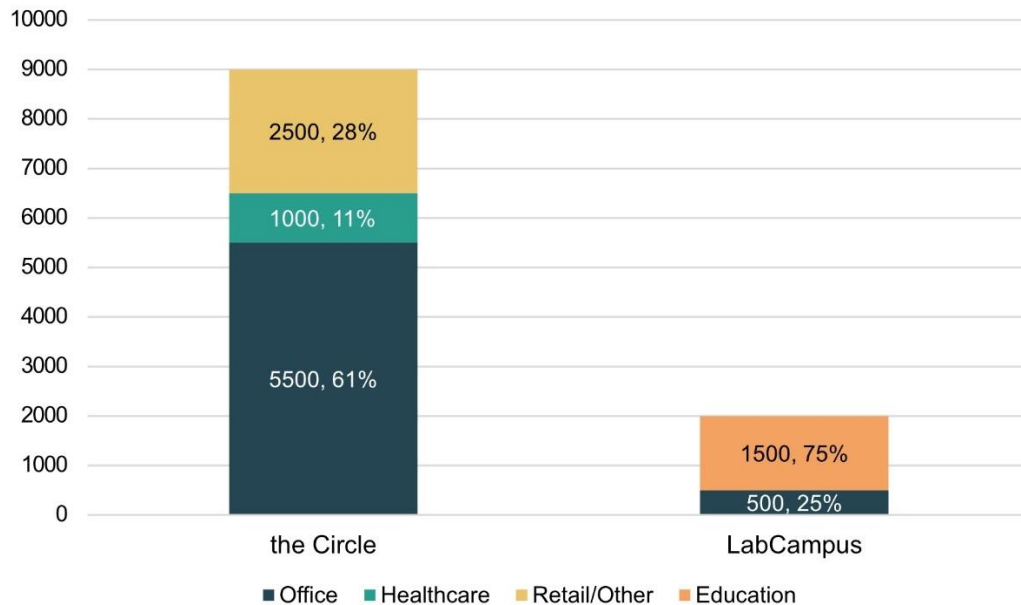


Note. For the complete unannotated map, see Appendix E

5.4 Presentation of Qualitative Data

5.4.1 Visitor Numbers and Purpose of Visit

Figure 10 *Airport City Visitor Numbers and Purpose (per day)*



Note. Based on data provided by Oliver and Marco in interviews. This is from approximations, for example Oliver estimated that 5000 – 6000 visitors work in the Circle, from this median averages have been taken for clarity of presentation.

The Circle sees around 8 – 10,000 visitors per day, far more than the LabCampus attracts. It is important to note that the LabCampus scenario is after the TUM campus opens, so currently only approximately 500 people use the LabCampus buildings. Even with the TUM, people are only visiting LabCampus for work or study, whereas the greater range of reasons why people visit the Circle more closely mirrors an actual city.

However, overall, Figure 10 shows that both airport cities are primarily used as places to work. After 5pm, the Circle felt as devoid of human activity as LabCampus did, even though most shops and cafes were still open. The observations carried out by the author found that 51% of visitors used the Circle for work, although this proportion would have been higher had most the

observations not been carried out in the middle of the day when most of the office workers would have been in the office.

Oliver explained that the Circle was designed with 25 retail units in mind and they expected 30,000 visitors per day. Currently, there are only 8 shops within the Circle (Zurich Airport, n.d.) and far less visitors than expected, although when there are events or conferences daily visitor numbers can reach up to 13,000.

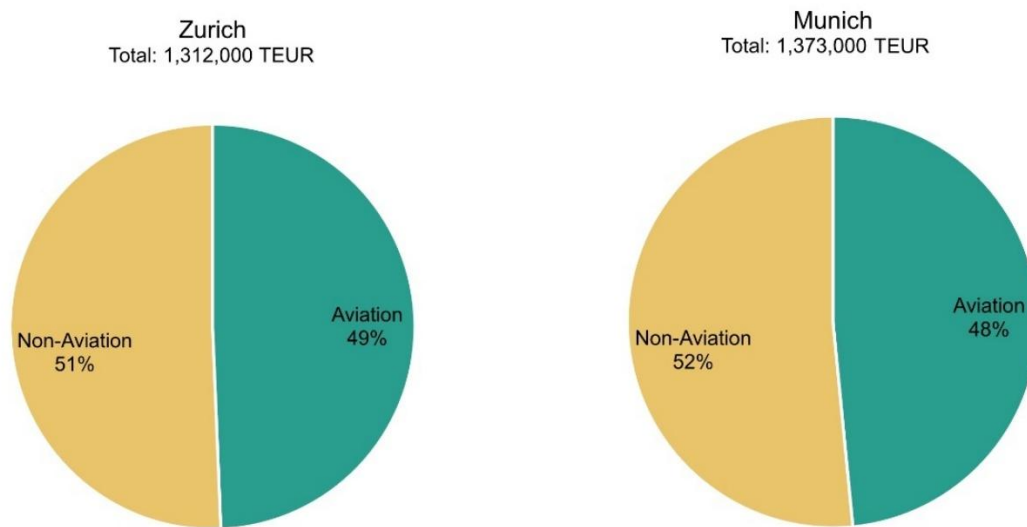
5.4.2 Rental and Financial Information

Table 4 *Airport City Rental, Occupancy and Revenue Information*

	The Circle, Zurich	LabCampus, Munich
Minimum Rental Space (gross floor area)	300sqm	600sqm
Occupancy Rate	95%	90% (with TUM) 40% (without TUM)
Rental Rate (per sqm, p.a.)	440 EUR	300 EUR
Rental Rate in City Centre (per sqm, p.a.)	400 – 500 EUR	480 – 600 EUR
Revenue (millions EUR)	80m EUR	Unknown

Note. Data provided by Oliver and Marco in interviews. Out of the 80 million EUR revenue generated by the Circle, 33.5 million EUR is from office rents.

Figure 11 Aviation v Non-Aviation Revenue Comparison, 2023



Note. The data for Zurich is from *Zurich Airport Airport Integrated Report 2023*, by Zurich Airport, 2024. The data for Munich Airport Passengers is from *Munich Airport Integrated Report 2024*, by Munich Airport, 2024.

*All numbers in stated are in Thousands of Euros (TEUR)

The high occupancy and rental rates seen in the Circle reflect its excellent location and high quality of architecture. Oliver said the co-working spaces fill an important niche in the Circle because they offer spaces from 10/15sqm which attracts smaller businesses and start-ups. In terms of revenue, it is difficult to make direct comparisons between the Circle and LabCampus as the Circle is physically much larger. However, with its higher minimum rental space and lower rental rate in comparison to rental rates in the city centre, LabCampus does seem geared towards attracting larger corporate tenants not blue-chip companies like Microsoft.

Figure 11 highlights the importance of non-aviation revenues to both airports. In the case of Zurich, 208,600 TEUR of non-aviation revenue comes from real estate. Out of this, 80,000 TEUR comes from the Circle, which shows how commercially important the Circle is to Zurich.

5.4.3 Airport City Access

Table 5 *Accessibility of the airport city*

		Transport Mode	Time (minutes)	Cost (£)
Airport City to Terminal	Zurich	Walk	2	N/a
	Munich	Bus	7	1.50
Airport City to City Centre	Zurich	Train	15	6.80
	Munich	Train	50	12.80

Table 5 highlights how disadvantaged Munich Airport City is for accessing public transport by its location away from the main terminal complex. The only way to access the terminal from Munich Airport City is via a bus connection which runs every 10 minutes during day-time hours. There is a train station with links to the city centre, but this is a 15-minute walk from the LabCampus buildings. In comparison, for Zurich, there are direct train, tram and bus connections to all of Switzerland located within the terminal complex, a 2-minute walk from the Circle.

Figure 12 *Transport Modal Splits*



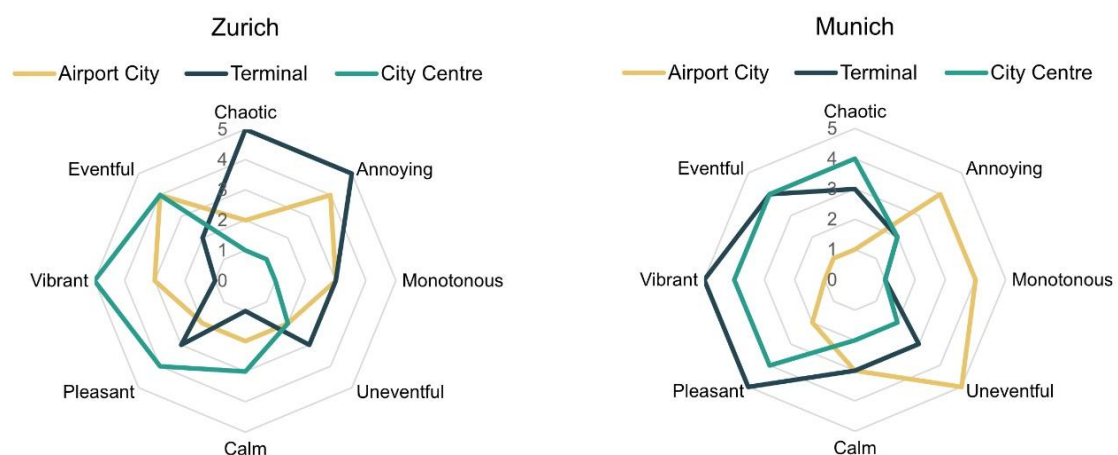
Note. Munich data from extrapolation of author's own observations. Zurich data according to Oliver.

On the other hand, LabCampus is easily accessible by private car, with a large multistorey car park close by. At the Circle, Oliver said ‘regulations only permit 1 parking space per 100sqm of office space which translates to 5% of people coming by car. Several companies have said they do not offer parking and employees have to pay for their own (this is extremely expensive) or use public transport’. Figure 12 shows how this affects the transport modal split.

5.4.4 Soundscapes

Figure 13 illustrates the soundscape at the airport city and compares this to the soundscapes at the airport terminal and in the city centre. This helps understand whether the airport city is an extension of the airport or an independent city quarter. For Zurich, the soundscape of the airport city lies between the overall pleasantness of the city centre and the unpleasantness of the airport terminal, reflecting the range of activities in the Circle. Meanwhile, the terminal soundscape at Munich was measured at the outdoor MAC. Compared to the airport terminal at Zurich, the MAC is more spacious and less chaotic, reflected in the more attractive soundscape. The range of activities in the MAC makes it very similar to the city centre in terms of soundscape attractiveness, whereas the eerily quiet LabCampus area was less attractive. For both airport cities, aircraft noise was a major annoyance although excellent sound proofing meant they could not be heard inside.

Figure 13 *Soundscape Comparisons*



6 Discussion and Analysis

6.1 Chapter Introduction

This chapter discusses, compares and critically assesses the airport cities then develops this discussion into a presentation of assertions (Stake, 1995), a 'summary of what the writer understands about the case(s) and whether initial naturalistic generalisations...have been changed conceptually or challenged' (Creswell, 1998). Therefore, this chapter is divided into two parts; the first 'discussion' part organised around the topical information questions introduced in Chapter 4, the second 'presentation of assertions' part addressing the research question guided by the research issues. The second part has a looser structure to allow 'changed or challenged' generalisations to be fully considered. As advised by Robert Yin (2018), the chapter begins with a justification of why generalisations can be drawn from the selected cases.

6.2 Justification of Comparisons

Before analysing both airport cities, it is necessary to briefly discuss how they are comparable along important dimensions and how differences between the cases do not undermine multiple case findings (Yin, 2018). Both airport cities are modern, opening in 2020 and 2023 respectively, and feature very high-quality architecture, two factors that rank highly for potential tenants. Both are majority or fully owned by the airport operator and sit within airport boundaries. The airport profile is also similar, being the main airport for their respective cities and home to a full-service hub carrier. These factors mean the airport cities share a similar contextual background.

There are notable differences. The Circle is read as one large building that houses different functions and activities within it, whereas Munich displays a more pragmatic approach, choosing to develop parcels of land as and when opportunities arise. At Munich, the distance between terminal and airport city as well as the dispersed arrangement of buildings within the airport city means it could almost be interpreted as a small scale aerotropolis (Appold & Kasarda, 2010). Kasarda's (2010) description of the aerotropolis as 'based on low

density, wide lanes, and fast movement' almost perfectly encapsulates the western area of Munich Airport. The Circle, with its range of different activities and proximity to the terminal complex is best described as an airport city as defined by Güller and Güller (2001). However, these differences do not undermine multiple case findings. Instead, they add to the richness of the comparison, enabling greater understanding of the airport city phenomenon.

6.3 Cross-Case Synthesis

6.3.1 What was the ambition of the airport city?

The impetus behind both airport cities was to increase revenue. Oliver said increasing revenue was the 'raison d'être' of the Circle. He explained that Zurich Airport can, and wants to, expand to 50 Million Annual Passengers (MAP) so the airport city was not needed to overcome limits on aviation-related revenue growth. However, the airport footprint is limited so in the future the Circle could act as a nucleus for larger airport-centred urban development. Munich Airport is even more explicit, stating in its annual report (2024) that the 'real estate business unit's main purpose is to provide buildings and space for value-added process'. It goes on to state that 'ongoing development is essential for the airport' and Marco confirmed that the 'growth of non-aviation revenue was key to growing the airport city'. The importance of non-aviation revenue to both airport groups as found by Graham (2008) is highlighted in Figure 11.

6.3.2 How have airport cities evolved?

The decisions taken to shape the airport city to maximise revenue growth seem to depend on individual localised factors, such as the availability of land and development model. In the case of the Circle, the ambition was for it to more closely resemble true urban space, containing more retail and accommodation alongside office space. However, Oliver explained that 'practicalities and regulations prevented this plan from fully materialising'. In Munich's case, the availability of land lends itself well to pragmatic, piecemeal real-estate development. The land-use plan is the commercially oriented bible that governs development, with no overarching urban development plan or vision in place. In

both cases, there was limited coordination with city planners at early stages of project development, a problem highlighted repeatedly in airport city literature (Appold & Kasarda, 2010; Knippenberger, 2010; van Wijk et al., 2014; Walker & Baker, 2010).

Both cases, either by accident or design, have become primarily spaces for work. Although there are different functions within the Circle, included some very successful ones like gastronomy, it would struggle without the business driven by the corporate tenants. In Munich, the future introduction of different activities such as events is driven by commercial opportunism rather than a desire to diversify uses. An expected feature of any urban space is for it to be a place to live, but both Oliver and Marco said that European Union (EU) and Swiss regulations prevent people from permanently living at the airport due to noise and air quality regulations. Therefore, without this, the concept of the 'airport city' being a new urban quarter is stymied at the earliest stage.

6.3.3 Has the airport city been economically and financially successful?

Generating 80 million EUR a year, boasting an occupancy rate of 95% and charging a rental rate comparable to city centre means the Circle can be considered financially successful. However, it must be noted that in comparison to Munich's airport city, the profits generated by the Circle are shared with Swiss Life. Also, costing 1.5 billion CHF, the Circle was far more expensive than Munich's development model. The main issue with the Circle is that retail has significantly underperformed. There are a series of connected reasons behind this but essentially the location is outside the main passenger flow, resulting in a lack of footfall, and there is limited demand for the luxury stores.

In the interview with Marco, he explained that the predicted internal rate of return (IRR) for LabCampus has not been achieved, although a 'good benchmark has been set'. He attributed this to the Covid-19 pandemic, as tenants pulled out of pre-lease agreements signed prior to the pandemic. FMG continued with construction despite this setback, taking on full financial risk. This is consistent with Messer's (2011) statement that 'self-development is the

most profitable but risky form of airport real estate development'. Marco said that the predicted IRR, calculated in 2016, will be difficult to achieve in today's environment because rental fees are under pressure from the shift to working from home and high construction costs. He concluded that the LabCampus project represents sound financial sense and highlighted flexibility to cater for different uses as a key airport city success factor. This is arguably the Achilles heel of the Circle, which is struggling to repurpose its extensive retail spaces.

When comparing office rental rates, the Circle is more successful, charging 440 EUR per sqm, compared to LabCampus which charges 300 EUR per sqm. The Circle's direct airport access gives it an obvious competitive advantage. This effect has been noted by Hirsch and van der Horst (2022) who found that 'direct airport access generates a significant price premium for commercial and industrial plots located in airport areas' and supports Kasarda's (2008) theory of airport city growth based according to time cost access gradients. A good benchmark for the Circle is Schiphol Airport Centre, which charged 390 EUR per sqm in 2009 (Conventz & Thierstein, 2011). This underlines the Circle's attractiveness for office rentals although rental rates will have changed since 2009.

Interestingly, from an economic perspective, the lack of airport and city coordination has not obviously affected either development. However, the problem has manifested itself in the unattractiveness of the airport cities as urban spaces. Over the long term, this is likely to make it more difficult for the airport city to attract tenants, impacting financial results even if direct cause-and-effect links are difficult to make.

6.3.4 Do airport cities support environmental and sustainability goals?

As described in the previous chapter, both airport cities have very energy efficient buildings, supporting their respective airport operators' plans to achieve net zero. Marco stated that the highest building environmental standards must be achieved 'whatever the cost'.

However, airport cities must aim to achieve a more holistic, comprehensive vision of sustainability as expounded by Freestone (2009). For this, other factors like transport type must be critically analysed. In this aspect, Zurich is peerless with 95% of visitors arriving by public transport. On the other hand, Munich is unfortunately a prime example of Güller and Güller's (2001) observation that 'too often, airport cities are developed where there is room not where connections are'. The difficulty accessing public transport has resulted in only 35% of visitors using it to access the airport city. Furthermore, the lack of an integrated public transport strategy is concerning, with Marco explaining that it is 'on the tenants to decide how they want to arrive at the airport city' and 'there is no real pressure to change the modal split' from FMG.

6.3.5 How attractive is the airport city as a place to spend time in?

Neither case was a particularly attractive place to spend time in despite being visually appealing. Although it wasn't planned as such, the Circle today is essentially a business park disguised as a shopping mall. The buildings are large and clustered tightly together; it felt slightly dystopian walking through the shuttered or quiet ground floor retail units knowing thousands of people, employed by some of the world's largest corporations, were sat at their desks peering down at you. Neither was the space very democratic; the seating in the central square of the Circle can only be used if you purchase something from the adjoining bar. The three token public-use deckchairs were in unsurprisingly high demand.

LabCampus was even more strange, feeling even emptier than its 40% occupancy rate, although this is likely to change quite dramatically with the 300% increase in daily visitors after the arrival of the TUM campus. In contrast to the Circle, understanding Munich Airport City as a conventional commercial real estate development meant it felt more familiar and comfortable, although understanding it as such means any pretence at it being a 'urban space' is lost.

In both cases, the transient nature of visitors meant there was an unsettled atmosphere and aircraft noise was an annoyance. Interestingly, the soundscape for the Munich Airport Centre is almost as attractive as the city centre, despite

the high levels of such noise. This may be because it is perceived as an integral part of the 'airport atmosphere' whereas given the urban nature of the airport cities, it is not expected and was simply an unwelcome disturbance to daily activities. Unfortunately, the street canyons and shielded facades of the Circle did not noticeably decrease aircraft noise as Lugten (2019) suggested they might do although the adjacent park did improve the soundscape.

6.3.6 Who benefits most from the airport city?

The most obvious beneficiary is the airport itself given the revenue generating *raison d'être* of airport cities. However, the situation is more nuanced than this although as Marco said, it is difficult to numerically prove benefits to surrounding communities and the city. The theoretical approach is that 'if the (airport city) concept is right, it naturally also strengthens the airport's general competitive position' (Poungias, 2009) and it is known airport expansion acts as a powerful economic development tool for the surrounding region (Brueckner, 2003; Florida et al., 2015). Also, as Appold and Kasarda (2010) note, airport cities also 'work indirectly, visually signalling the attractiveness of a region for inward investment.' The impressive nature of the Circle and the high profile of the companies located there certainly does not harm Zurich's reputation as a place for doing business.

As Oliver explained, in Munich's case the relatively unlimited capacity of the new airport site has been economically very beneficial for the city. Lufthansa has established a hub at the airport, leading to the airport being the biggest employer in the region and the old Munich-Riem site is used as a 'very successful' exhibition area. He envisages the arena development being beneficial for the city, as it will attract a huge number of visitors who will very likely also include a visit to Munich itself as part of their experience.

Overall, given they provide the most direct benefits to the airport this aspect strengthens the impression of the airport city being an extension to the airport although conflicting conclusions may have been drawn if aerotropolis-style 'outside the fence' airport cities were studied.

6.3.7 How might airport cities evolve in the future?

Both airport cities have well-defined plans for future development. Zurich seeks to integrate the Circle even more closely with the airport by building an underground connection to the rebuilt landside shopping and transport hub, in the hope this will increase footfall and revitalise retail spaces. Munich aims to continue with its real estate development model, with the arena being completed in the next 3-5 years and other projects like the serviced apartments.

More broadly speaking, it is difficult to envisage airport cities becoming new urban quarters despite the best efforts of airport like Zurich due to regulations, environmental factors and the unwelcoming nature of development around airports. Nearly 15 years ago, Conventz (2011) mused that 'airport city locations are not able to exist autarkically due to the currently not fully developed infrastructure, poor amenities and insufficient urban design qualities. While some of these issues have been addressed in the cases studied in this thesis, the road to the autarkical existence of airport cities looks uncertain.

With this in mind, it seems like the most likely way that airport cities will evolve is to further entrench their position as centres for commerce. Both Oliver and Marco said, unprompted, that airport cities and city centres are benefitting from a post-covid shift away from suburban business parks. Although the rents are less expensive at these locations, employees are placing greater value on the attractiveness of city centres and businesses on the connectivity of airports.

However, Oliver did mention that if the Circle were to be built today accommodation would very likely be allowed because the rental rates in Zurich have risen so high and there is a shortage of housing stock. Given this situation is mirrored across many large cities, could this be key to the birth of true airport cities?

6.4 Presentation of Assertions

6.4.1 Case Studies

Conceptually, the Circle can be understood as an attempt to create a new city quarter within the airport boundary. However, hamstrung from the start by a need to generate revenue, a flawed location choice and the refusal of on-site accommodation, this attempt has broadly failed but the vision should be applauded. In comparison, Munich Airport City is more limited in scope, simply building whatever generates the highest IRR. For now, Munich's concept appears to be more successful although its approach is problematic in the long term and it is impossible to state with finality which airport city is most successful without knowing detailed financial results.

Through a consideration of the strengths of each concept, an interesting paradox is observed. Assuming a better link with the landside shopping centre can be developed to increase footfall, the location of the Circle being close to major transport infrastructure, is good but there is nowhere left for it to expand as it is tightly bounded by the hillside park on one side and the terminal complex on the other. This situation is typical at many airports, where landside space is at a premium (de Neufville & Odoni, 2013). On the other hand, Munich Airport City has practically unlimited room for future expansion but the downside of this is the distance to the main terminal's transport links. To develop a sustainable, dynamic airport city with true 'urban character', this paradox must be solved.

Güller and Güller (2001), and Schlaack (2010), suggest similar definitions for the city: dense environments featuring public amenities, access quality, heterogeneity and a permanent rather than transit character. From the analysis of the Circle and Munich Airport City, it is clear the 'city' element of the airport city is still missing. Given the number of times this issue is mentioned in literature (Hirst, 2018; Kasarda, 2018; Schlaack, 2010) it cannot just be a problem specific to the two cases studied. This is hardly surprising; the cases studied, particularly Munich, weren't meant to be cities, rather this just seems like a selling point inserted into the project during the design phase at the discretion of the developer or the architect.

However, Peneda, Reis and Macário's (2011) assertion that the Airport City label is simply a 'marketing tool for real estate interests in the airport vicinity' is too reductive, especially in the case of the Circle. Even if the airport city did just contain warehouses and offices, much like the Munich Airport City, this still constitutes a form of urban development. The frustration is that a well-connected, integrated and dynamic airport city could in theory create a 'highly unique urban culture that corresponds to the complex relationships between man and technology' (Urry, 2012) yet this exciting urban vision remains out of reach.

6.4.2 Should airport cities exist?

There was a reason city planners sought to separate airport and city way back in the 1920's (Bednarek, 2000). The inherent incompatibility still remains, created by factors such as air pollution and noise. However, like this research found, airport cities deliver such attractive benefits for their owners, whether that be the airport itself or other companies in the property development chain, it is naïve to think that airport-centred urban development could be halted even if there was an obvious case for it to be so. Moreover, airport cities represent a very attractive place for investment, highlighted by the choice of LiveNation to build its new arena at Munich Airport, a choice made due to the availability of land, excellent connectivity and limited sensitivity to noise complaints.

There is a greater need for airports to be cognisant of the problems of airport-led urban development, something partially addressed in Hirsch's (2019) airport urbanism approach. In the case of Munich, there is clear potential for future conflict with continued airport city growth. The increase in size and traffic, even if accommodated in the masterplan as asserted by Marco, could cause friction with local communities which would then inhibit further aviation related growth, thus affecting the city itself. Airports value the unregulated nature of airport cities (Bednarek, 2016), but does this mean they would prioritise airport city growth over aviation growth? From the perspective of the city, the airport should prioritise aviation growth but how strong is the airport's obligation to serve the city? To answer these questions, airports, particularly in Europe where space is

at a premium, need to consult with local and regional government. Perhaps public ownership of airports in this regard would be effective, with all parties working towards the benefit of the region and fewer vested interests.

6.4.3 How should airport cities evolve?

Assuming that airport cities are going to develop regardless of airport-city compatibility, there are two approaches to addressing the development paradox mentioned earlier in this chapter. The first is to build the airport city according to the airport corridor rationale (Schaafsma, Amkreutz & Güller, 2008) and utilise the transport infrastructure running from city to airport, a strategy that has been successful at Amsterdam Zuidas (Conventz, 2010). However, given the declining popularity of suburban office clusters, this approach may struggle to attract tenants, in particular the valued blue-chip companies.

The other approach would be to develop smaller-scale, high-quality airport cities within, or adjoining, the main transport interchange. There are several advantages to this. Güller & Güller (2001) note the close interdependency of airport city and airport interchange, a relationship found in this research. They go on to say that 'sites in the immediate vicinity of the airport interchange are the most attractive business locations, with an increasingly diverse mix of activities competing for space and privileged sites.' Again, this proved to be true. The Circle is very close to the main transport interchange and has been successful at attracting a high calibre of tenants who are willing to pay higher rents. In terms of the diversity of uses, it is very insightful to reference the MAC. Marco remarked that 'at weekends, people come to visit the MAC for the on-site brewery and to enjoy the airport atmosphere'. This seems to be a very unique example of the airport city becoming a destination, like city centres are. The Circle has come very close to this ideal, but in its attempt to recreate the city environment the special nature of the airport is lost. The location is only slightly but very significantly flawed; if it were located within the landside shopping area, the result may be very different. On the other hand, the MAC, with its distinctive sail-like roof sheltering a meandering flow of people is a good example of an urban catalyst (Davis, 2010) that makes it attractive to businesses, passengers

and tourists alike. The results from the soundscapes reinforce the impression of the pleasant atmosphere within the MAC. Obviously, the MAC is limited in space and therefore revenue generating potential but an integrated landside shopping, office and transport hub could be the blueprint for airport cities to evolve. Visitors would value the attractive urban atmosphere; like the Circle, most office workers could arrive by public transport and the airport could rely on these features to charge high rents thus overcoming the lack of space. Finally, concern about long term conflict between the airport city and airport aviation would diminish because the economic performance of the airport city would be determined by quality, not scale.

7 Conclusion

7.1 Chapter Introduction

This chapter is structured into four sections. The first summarises the main findings of this thesis and is followed by a discussion of the main limitations encountered in researching the topic area. The third part presents a list of policy and managerial implications, and finally research gaps are identified as a foundation for future research.

7.2 Main Findings

To answer to research question, ‘how should airport cities exist, if at all?’, this thesis was broadly organised into three parts. The objective of the first part was to describe the cases, the within-case analysis. The second part, the cross-case synthesis, aimed to analyse the cases according to themes derived from the topical information questions through comparing and contrasting the case studies and referencing supporting literature. Finally, this analysis was interpreted and conclusions were discussed, the presentation of assertions.

Aided by information from interviewees and in-person visits to the case studies, the first objective was fully achieved. A thorough description of the Circle and Munich Airport City with supporting qualitative information was provided. In particular, the in-person visits were invaluable, the author being surprised by the poor urban atmosphere found in the airport cities which is well-disguised by the airport marketing materials and was not fully addressed in the interviews.

The cross-case synthesis was effective at breaking down the complex interrelationships found in airport cities. Through this, a clear picture emerged of the airport cities being largely an extension of the airport rather than a new urban quarter. This conclusion is based on the revenue generating *raison d’être* of cases being studied, the evaluation that the airport is the ultimate beneficiary of airport-led urban developments and last but not least, a notable difference in atmosphere and activity between the city and airport city. This section would have been strengthened by the inclusion of another airport city case, one

‘outside the fence’, and interviews with the relevant city planners to understand their perspective on the airport city development.

To conclude the research, the presentation of assertions found that for now, Munich can be considered the more successful airport city overall, but this is largely because its aims are relatively limited. It is a less sustainable form of urban development and its profit-focused approach could well cause FMG problems in the future. Meanwhile, the Circle represents a commendable attempt to develop a new urban quarter, but this attempt has been stymied by a flawed location choice and regulations regarding on-site accommodation.

Competing priorities and concerns, underlining the complex nature of airport cities, made answering the first part of the research question ‘should airport cities exist?’, difficult. These included the incompatibility permanent homes in airports, the paradox of proximity to the terminal complex and the pragmatic realisation that airport cities are too attractive for airports to ignore as they offer such valuable revenue streams. Overall, it became clear that airport cities can and should exist, although not as conventional ‘cities’; ‘cities’ of work rather than ‘cities’ of living.

However, this discussion enabled the second part of the research question, ‘how should airport cities exist’, to be answered with clarity, asserting that small-scale, high-quality ‘cities’ integrated with the main airport transport interchange offer a clear path to resolving the conflicts found in airport-centred urban development. This may eventually lead to a re-evaluation of the classic airport layout with the terminal complex placed within parallel runways, in the realistic scenario of the airport city outgrowing the space available in the central area.

This conclusion seems somewhat underwhelming when compared to the possibility of airport cities becoming exciting and expansive new urban forms as suggested in Chapter 1. However, one must pay attention to the outcome of Le Corbusier and Sant’Elia’s visions, which helped shape contemporary thinking but remained bound to the drawing board because they failed to understand the nature of aviation. Reality must be observed.

7.3 Implications

The implication for airport operators, acting in a capacity as owners of the airport city, is that they need to consider very carefully the location, as well as the strategy of the airport city. A revenue generating focus is economically advantageous, but it is likely to struggle in the long term, potentially even backing the airport itself into an unwelcome corner. Airport operators also need to make sure the airport city is well connected to transport infrastructure and be cognisant of problems associated with the 'build it and they will come' approach.

Cities, meanwhile, need to take a more active approach in shaping the airport city. The airport's success is crucial to the city's success, so the success or failure of the airport city can also affect the city. In an ideal situation, the airport and city would collaborate on airport city development in areas like land-use policy, transport planning and strategy so airport and city complement each other.

As seen in the example of the MAC, airport planners could consider the viability of placing or leaving space for an integrated multimodal transport hub and airport city development in the terminal forecourt area, instead of the traditional split-level car access roads. This would increase revenue for the airport, potentially increase the proportion of passengers arriving at the airport by public transport because of the transport interchange's proximity to the terminal and host a wider variety of activities sustained by the constant flow of passengers.

7.4 Research Limitations

Overall, no obvious limitations have come up as part of this study – the desired holistic, in-depth understanding of the cases was achieved through the research methods. However, more information on the following areas would have strengthened the analysis:

1, Detailed financial results of the cases studied. This would have enabled more complete comparisons to be made, but the understanding that both airport cities are financially successful was sufficient for the purposes of this research.

2, It would have been very interesting to get a perspective of the cases from a city or urban planning perspective. This would have offered a more balanced appraisal and could have provided more clarity to answer the first part of the research question.

7.5 Further Research

There are two main avenues for further research:

1, To develop a stronger analysis of airport and city integration, further cases could be studied that are not being primarily developed by the airport and are outside the airport boundaries, in essence 'aerotropolis' or 'airea' airport cities. It should be noted that the cases studied are both privately owned, so to fully analyse the airport city phenomenon it would have been interesting to study publicly owned airport cities and how they compare to their privately owned counterparts.

2, The study asserts with confidence that a MAC-style airport city development is the preferred way for airport cities to evolve. However, before studying the selected cases, this author felt that the Circle offered a blueprint for airport cities, a perception that changed quite substantially over the course of this research. This proves that initial perceptions can and do change, so further study of the MAC (and similar projects) is required to validate the conclusion of this thesis.

References

- Appold, S. J., & Kasarda, J.D. (2010). Strategically Managing Airport Cities. In J.D. Kasarda (Eds.), *Global Airport Cities* (pp. 1-31). Insight Media.
- Archello. (n.d.). *The Circle at Zurich Airport*. Retrieved 17 June, 2025, from <https://archello.com/project/the-circle-at-zurich-airport>
- Auer Weber Architecture. (n.d.). Airport Academy Munich Airport. Retrieved 19 July, 2025, from <https://www.auer-weber.de/en/projects/details/airportacademy-munich-airport.html>
- Axelsson, Ö., Nilsson, M. E., & Berglund, B. (2010). A principal components model of soundscape perception. *The Journal of the Acoustical Society of America*, 128(5), 2836-2846. <https://doi.org/10.1121/1.3493436>
- Azungah, T. (2018). Qualitative research: deductive and inductive approaches to data analysis. *Qualitative research journal*, 18(4), 383-400. <https://doi.org/10.1108/QRJ-D-18-00035>
- Barrett, P. (1987). Cities and Their Airports: Policy Formation, 1926-1952. *Journal of urban history*, 14(1), 112-137. <https://doi.org/10.1177/009614428701400105>
- Barrow, H. (2018). *Henry Ford's plan for the American suburb: Dearborn and Detroit*. Northern Illinois University Press.
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*, 13(4), 544-559.
- Bednarek, J. R. (2016). *Airports, cities, and the jet age*. Springer International Publishing.
- Bednarek, J. R. D. (2000). City planning and municipal airports, 1927–40. *Planning Perspectives*, 15(4), 349-375. <https://doi.org/10.1080/026654300420954>

- Betz, S. (2010). Sustainable airport region: Managing airport cities: Benchmark study 2008. In U. Knippenberger & A. Wall (Eds.), *Airports in Cities and Regions: Research and Practise: 1st International Colloquium on Airports and Spatial Development, Karlsruhe, 9th-10th July 2009* (pp. 153-157). KIT Scientific Publishing.
- Brilha, N. M., & Nobre, H. (2019). Airports as platforms: towards a new business model. *International Journal of Business Performance Management*, 20(4), 297-312.
<https://doi.org/10.1504/IJBPM.2019.105234>
- Brueckner, J. K. (2003). Airline traffic and urban economic development. *Urban Studies*, 40(8), 1455-1469. <https://doi.org/10.1080/004209803200009438>
- Budd, L., Ison, S., & Budd, T. (2016). Improving the environmental performance of airport surface access in the UK: The role of public transport. *Research in Transportation Economics*, 59, 185-195.
<https://doi.org/10.1016/j.retrec.2016.04.013>
- Charles, M. B., Barnes, P., Ryan, N., & Clayton, J. (2007). Airport futures: Towards a critique of the aerotropolis model. *Futures*, 39(9), 1009-1028.
<https://doi.org/10.1016/j.futures.2007.03.017>
- Conventz, S. (2010). New office space at international hub airports. In U. Knippenberger & A. Wall (Eds.), *Airports in Cities and Regions: Research and Practise: 1st International Colloquium on Airports and Spatial Development, Karlsruhe, 9th-10th July 2009* (pp. 153-157). KIT Scientific Publishing.
- Conventz, S., & Thierstein, A. (2011, August 30-September 3). *The knowledge economy, hub airports and accessibility. A location based perspective* [Paper presentation]. 51st Congress of the European Regional Science Association: "New Challenges for European Regions and Urban Areas in a Globalised World", Barcelona, Spain.
<https://hdl.handle.net/10419/120305>

- Conway, H. (1980). *The airport city: development concepts for the 21st century*. Conway Publications.
- Creswell, J. W. (1998). *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*. Sage Publishing.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publishing
- de Neufville, R., & Odoni, A. (2013). *Airport Systems: Planning, Design and Management* (2nd ed.). The McGraw-Hill Education LLC.
- Denzin, N. K., & Lincoln, Y. S. (Ed.). (1994). *Handbook of qualitative research*. Sage Publishing.
- Florida, R., Mellander, C., & Holgersson, T. (2015). Up in the air: the role of airports for regional economic development. *The annals of regional science*, 54(1), 197-214. <https://doi.org/10.1007/s00168-014-0651-z>
- Florido-Benítez, L. (2021). Málaga Costa del Sol airport and its new conceptualization of hinterland. *Tourism Critiques: Practice and Theory*, 2(2), 195-221. <https://doi.org/10.1108/TRC-05-2021-0010>
- Freestone, R. (2009). Planning, sustainability and airport-led urban development. *International planning studies*, 14(2), 161-176. <https://doi.org/10.1080/13563470903021217>
- Freestone, R., & Baker, D. (2011). Spatial Planning Models of Airport-Driven Urban Development. *Journal of Planning Literature*, 26(3), 263-279. <https://doi.org/10.1177/0885412211401341>
- Geertz, C. (1973). Thick description: Toward an interpretive theory of culture. In Geertz, C, *The interpretation of cultures* (pp. 3-30). Basic Books
- Graham, A. (2009). How important are commercial revenues to today's airports?. *Journal of Air Transport Management*, 15(3), 106-111. <https://doi.org/10.1016/j.jairtraman.2008.11.004>

- Güller, M., & Güller, M. (2001). *From airport to airport city*. Gustavo Gili.
<http://www.ggau.net/html/GG01.html>
- Hirsch, M. (2018, August 16). *How Can We Build Attractive Neighbourhoods Around the Airport*. Airport Urbanism.
<https://airporturbanism.com/articles/how-can-we-build-attractive-neighborhoods-around-the-airport>
- Hirsh, M. (2019). Developing successful landside real estate: An airport urbanism approach. *Journal of Airport Management*, 13(2), 186-197.
- Hirsh, M., & van der Horst, P. (2018, September 18). *How Can Airports Develop Their Landside Real Estate*. Airport Urbanism. <https://airport-urbanism.com/articles/how-can-airports-develop-their-landside-real-estate>
- Hirsh, M., & van der Horst, P. (2022). Airport real estate values: What drives growth? *Journal of Airport Management*, 16(4), 361-375.
- Jacobs, J. (1961). *The Life and Death of Great American Cities* (Vintage Books Edition). Random House.
- Kasarda, J. D. (1991). An industrial aviation complex for the future. *Urban Land*, 50(8), 16-20.
- Kasarda, J. D. (1996). Airport-Related Industrial Development. *Urban Land*, 55(6), 54-55.
- Kasarda, J. D. (2000). Logistics & the rise of aerotropolis. *Real Estate Issues*, 25(4), 43-43.
- Kasarda, J. D. (2008). The evolution of airport cities and the aerotropolis. In L. Siebert & J.D. Kasarda (Eds.), *The Transformation of Airports into World-Class Airport Cities* (pp. 1-39). Insight Media.
- Kasarda, J. D. (2018). China's aerotropolis: The Zhengzhou airport economy zone. *International Airport Review*, 13.

- Kasarda, J. D., & Appold, S. J. (2014). Planning a competitive aerotropolis. In *The economics of international airline transport* (pp. 281-308). Emerald Group Publishing Limited. <https://doi.org/10.1108/S2212-160920140000004010>
- Kasarda, J. D., & Lindsay, G. (2011). *Aerotropolis: the way we'll live next*. Macmillan+ ORM.
- KCAP. (n.d.). *LabCampus West, Munich*. Retrieved 31 July, 2025, from <https://www.kcap.eu/projects/19/labcampus-west-munich>
- Knippenberger, U. (2010). Airport-region governance: Conundrums of airports and regional coherence. In U. Knippenberger & A. Wall (Eds.), *Airports in Cities and Regions: Research and Practise: 1st International Colloquium on Airports and Spatial Development, Karlsruhe, 9th-10th July 2009* (pp. 101-111). KIT Scientific Publishing.
- Lang, R. (2003). *Edgeless cities: Exploring the elusive metropolis*. Brookings Institution Press.
- Lugten, M. (2019). *Tranquillity by design - Architectural and landscape interventions to improve the soundscape quality in urban areas exposed to aircraft noise* [Doctoral dissertation, University of Cambridge]. Apollo - University of Cambridge Repository. <https://www.repository.cam.ac.uk/handle/1810/294266>
- McDonough, E. (2014). *Global flows, local conflicts and the challenge of urban governance: Managing the city-airport interface in London, UK* [Unpublished doctoral dissertation]. University of Luxembourg.
- McNeill, P. (1990). *Research Methods*. Routledge
- Messer, R. (2012). Making good decisions: The case of airport land development. *Journal of Airport Management*, 6(3), 250-259.
- Mironov, L. (2020). *Airport Aura—A Spatial History of Airport Infrastructure*. Hochschulverlag AG.

- Mitchell, A., Aletta, F., & Kang, J. (2022). How to analyse and represent quantitative soundscape data. *JASA Express Letters*, 2(3), 037201. <https://doi.org/10.1121/10.0009794>
- Munich Airport. (2024). *Munich Airport Integrated Annual Report 2023*. https://www.munich-airport.com/_b/0000000000000026285521bb66a1-f6b9/fmg-integrated-report-2023.pdf
- Munich Airport. (n.d.). *Munich Airport Company*. Retrieved July 29, 2025 from <https://www.munich-airport.com/company-263024>
- Oxford Economics. (n.d.). *Global Cities Index*. Retrieved July 19, 2025, from <https://www.oxfordeconomics.com/global-cities-index/>
- Pai, B. R., & Kodanda, B. (2003). History of Powered Flight. *Journal of Aerospace Sciences and Technologies*, 289-302. <https://doi.org/10.61653/joast.v55i4.2003.803>
- Peneda, M. J. A., Reis, V. D., & Macário, M. D. R. M. (2011). Critical factors for development of airport cities. *Transportation research record*, 2214(1), 1-9. <https://doi.org/10.3141/2214-01>
- Poungias, P. (2009). Airport city developments: An airport investor's perspective. *Journal of Airport Management*, 4(1), 14-22.
- Ragin, C. C. (1998). The logic of qualitative comparative analysis. *International review of social history*, 43(S6), 105-124. <https://doi.org/10.1017/S0020859000115111>
- Reiss, B. (2007). Maximising non-aviation revenue for airports: Developing airport cities to optimise real estate and capitalise on land development opportunities. *Journal of Airport Management*, 1(3), 284-293.
- Schaafsma, M. (2003). Airports and cities in networks. *disP-The Planning Review*, 39(154), 28-36. <https://doi.org/10.1080/02513625.2003.10556854>

- Schaafsma, M. (2010). From airport city to airport corridor: Airport and city, sustainability and economy. In U. Knippenberger & A. Wall (Eds.), *Airports in Cities and Regions: Research and Practise: 1st International Colloquium on Airports and Spatial Development, Karlsruhe, 9th-10th July 2009* (pp. 173-179). KIT Scientific Publishing.
- Schaafsma, M., Amkreutz, J., & Güller, M. (2008). Airport and city. *Airport corridors: drivers of economic development. Amsterdam: Schiphol Real Estate*.
- Schlaack, J. (2010). Defining the airea. In U. Knippenberger & A. Wall (Eds.), *Airports in Cities and Regions: Research and Practise: 1st International Colloquium on Airports and Spatial Development, Karlsruhe, 9th-10th July 2009* (pp. 113-125). KIT Scientific Publishing.
- Schmutz, I. (2020). The Circle: Das Grossbauprojekt am Flughafen Zürich kurz vor Eröffnung. *Marketing Review St. Gallen*, 37(2), 38-43.
- Schubert, J. A. (2014). Driving factors of Airport City developments: An international comparison. In S. Conventz & A. Thierstein (Eds.), *Airports, Cities and Regions* (pp. 242-256). Routledge.
- Schubert, J., & Conventz, S. (2011). Immobilienstandort Flughafen-Merkmale und Perspektiven der Airport Cities in Deutschland. *Informationen zur Raumentwicklung*, 2011(1), 13-26.
- Schwandt, T. A. (1994). Constructivist, interpretivist approaches to human inquiry. In Denzin, N. K and Lincoln, Y. S (Eds.), *Handbook of qualitative research*. Sage Publishing.
- Searle, J. R. (1995). *The construction of social reality*. Simon and Schuster.
- Sonnenburg, F., & Braun, B. (2017). Impact of airports on spatial patterns of metropolitan employment: The case of Australia. *Erdkunde*, 71(4), 287-300.
- Stake, R. (1995). *The Art of Case Study Research*. Sage Publishing.

- Stevens, N. J. (2006). City airports to airport cities. *Queensland Planner*, 46(1), 37-37. <https://eprints.qut.edu.au/10243/1/10243.pdf>
- Stilwell, J. D. L. (2013). *The importance of air transportation to the US economy: analysis of industry use and proximity to airports* [Doctoral dissertation, Massachusetts Institute of Technology]. DSpace – MIT Library. <http://hdl.handle.net/1721.1/81129>
- The Circle Zurich Airport. (n.d.). *About the Circle*. Retrieved 13 June, 2025, from <https://www.thecircle.ch/en/about-the-circle>
- Thierstein, A., & Conventz, S. (2014, August 26-29). *Hub Airports, the knowledge economy and how close is close? Evidence from Europe* [Paper presentation]. 54th Congress of the European Regional Science Association: "Regional development & globalisation: Best practices", St. Petersburg, Russia. <https://hdl.handle.net/10419/124311>
- Urry, J. (2012). *Sociology beyond societies: Mobilities for the twenty-first century*. Routledge.
- van Wijk, M., van Bueren, E., & te Brömmelstroet, M. (2014). Governing structures for airport regions: Learning from the rise and fall of the 'Bestuursforum' in the Schiphol airport region. *Transport policy*, 36, 139-150. <https://doi.org/10.1016/j.tranpol.2014.08.006>
- Walker, A. R., & Baker, D. C. (2010, July 6-9). *A planning support system for airport city development* [Paper presentation]. 14th Air Transport Research Society Conference, Porto, Portugal. <https://eprints.qut.edu.au/34140/>
- Wang, K. J., & Hong, W. C. (2011). Competitive advantage analysis and strategy formulation of airport city development—The case of Taiwan. *Transport Policy*, 18(1), 276-288. <https://doi.org/10.1016/j.tranpol.2010.08.011>
- Witt, A., & Kwon, H. (2022). The Past Futures of Aerotropolis. *Thresholds*, (50), 9-25. https://doi.org/10.1162/thld_a_00741

- Wong, D. (2006). *Airfront Districts: Economic Assets and Noise Mitigation* [Conference presentation]. Aviation Noise, 2006
- Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods* (6th ed.). Sage Publishing.
- Zurich Airport. (n.d.). *Shopping & Enjoy*. Retrieved 13 June, 2025, from <https://www.flughafen-zuerich.ch/en/passengers/shopping-and-enjoy/shops/circle>
- Zurich Airport Ltd. (2024). *Zurich Airport Integrated Annual Report 2023*. <https://report.flughafen-zuerich.ch/2023/ar/en/>
- Zurich Airport Ltd. (2025). *Zurich Airport Integrated Annual Report 2024*. <https://report.flughafen-zuerich.ch/2024/ar/en>

Appendix A - Ethical Approval Letters

A.1 CURES Approval Letter



16 June 2025

Dear Leo Cowie,

Reference: CURES/25698/2025

Project ID: 29250

Title: Ambition of the Airport City: Understanding their aims, how these are being achieved, and analysis of success factors

Thank you for your application to the Cranfield University Research Ethics System (CURES).

We are pleased to inform you your CURES application, reference **CURES/25698/2025** has been reviewed.

You may now proceed with the research activities you have sought approval for.

If you have any queries, please contact CURES Support.

We wish you every success with your project.

Regards,
CURES Team

A.2 Title Change Approval Letter



8 August 2025

Dear Mr Cowie ,

Reference: CURES/26247/2025

Project ID: 29250

Title: Understanding the Airport City: An Analysis and Critique of Airport City Development through a study of the Circle at Zurich Airport and Munich Airport City

Thank you for your application to the Cranfield University Research Ethics System (CURES).

We are pleased to inform you your project title change request has been actioned and has been amended as shown in the table below.

Submitted Form Reference	Status Date	Short_Title	full_title
Cranfield University Research Ethics System (CURES)	16/06/2025	Ambition of the Airport City: Understanding their aims, how these are being achieved, and analysis of success factors	A comparison of The Circle at Zurich Airport and Munich Airport City to understand their aims, how these are being achieved and analysis of success factors
Project title change	07/08/2025	Understanding the Airport City: An Analysis and Critique of Airport City Development	Understanding the Airport City: An Analysis and Critique of Airport City Development through a study of the Circle at Zurich Airport and Munich Airport City

If you have any queries, please contact CURES Support.

Regards,

CURES Team

Appendix B - List of Interview Questions

B.1 Zurich Airport

Interview Questions

The Circle at Zürich Airport

Thesis Title	Analysing the Airport City: An extension of the airport or an independent urban quarter?
Researcher Name	Leo Cowie
Supervisor Name	Henrik Rothe
Contact details	E: Leo.cowie.613@cranfield.ac.uk M: +44 (0) 7824 086810

Q1, What were the conceptual ideas for the Circle? Since opening in 2020, how does the Circle echo these ideas?

Q2, Have the economic and financial aims of the project been achieved, and if so, how?

Q3, Who uses the Circle - is it primarily passengers (an extension of the airport) or local residents (an independent city quarter)?

Q4, Airport city development can lead to increased congestion of the airport transport corridors. How have you managed this issue for the Circle development?

Q5, Airports often have limited landside space. What alternative land uses (for example, additional car parking) were considered for the area occupied by the Circle?

Q6, How is the airport city strategically managed within the Flughafen Zürich company? Who approves the financial report and would request amendments to the existing design and operation?

Q7, Given the high quality of buildings in the Circle, there is potential to reduce the overall emissions of the city if they replace existing structures. In this context, does the Circle replace or add retail and hotel capacity to the city of Zürich?

Q8, To what extent does the Circle support the carbon neutrality/zero carbon targets of the airport?

Q9, Who benefits most from the Circle - the airport, local communities or the city as the ultimate attraction of the airport?

Q10, What does the future of the Circle look like? Has the airport got any plans to further extend the project?

B.2 Munich Airport

Interview Questions

Munich Airport City

Thesis Title	Analysing the Airport City: An extension of the airport or an independent urban quarter?
Researcher Name	Leo Cowie
Supervisor Name	Henrik Rothe
Contact details	E: Leo.cowie.613@cranfield.ac.uk M: +44 (0) 7824 086810

Q1,	What were the conceptual ideas for the airport city? How does the airport city echo these ideas?
Q2,	Have the economic and financial aims of the project been achieved, and if so, how?
Q3,	Who uses the airport city - is it primarily passengers (an extension of the airport) or local residents (an independent city quarter)?
Q4,	Airport city development can lead to increased congestion of the airport transport corridors. How have you managed this issue for Munich Airport City?
Q5,	Airports often have limited landside space. What alternative land uses (for example, additional car parking) were considered for the area occupied by the airport city?
Q6,	How is the airport city strategically managed within the Flughafen Munich company? Who approves the financial report and would request amendments to the existing design and operation?
Q7,	Given the high quality of airport city buildings, there is potential to reduce the overall emissions of the city if they replace existing structures. In this context, does the airport city replace or add retail and hotel capacity to the city of Munich?
Q8,	To what extent does the airport city support the carbon neutrality/zero carbon targets of the airport?
Q9,	Who benefits most from the airport city - the airport, local communities or the city as the ultimate attraction of the airport?
Q10,	What does the future of Munich Airport City look like? Has the airport got any plans to further extend the concept?

Appendix C - List of Observations

Airport City Personal Observations

Physical Environment Quality & Amenities

Quality of Architecture/Positioning of buildings/Greenery/Walkability/Wayfinding

Pictures, Notes here:

Amenities:

Type	Yes/No
Parking	
Nursery	
Gym	
Post Office	
Parks	
Healthcare	
Range of Food Options	
Housing	

2, Soundscape at City, Airport City and Airport

Do it according to perceived affective quality (ISO 12913 scale)

1 – 5 (5 being Most)	Airport	City	Airport City
Pleasant			
Vibrant			
Uneventful			
Calm			
Eventful			
Monotonous			
Chaotic			
Annoying			

3, Accessibility

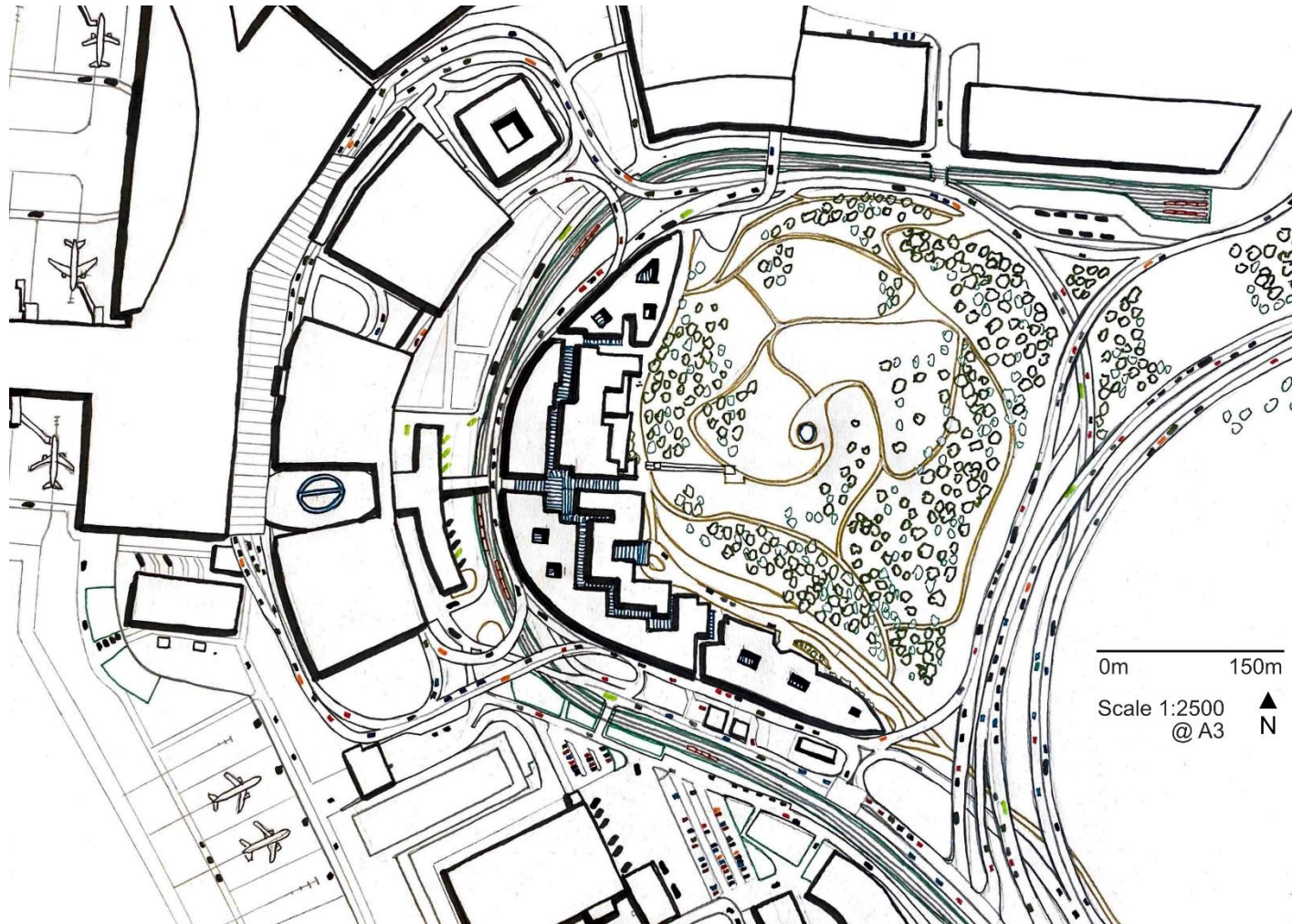
	Transport Type	Time	Cost
AC to Public Transport			
AC to Terminal			
AC to Downtown			

Flows through Airport City – Count number of people at entry exit points over 10-minute intervals, No access type (Walking/Cycling/E-Scooter)

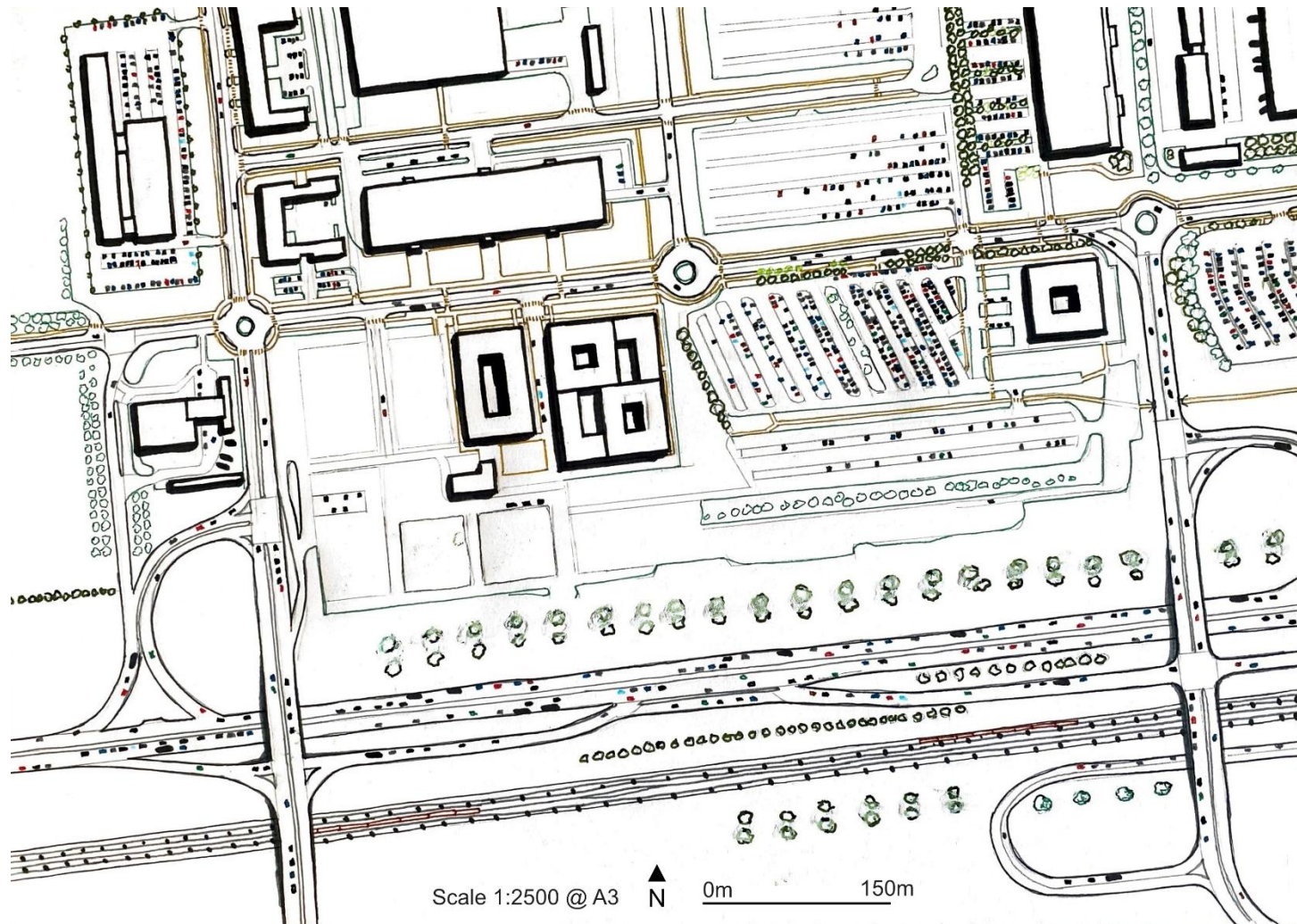
Other

- Outstanding success factors/catalysts or Obvious negatives
- Photos capturing key areas of interest/key gathering places/bottlenecks/capture the essence
- Identity of airport city in relation to actual city

Appendix D - Zurich Airport 1:2500 Map



Appendix E - Munich Airport 1:2500 Map



Appendix F - Oliver (Zurich) Interview Notes

The Circle was designed with 25 retail units in mind, expected 30,000 visitors per day. Currently less shops than that, seeing 8-1000 visits per day although they can go up to 12/13000 depending on events/conferences.

Don't count exact splits but they know 5-6000 people are working in the circle out of the 8-10, 500-1000 visits are hospital related leaving in the region of 1-3000 visiting for retail or other.

Accommodation – wanted to include it initially but rules don't allow it due to air quality – from planes and also motorway. Also vested interested from local landowners not wanting more competition. However, if it was built now probably different, these rules could be relaxed because Zurich rental prices have increased exponentially city needs more accommodation – wouldn't be long term, probs 6 months max. Oliver thinks this would be very beneficial for airport city and retail in particular. Overall size 180,000 sqm need at least 85sqm per apartment, min number to work would be around 100.

Gastronomy works well – good during lunch and after work thanks to the office workers in the day is so so, problem is at weekends when no office workers, the unique strength they have is that they only transport hubs are allowed shopping on Sundays so try to use that as a advantage.

Adjacent landside shopping is working well mainly everyday items, airside shopping is luxury so is airport city, too much luxury, most airport city visitors are coming to work not interested in buying an expensive watch.

Oliver's recommendation is either to go really big or really small with retail – go big and do it all so all types are attracted or go small and just cater to office workers leave rest of retail for airport.

Layout is difficult – most retail is arranged in a circular shape whereas the circle has a main entrance in the middle and wings either side – forked layout.

Oliver recommends importance of convention centres as an attraction – when there is a convention, hotels are full, eating is full, retail gets a boost.

Airport can expand, wants to grow to 50 MAP so they didn't need the airport city to increase revenue from that point of view, however increasing revenue was the *raison d'être*.

City centre 10m train ride away, every 15 minutes.

4th biggest train interchange (changing trains) in Switzerland.

Music festival in park.

Land preowned by Zurich airport. Swiss Life bring investment but a lot of know-how, they do lots of real estate projects in Switzerland.

In the future – the transport interchange/landside retail structure was old and failing, needing a lot of maintenance – decided to rebuild it entirely and double the size of the landside shopping including an extension under the circle, will open in 2027 and feature an underground connection into the circle near the circle centre, expects this to really benefit retail. Planning started in 2015 so the circle came first.

Office tenants – ICT cluster, bluechips are Microsoft, Oracle and SAP their Swiss headquarters are in the Circle, this attracts smaller related companies. Also, there is a medical/pharma cluster, including the University Hospital for outpatients and Novo Nordisk, Novo Nordisk the best performing company in the Circle right now.

Most companies moved from offices on the outskirts, eg SAP and Microsoft. A big attraction is that it is so well connected, most places reached in Switzerland within 30-minute transport time. After covid Swiss commercial office market experienced big changes, Zurich centre much more popular, outskirts less so because of working from home people wanted nice offices and good connectivity which is better for city centre access. Circle benefits from these changes because the connectivity is so good.

SAP old office space is still vacant; a number of smaller clients have taken some of the old Microsoft space.

Another attraction for offices is that the structure is better. Much of Zurich office buildings have small footprint with offices over several floors whereas the circle allows for much more open plan offices over 1 floor, good example is SAP all on one floor they like this because it encourages a better more collaborative working culture. Microsoft over 2 but 1 is meeting rooms/conference, the other is desks.

Office rents roughly same price level as Zurich city centre, a bit less than the downtown ones with lakeside views.

Tend to rent out space is shell form, rental rate is 400-600 CHF sqm, +150 CHF sqm for fitted offices.

Wasn't sure if offices were pre-leased but Zurich airport did have a contract with JLL before starting who approached many of the big clients.

Now they work with Colliers to lease out the ground floor spaces and Accentica a small Zurich firm who do the offices.

Several companies have said they do not offer parking have to pay for your own or use public transport, rules (who sets these?) are that there can only be 1 parking space (underneath the circle) per 100sqm of office space, which roughly translates into only 5% of people coming by car.

Cycle link built but rarely used.

LEED platinum which helps attracts companies, for example Novo Nordisk only locate themselves in offices that have the LEED platinum certificate.

Having trouble with the large retail spaces, for example the main retail space either side of the entrance was originally a Swiss chain luxury store who went bust, now it is a bakery and 12 month pop up car exhibition/showroom. Also, other multiple level retail units that are just empty or too oversized, for example the omega store is 600sqm. Not easy to just switch these to offices – first

problem is that they are ground level, not many companies want to locate themselves at ground level, second is that they were not designed as office spaces things like emergency exits aren't placed in the right places, expensive to change.

Trying to encourage arts and culture on ground floor retail, difficulty is they struggle to pay the high rents that retail and f and b can. Another approach is to go to companies like architects and estate agents who need display places for models and things etc.

2 Co-working spaces within the circle, they fill an important niche because the smallest office location is around 300sqm whereas co-working areas can offer 10-15sqm +.

All doors are electric for accessibility purposes.

Smaller entrance canyons are generally only used by office workers.

Appendix G - Marco (Munich) Interview Notes

Airport opened in the 90s, aviation was the main thing, Munich airport is textbook airport layout, sufficient land in between for terminals in accordance with traffic forecast for upcoming 50 years, reutilise former airport used as a trade fair now, this has worked very well, the new airport they thought to build a new hotel and office building small start, walkable to terminal. However, imagined airport city of today is not the same as the one from the beginning of the 90's. Growth of non-aviation revenue was key to grow to the airport city.

The Real Estate Development strategy 2014 – 2025 defined the airport land and which part of the land is necessary for future operations and which area is left for non-aviation growth, idea came up to develop a project like LabCampus. Took inspiration from Dusseldorf airport city which is within walking distance to the terminal.

In terms of LabCampus, in 2016 business case presented to board to start project planning and design, 2020 construction started and corona started and everything stopped but the LabCampus construction continued during corona, pre lease agreements had been signed, not sure about the percentage, but due to corona most of the pre lease agreements were terminated – project continued without any pre lease, full risk taken by airport. Biggest tenant last year Technical University Munich with 20,000m² office space. They will move in October this year. Financially, IRR not achieved in 2016 due to corona but they have a good benchmark, and for other buildings hard to achieve IRR because rental fees are under pressure, construction costs are high and companies don't want to move because of working from home. Important for airport cities to maintain flexibility for different uses to cope with ups and downs.

Pure airport city is Munich airport city, sometimes this attracts visitors from surrounding villages to take advantage of food and beverage or events. Majority of users coming from passengers and business partners located on airport.

For arena, tried to grab each and every revenue opportunity, massive research for location of arena in terms of connections, noise, land availability, arena

operator approached the airport, do you have a piece of land available for us from arena operator? Not suitable in middle of airport, but outside the airport even the airport was thinking we do not have a suitable need for this piece of land, why not sell it to events arena and also participate from huge amount of visitors coming (much like convention centre), 120-130 events per year up to 20,000 visitors coming, massively change the situation of the entrance and lab campus area, will come in next 3-5 years. Again, TUM grabbed the opportunity, started to build LabCampus 2 buildings without any previous agreement, they like the idea behind lab campus, like connections between science, industry and startups, and at airport. President of TUM said the location of the airport becomes part of the excellence program.

In terms of visitors per day, with TUM, would expect minimum per day 2000 people, 1500 coming from TUM 500 coming from existing tenants. Each additional building, 1 person per 20 sqm floor area. Potential for up to 29 buildings.

Minimum rental space is 600sqm gross floor area (GFA)

For looking at impacts of airport city development, review masterplan carefully in terms of modal split, available road, prove traffic impact on overall airport traffic also in terms of parking, part of building regulation you are obliged to prove that traffic has been carefully considered. Textbook airport layout means that in principle there is no traffic issue.

Increase public transport? On the tenants how they decide they want to arrive at the airport, so many options, there's no real pressure to change modal split to airport city, in company strategy employees are motivated to use public transport but nothing else we can do.

Thinking about alternative land uses for where the airport city is, Munich is a typical airport masterplan development, interim parking, grassland, small airport training building. Started to build Novotel first, long term land lease to Novotel owner, started second hotel, Ibis. Step by step started to utilise area, because there is a demand from different business partners and this will continue. Next

project is for serviced apartments for LabCampus, need to prove desired IRR to present to board.

Some kind of short-term accommodation? According to airport regulation, not allowed to stay more than 6 months in airport, EU wide rule, got hotels, 200 room hotel to be built alongside arena, serviced apartments next to lab 48 and 52, 220-240 serviced apartments to keep people for 1 night, targeted at airline crews.

FMG Flughafen Munich is divided into several divisions, one is called real estate subdivisions then in charge for development. My responsibility is to develop each and every property on airport apart from terminals. Including cargo, offices, hotels. Classic property development, start with ideas then initial numbers, then discuss commercial terms with tenant, pre-inform board about potential project, bring project to board for approval. LabCampus subsidiary GmbH, small team 13 people, classic development, finance, marketing done in house, close to airport mother company, services like hr and accounting from mother company. Certain period of time, maybe the airport wants to sell LabCampus or find third party developer willing to join us with shares. Defined area within airport boundary. Airport arena is not part of lab campus. Most of the development is done with in-house expertise, need architecture and finance competence and project management and construction management competence, all these skills they have in house. We see capacity and staff constraints because so many projects running at the same time, got all operational and non-aviation projects going on, T1 refurbishment, T2 wants to be expanded.

Working on updated real estate strategy, up to 2040, in this strategy each and every building is investigated in combination with demand exercise, need to decide between demolishing old energy inefficient buildings or replacing with new energy efficient buildings.

IRR is the most important thing for airport cities, the quality of architecture makes the LabCampus unique.

Each new building needs to achieve net zero goals which are defined in company strategy to be net zero by 2035. Have done in the past projects where extra investment needed to achieve net zero goals was not done in order to keep the project going because it was too expensive, this will not happen going forward.

Difficult to prove via numbers how the airport city benefits the city – it is clear the airport is attractive, far away from the city centre but it means it can grow and expand without any massive limitations, unlimited capacity. Getting more and more visitors to Munich city, means the airport became a hub for Lufthansa, biggest employer in region, contribution to overall development of Munich is fantastic.

Last two companies relocated from a city which was a 30 minute drive away, wanted to move closer to Munich and Munich airport was in the middle. Inside city centre is crowded, difficult to reach, no parking.

A trend from real estate agents and potential tenants is that big companies are trying to find new space in the city centre in order to be attractive for employees – home office growth, public transport, office in city centre is attractive. Airport is too far away.

If this is the case, selling airport city with airport location, good road connections, sufficient land, can build tailor made buildings, rental fee in LabCampus is 25 EUR per sqm per month, rental fee downtown is minimum 45/50 EUR per sqm per month.

Becoming more and more difficult to outside city business centres, 15-18 EUR per sqm per month but the occupancy rates are going down. Competition between city centre and airport city but in between it is hard – must have good road connections, new building, public transport.

In the future, event arena increases attractiveness of overall airport, every 3rd day there is a huge event, event operator is shareholder of LiveNation.