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Resilience, security, and the railway station: a unique case study of the current and future resilience to security threats

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Resilience, security, and the railway station. A unique case study of the current and future resilience to security threats.

A thesis submitted to Loughborough University

in partial fulfilment of the requirements for the degree of Doctor of Philosophy

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ABSTRACT

Major railway stations in England and Wales are highly networked and open locations, frequently crowded, and are vulnerable to criminal and terrorist activities. Successive Government policies and agendas have sought to lessen this susceptibility, by promoting the understanding of and the application of resilience and security measures. Thus, the complex stakeholders are 'responsibilised' (Garland, 1996) and urged to integrate and merge resilience, crime prevention and counter-terrorism measures into their governance, and operational policies and agendas. The aim of this research is to determine and examine the interdependencies and boundaries of the multiple stakeholders within St Pancras International Railway Station (SPIRS), and to analyse how their governance, operational and legislative requirements, and agendas influence current and future resilience of complex Category A railway stations to human malign security threats. Through a unique single case study of SPIRS, qualitative data was collected from thirty-two stakeholder participants, sampled for their expert opinion and experience. Data was also collected via documents and observations. SPIRS' interconnected and complex stakeholders were represented using stakeholder analysis and mapping to create an original and innovative map highlighting those who can influence and impact the resilience of the space to human malign security threats. From the thematic analysis of the data, the overarching themes exposed the resilience within SPIRS operates in an uncertain legal space, competing with disparate institutional processes creating a gulf between reality and rhetoric of the responsibilisation of resilience and security strategies. The blurred boundaries of responsibility and understanding of the resilience and security agendas within SPIRS created tension between the national and local level stakeholders. The research adds an original and novel contribution to knowledge, as through contemporary empirical evidence it has established the political rhetoric of 'responsibilisation' (Garland, 1996) for resilience and security policies are inconsistent and contradictory with the reality of how these transpire in an ambiguous operational and legal space such as SPIRS. Regardless of the mapped interdependencies between the multiple stakeholders and their interconnecting operational and legislative obligations, there is a definite absence of a clear and united approach to resilience, with concerns being dealt with by multiple stakeholders and policies. The research has revealed the complications and disparities the complex and multiple stakeholders face implementing policy and subsequently institutional changes in a cohesive manner. The findings of the research necessitate transformations in established organisational procedures, thus ensuring these

interdependencies are dealt with now to make certain the effectual incorporation and integration of agendas and strategies are unified, and which maintain the resilience of Category A railway stations and SPIRS for future generations.

Key words: Resilience; railway stations; security threats; counter-terrorism; crime prevention measures; responsibilisation; stakeholders; governmentality

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My husband and I started the adoption process in December 2014, which was stressful, long and time consuming. Therefore, I want to dedicate this thesis to our two children, **Edward and Abigail**, who we adopted in March 2017. I hope one day this thesis will inspire them that by working hard and with perseverance they can achieve their goals and ambitions.

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LIST OF ABBREVIATIONS

ALO	Architectural Liaison Officer
ATOC	Association of Train Operating Companies
BTP	British Transport Police
CCA	Civil Contingencies Act (2004)
CCTV	Closed Circuit Television
CNI	Critical National Infrastructure
CP	Crime Prevention
CPTED	Crime Prevention Through Environmental Design
CPM	Crime Prevention Measure(s)
CPNI	Centre for the Protection of National Infrastructure
CPO	Crime Prevention Officer (s)
CT	Counter-terrorism
CTM	Counter-terrorism Measure(s)
CTSA	Counter-terrorism Security Advisor(s)
DfT	Department for Transport
FOC	Freight-Operating Compan(y)ies
HMV	Hostile Vehicle Mitigation
HOT	Hidden Obvious Typical
HS1	High-speed 1
HS2	High-speed 2
IRA	Irish Republican Army
ITAs	Integrated Transport Authorities
NDPBs	Non-Departmental Public Bodies
NSIP	National Stations Improvement Programme
NRSP	National Railway Security Programme
ORR	Office of Rail Regulation
PACT	Police and Communities Together [meetings]
PETs	Passenger Transport Executives
RSSB	Rail Safety Strategy Board
SCP	Situational Crime Prevention
SBD	Secure by Design
SIDOS	Security in Design of Stations
SPIRS	St Pancras International Railway Station

SSS	Secure Station Scheme
TOC	Train Operating Compan(y)ies

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CHAPTER ONE: INTRODUCTION

1.0 Research Context

Awareness has grown during the last two decades of the increased vulnerability and interconnectedness of the UK's Critical National Infrastructure (CNI) to the risk of human malign threats, such as criminal activity and terrorism, and to natural hazards, such as flooding and storm damage. Events such as the 2005 terrorist attack on the London transport system and the floods of 2007 and 2015 in the North of England can have a significant social, political, and economic impacts on society if the country's CNI is unable to or must operate at a reduced capacity. Given the increased recognition of vulnerabilities and interdependencies, there is a significant body of research which has developed and examines the resilience of CNI to such risks. However, over time and with its increased usage, the concept of resilience (Chandler and Coaffee, 2017, Joseph, 2013, Bourbeau, 2013) has become a "buzz" word being frequently used by politicians, the media and academia, yet the term is highly contested, ambiguous, conflicting, and inconsistent in its application regarding CNI.

Moreover, a number of interconnected dynamics determine the shifting understanding of the concept of resilience, for instance from the primary purpose or the field of speciality, for instance 'security risk or natural hazard studies' and to the form of 'infrastructure…as well as national differences including…scale (e.g. regional, national or local)' (Kimmance and Harris, 2013, p.8). Thus, CNI can be broken down into interconnected system components, for instance in the case of transport infrastructures such as the railway network, railway stations are dependent on their size, location and function and can be both critical national and local infrastructure. The railway station is recognised as a fundamental part of the railway network in any location. The Cabinet Office deals with natural hazards and security threats posed to the resilience of infrastructure in the UK collectively in a combined all-encompassing hazard methodology. However, this research is only concerned with human malign security threats to CNI, railway stations, and not natural hazards. Consequently, the research will examine the unique single case study of St Pancras International Railway Station (SPIRS), which is a complex major international multi-modal transport hub and termini in London. The justification and contextual discussion of the unique case study station are expanded on in Chapters Five and Six of the thesis.

1.1 Research Problem

Significantly located Category A railway stations in England and Wales, such as SPIRS, are exceptionally complicated and multifarious systems, which are unrestricted, and at times during the working week is a crowded space, making them particularly vulnerable to terrorism and other forms of criminal activities. Consequently, as railway stations are refurbished or newly built there is an evident need to recognise and categorise the sizeable and complex range of stakeholders, policies, strategies and individual organisational agendas that influence the resilience of these spaces to human malign security threats. This knowledge and information are not presently accessible to the complex and multiple stakeholders who plan, build, legislate, and operate railway stations throughout England and Wales. The research examines and unpacks how these elements currently affect the resilience of such spaces to human malign security threats, and how to incorporate these perspectives into the governance, legislative and daily operational requirements to meet futureresilience demands. Hence, to deal with this research problem, the following research question, and aim and objectives have been devised.

1.2 Research Question

> *How do the interdependencies and governance of the complex operational, and policy boundaries of SPIRS' stakeholders influence and impact the space's current and future resilience to human malign security threats?*

The research question and the subsequent thesis covers a unique and exploratory area of research. This is to establish and to drill down into the numerous interdependencies and interfaces of the multiple and complex stakeholders specifically within the unique case study of SPIRS, and to analyse how their governance, operational and legislative requirements, policies, and agendas influence both the existing and future resilience of the space to human malign security threats.

1.3 The Aim and Objectives of the Research

The research has been developed in accordance with a systematic abductive process (see Chapter Five). Hence, the aim and objectives of the research have altered accordingly during the stages of the PhD. The initial aim of the research during the first year was to inform stakeholders how to mitigate future security threats to the railway station. However, as the research progressed it became apparent that understanding how to mitigate against human malign security threats in the future was a too simplistic aim for the research and

there is much existing research on target hardening of spaces. As with the aim of the research, the objectives have altered. Initially, the objectives were based upon developing and testing a framework of how to implement security measures within a railway station environment. However, as the research progressed it was decided that this would not be achievable or welcomed by Governmental departments and Network Rail.

Hence, given the complexities of the stakeholder interfaces and governance in SPIRS and other Category A railway stations in England and Wales, and how these can impact on the resilience these spaces to human malign security threats, the following aim and objectives have been developed.

The aim of the research is to

> *determine and examine the interdependencies and boundaries of the multiple stakeholders within St Pancras International Railway Station, and to analyse how their governance, operational and legislative requirements, and agendas influence both current and future resilience of complex Category A railway stations to human malign security threats.*

Consequently, a single unique case study of SPIRS which is a highly complex Category A railway station has been undertaken to address the four research objectives:

1. To critically examine the current literature and policy concerning resilience, governance, security, and prevention measures within the context of Category A railway stations in England and Wales
2. To identify those stakeholders within the case study railway station, SPIRS, who (in) directly influence the current and future resilience to human malign security threats, and to develop a unique and innovative stakeholder map of the space
3. To examine the SPIRS stakeholder's security, resilience, and operational policies, strategies, and agendas which (in) directly affect the current and future resilience of the space to human malign security threats
4. To analyse the tradeoffs, (un)intended consequences, and impacts of security and resilience policies and agendas which operate in the space of SPIRS, and to make

recommendations to address the emerging themes from the research

1.4 Statements of Contribution

As discussed above, SPIRS and other Category A railway stations in England and Wales are vulnerable to human malign security threats because they are extremely open locations that are frequently congested with passengers, members of the public and those who are employed by the rail industry. Yet, a comprehensive analysis of the existing academic literature has highlighted this is an under-researched area and there is little known about the multiple stakeholders, their complex interdependencies within the railway station and how their resilience and security policies and strategies are enacted in the space. Furthermore, there is a paucity of knowledge surrounding how the complicated stakeholder interfaces and the rafts of Governmental and organisational security policies and strategies affect crime and counter-terrorism prevention measures in the railway station. Therefore, the research will significantly contribute to knowledge by confronting this dearth of knowledge and under-researched area by identifying the broad range of strategic stakeholders, policies and agendas that influence the security and resilience of Category A railway stations, and assessing how these can challenge at a local and national level their current and future governance, operational and policy requirements. This research is timely and relevant given the level of existing and future investment in the railway network in England and Wales. The Government over the next three decades is investing heavily in a prominent and high-value modernisation programme of the ageing railway infrastructure.

1.4.1 Conceptual and Theoretical Contributions

The research will present an original and novel contribution to knowledge, as through contemporary empirical evidence it seeks to establish the reality, rather than an academic and political rhetoric and idealism of the resilience and security policies and how they operate within the space of a complex Category A railway station. Below is a succinct appraisal of how the research has exposed gaps in the knowledge surrounding the concept of resilience and Stakeholder Theory specifically in relation to a significantly important Category A railway station such as SPIRS. These conceptual and theoretical positions are examined in greater detail in Chapter Two.

This research will contribute to the concept of resilience by examining how resilience and security policies and agendas are conceptualised and operationalised in the everyday reality, and not merely within the realm of Governmental discourse, of SPIRS and how these

impact on current and future resilience to human malign security threats. This research supports the stance that resilience is not 'a grand or unifying theory, it should be seen (and used) as a middle-range theory compatible with some but not all ontologies' (Geels, 2010, cited in Olsson *et al*., 2017, p.58).

The concept of resilience (Chandler and Coaffee, 2017, Joseph, 2013, Bourbeau, 2013) has become increasingly and widely used with UK security and CNI national policies (Coaffee *et al.,* 2009, p.111). Yet, the researcher argues resilience is a 'shallow concept' (Joseph, 2013, p.51), shifting and unstable, with it being enacted in spaces such as SPIRS through a process of governance and governmentality, progressing from 'a state based to a society-based understanding of security practices' (Chandler, 2013, p.217). When examining how current UK policy deals with human malign security threats, resilience has transformed into a fundamental political rhetorical statement used as an appropriate response by the government for the UK institutions, businesses, and citizens to resist and recover from acts of crime and terrorism (Coaffee *et al.,* 2009, p.111). However, the numerous definitions of resilience are frequently contradictory and inconsistent, and which are open to manipulation to suit the writer's/policy agenda (Joseph, 2013, p.51). Thus, the concept of resilience is being progressively employed to imply a specific position 'of being, or set of processes to bring about a state of being…it is increasingly mobilised to represent and/or to justify a cause of action' (Chmutina *et al*., 2016, p.71).

Moreover, in recent years the discourse surrounding the concept of resilience has acknowledged the built environment is unable to be 'future-proofed to be totally resistant' (Bosher and Dainty, 2011, p.2) against human malign security threats. When considering the resilience of SPIRS or other Category A railway stations to such threats, commentators such a Coaffee (2008, p.463) maintain the concept can be operationalised through their 'embedded security and risk management' and the capacity 'to absorb or recover from a…attack' (Schulman and Roe, 2007, p.42). Nevertheless, Chandler (2013, p.217) proposes there is a 'continuum of resilience' and thus all spaces such as SPIRS are 'in need of enabling to become more resilient'. Consequently, the standpoint of the research is that the concept of resilience within the space of SPIRS is an aspirational vehicle of 'governance which emphasise[s] responsible conduct' (Joseph, 2013, p.40) of the stakeholders, and it is not an absolute 'state… it therefore can only be measured or calculated as a comparative or

relative quality' (Chandler, 2013, p.217). Thus, when this thesis examines the resilience of SPIRS to human malign security threats, it will move away from 'fixed definitions of resilience' (Chandler and Coaffee, 2017, p.7) and consider it as the foundation for 'a range of policy discussions in a number of fields that seek to rethink traditional policy approaches' (Chandler and Coaffee, 2017, p. 7).

Furthermore, the research will provide a current and innovative contribution to Stakeholder Theory, through the unique analysis of how SPIRS' complex and multiple stakeholders operationalise resilience and security strategies and policies. A conventional classification of a stakeholder is given by Freeman (1984, p.46) as 'any group or individual who can affect or is affected by the achievement of the organisation's objectives'. Thus, when examining the stakeholders within SPIRS and other Category A railway stations in England and Wales, the research will develop a holistic stance of Stakeholder Theory, building on the classic theories of Freeman (1984). By adopting this stance, the research will widen an established view of strategic stakeholders in the railway station beyond their relationships based on contractual and fiscal associations. The research considers the strategic stakeholders within SPIRS as 'moral actors…[and] relationships include social characteristics such as interdependence' (Hendry, 2001 cited in Friedman and Miles, 2006, p.8).

Moreover, the research will develop the debate surrounding the legitimacy of stakeholders (Phillips, 2003 and Freeman, 1984). Within the context of SPIRS, there will be some stakeholders who will not be considered as 'legitimate in the sense they will have vastly different values and agendas for action' (Freeman, 1984, p.53), for instance, those determined on human malign threats to the space. However, the research will demonstrate that SPIRS and other Category A railway stations in England and Wales need to acknowledge in their management strategies that illegitimate stakeholders such as terrorists and other criminals do have an interest and as such a stake in the organisation (Freeman, 1984 and Phillips, 2003).

1.4.2 Empirical Contribution

To fully address the gaps in the knowledge, the research will collect unique qualitative data, semi-structured interviews, documentation, and observations, on how the multiple and interdependent strategic stakeholders, through their operationalisation of both corporate and Governmental strategies can influence the resilience of SPIRS to current and future

security threats. Thus, the findings of the research will create an empirical knowledge, which unpacks the complex, numerous stakeholders, and their influences, governance, and operational agendas and policies in SPIRS and is applicable to other Category A railway stations in England and Wales. This will be germane to the strategic stakeholders who are accountable for the railway station's resilience to security threats, through the planning and construction or operational stages of the project.

Moreover, a further key empirical contribution of the research is the creation of the unique SPIRS Stakeholder Map. By following and building on the recommendations of Freidman and Miles (2006), the research will categorise the strategic stakeholders within SPIRS through Stakeholder Mapping and it will visualise the stakeholder's authority and impact within the railway station (Bourne and Walker, 2005). The procedure of Stakeholder Mapping of SPIRS can play a key part in designing and operationalising other Category A railway stations in England and Wales by identifying the strategic stakeholders who have an impact on the resilience of the space to existing and future security threats. The creation and analysis of a unique map of the strategic stakeholders and the examination of security policies and strategies within SPIRS that can affect or be affected by security threats, will also provide an original empirical contribution to the concept of Resilience and Stakeholder Theory, and the understanding of the complexities of multiple stakeholder interdependencies in the space.

1.4.3 Practical Contribution

In addition to increasing academic knowledge, the research will enhance and improve practical knowledge. The practical beneficiaries of the research are the policy makers and the multiple strategic stakeholders, such as Network Rail, the British Transport Police (BTP), emergency services, security consultants, and regulators, in SPIRS and other Category A railway stations in England and Wales. It is anticipated that a practical contribution and subsequent impact of the research will be the development of the SPIRS Stakeholder Map and the research recommendations they will be able to attain an in-depth knowledge and an applied understanding of the processes and dynamics that influence and regulate the resilience of railway stations to security threats. The process of Stakeholder Analysis and Mapping being developed by the researcher for the unique single case study of SPIRS has the potential to be transferable to other Category A railway stations in England and Wales, who share a similar network of complex and multiple stakeholders. Moreover, the practical process of Stakeholder Analysis and Mapping could also be applicable to other pseudo-

public spaces. Particularly those which operate with multiple stakeholders, such as shopping centres and who need to be aware of the sizeable and complex range of stakeholders, policies, strategies and individual organisational agendas that influence the current and futures resilience of such spaces to human malign security threats.

1.5 Thesis Structure

The thesis comprises of nine chapters and contains supplementary information in the appendices. Chapter One has offered an introductory outline of the standpoints and arguments are examined throughout the thesis. Chapter Two presents the conceptual and theoretical positions of the research, Resilience and Stakeholder Theory and how they are interconnected within the body of this thesis. The underpinning argument of this chapter is the concept of Resilience and Stakeholder Theory are both capable of providing the lens to examine the research data and to make a valuable contribution to the knowledge base of how the multiple strategic stakeholders within SPIRS through resilience and security policies and agendas impact on existing and future resilience of the space to security threats.

Chapters Three and Four provide an extensive and critical review of the appropriate literature and policies surrounding the railway station and the prevention of security threats (crime and terrorism). Therefore, these two chapters are considerable given that examining the resilience of railway stations to current and future security threats combine three separate areas of literature; railway stations and their functions; the concept of resilience; and the security threats posed to them. Both Chapters analyse the policies which are applicable and contextual to the resilience of railways stations to security threats, which are inextricably interconnected and are reliant on the other to achieve the desired results. The policies examined will include railway station specific and general transport policies, CONTEST Strategy, Crime and Disorder Act 1998 and SIDOS (Security in Design of Stations). As discussed in the above chapter, the aim and the objectives of the research have been strategically devised to address the significant gaps in the literature, which are needed to answer the research question.

Chapter Five presents the research design, the single unique case study of SPIRS, and the subsequent qualitative methodology. This chapter provides a comprehensive, reliable, and valid research design. The research data gathering phase is explained and the analytical technique of thematic analysis used in the analysis of the collected qualitative data. Also, presented in this chapter is the process of strategic Stakeholder Mapping of SPIRS and

its subsequent methodology.

Chapter Six presents an in-depth and relevant contextual examination of the unique case study Category A railway station, SPIRS. Moreover, during the research collection phase, a proportion of the presented information and data was gathered for this chapter. Chapters Seven and Eight subsequently illustrate the findings of the research while discussing these collectively and simultaneously with the two theoretical standpoints of the thesis. Chapter Nine presents and examines the conclusions drawn by the research findings and operational and policy recommendations that can be made, and provides proposals for further research.

CHAPTER TWO –THEORETICAL AND CONCEPTUAL POSITIONS

2.1 Chapter Introduction

The following chapter presents Stakeholder Theory and the concept of Resilience within the context of the unique single case study railway station, SPIRS, will be expanded upon in this chapter and later in Chapters Seven and Eight. Consequently, throughout the thesis these positions are examined contextually in terms of the stakeholders and resilience within SPIRS and other Category A railway stations in England and Wales, and the role they have in ensuring the current and future resilience of the space to human malign security threats.

2.2 Stakeholder Theory

SPIRS and other Category A stations in England and Wales provide a unique space for the setting of political and operational agendas, which is enacted by complex and multiple stakeholders. Since the privatisation of the railway industry in the 1990s, the stakeholders who are involved in the legal and operational processes of the railway station have vastly increased in numbers, leading to an extremely complex and disparate group. Bowie (2008, p.15) maintains Stakeholder Theory is unusual as it has 'transcended the realm of academic discourse and taken hold amid a much broader population'. This research proposes by using Stakeholder Theory as one of the frameworks for the conceptualisation of SPIRS, it will both aid and increase the understanding of the complex and interconnected of both compulsory and voluntary relationships and the diverse forms of relationships that exemplify the Category A railway station in England and Wales and how this will affect the subsequent resilience of the spaces to security threats.

Many commentators, both political and academic discuss the concept of stakeholders within their work and yet fail to define what constitutes a stakeholder and the theory that binds them. Therefore, it is the purpose of this thesis to research and examine who the many and complex stakeholders are in a Category A railway station and their interconnected and often blurred relationships. Stakeholder Theory is a multidisciplinary concept and its origins can be traced to 'sociology, organisational behaviour, the politics of special interests' (Jensen, 2001, p.4), and consequently has multiple meanings. A traditional definition of a stakeholder is proposed by Freeman (1984, p.46) as 'any group or individual who can affect or is affected by the achievement of the institution's objectives'. However, as with the other theories and concepts used within the body of this research, for instance,resilience which

is discussed in Chapter One, Stakeholder Theory is contested and one such area of criticism is it is applicable to too many frameworks (Friedman and Miles, 2006).

Moreover, it can be argued it is an ambiguous term, which can represent anything, the creator wishes and can be manipulated to further specific agendas (Weyer, 1996, p.35, Stoney and Winstanley 2001, p.650, cited in Friedman and Miles, 2006, p.4, and Jensen, 2001, p.1). Friedman and Miles (2006), who list fifty-five versions of the definition, present the array of definitions that surround the concept. Laplume *et al*., (2008, p.1152) propose given the breadth of research areas which utilise Stakeholder Theory, it has a 'broad appeal' with which to examine organisations.

When examining the complex and multiple stakeholders within SPIRS, the research and thesis advocates a holistic stance of Stakeholder Theory, building on the seminal theories of Freeman (1984) and the more radical ones of Starik (1994). By adopting this stance, the research will widen an established view of the stakeholders in the case study railway station beyond their relationships based on traditional contractual and fiscal associations. Thus, the complex and multiple stakeholders within the space must be considered as 'moral actors…relationships include social characteristics such as interdependence' (Hendry, 2001 cited in Friedman and Miles, 2006, p.8).

Furthermore, the research builds on a more radical position of Stakeholder Theory which will be incorporated into those presented by Freeman (1984), the theories presented by Starik (1994, p.92) proposes the stakeholders within an institution can be 'any natural occurring entity which affects or is affected by institutional performance'. This encompasses the environment and goes as far as to include 'future generations and environmental impacts' (Friedman and Miles, 2006, p.9). Moreover, the Stakeholder Theory framework adopted will endorse illegitimate stakeholders such as terrorists and criminals must be included in some stages of analysis and decisions. This is justified in the below section of this chapter.

2.3 Who is a Stakeholder within a Railway Station?

As discussed in the above section, it is important to understand what constitutes a stakeholder within the context of SPIRS and other Category A railway stations. Thus, in the broadest theoretical sense, stakeholders can be defined as a group who have a stake in an institution (Freeman, 1984). Freeman's (1984) theory built on earlier work of the Stanford Research Institute and highlighted the significance of institutions and organisations to carry

out Stakeholder Analysis to establish which stakeholders are critical to its continued existence and critical functions. Taking this a stage further, Freeman (1984) proposed institutions and organisations should value the opinions of stakeholders and use these to inform strategies, this concept is used within the data collection and analyse phase of the research to unpack how it impacts on current and future resilience of SPIRS to human malign security threats.

Moreover, stakeholders can additionally be part of the process of 'social inclusion in a community in which every citizen is a valued member who contributes and benefits' (Anderson and Nielson, 2009, p.309). However, in terms of a pragmatic approach, 'stakeholders may adopt active participation in the processes of account-ability; and financially speaking a material interest in the well-being of an enter-prise is what legitimates such participation' (Clarke 1997, p.211, cited in Anderson and Nielson, 2009, p.309).

Phillips (2006, p.25) proposes central to the traditional definition of a stakeholder, is they can be 'any individual or group of individuals that is the legitimate object of managerial or institutional attention', thus suggesting that not all stakeholders are valid recipients of consideration. It is worth acknowledging the legitimacy of stakeholders is highly subjective and extremely dependent on individual institutions/organisations. Therefore, an institution will not consider some stakeholders as 'legitimate in the sense they will have vastly different values and agendas for action' (Freeman, 1984, p.53). Moreover, Phillips (2003, p.25) contends there are two forms of legitimate stakeholders, normative and derivative. Normative stakeholders are considered to be entitled to a 'moral obligation' from other stakeholders and derivative stakeholders have the power to damage or aid the institution. These stakeholders can have different consequences in decision making processes. Freeman (1984, p.45) supports this view of legitimate stakeholders given 'legitimacy' is assumed when specific groups have the power 'to affect the direction' of the institution...regardless of the appropriateness of their demands'.

Furthermore, Stakeholder Theory suggests institutions and organisations must recognise all the interests of the stakeholders including 'financial claimants…employees, customers, communities, Governmental officials, and under some interpretations the environment, terrorists, and blackmailers' (Jensen, 2001, p.1). Commentators such as Starik (1995) have broadened the traditional concept of stakeholder legitimacy to include the current and future environment and generations as legitimate stakeholders who should be considered

in projects and strategies. Therefore, it is proposed that SPIRS and other Category A railway stations must acknowledge in their design, operational management and security and resilience strategies that illegitimate stakeholders such as terrorists and other criminals do have an interest and as such an illicit stake in the institution (Freeman, 1984).

Furthermore, the term illegitimate stakeholder, according to Phillips (2006), describes stakeholders if they can negatively impact on the institution and therefore, they should, be recognised as legitimate. Interestingly, at certain points illegitimate stakeholders do also have legitimate stakes in the railway station, given its open and pseudo-public nature, they can consequently use the space as passengers or consumers of the retail facilities. However, Phillips (2006, p.28) offers a cautionary note, a stakeholder definition which is too broad, 'threatens the meaningfulness of the term'. Furthermore, if a normative definition of a stakeholder is utilised this can lead to a very narrow definition of a stakeholder.

Moreover, when individuals or groups of individuals of their own accord recognise the advantages of a reciprocal system of collaboration on their part, there is the opportunity of the 'obligations of fairness…created among the participants in the co-operative scheme in proportion to the benefits accepted' (Phillips, 1997, p.57). Phillips (2006, p.26) further argues 'voluntary acceptance' creates responsibilities which can be compared to 'consent, contract, or promise'. However, if following this principle of fairness, it can lead to a very restricted perception of Stakeholder Theory.

Thus, criminals and terrorists are legitimate stakeholders in an institution if they can harm the institution. Therefore, the of Phillips (2006, p.27) contends criminals and terrorists are stakeholders as their intentions and actions merit managerial consideration. Hence, these relationships can be managed through specific actions such as prevention strategies and co-ordinated multiagency working; this is discussed in more detail in the subsequent chapters of this thesis.

2.4 Stakeholder Analysis

As mentioned in the above section, Freeman's (1984) Stakeholder Theory expanded the prior studies of the Stanford Research Institute and stressed the significant implication of institutions implementing Stakeholder Analysis to establish which stakeholders are essential to its continued existence and critical functions. Furthermore, by taking these assertions further Freeman (1984) proposed institutions must respect the points of view of its stakeholders and

use them to advise strategies. Consequently, this research proposes for any policy or strategy changes, it is critical for the institution or organisation within SPIRS proposing the alterations to create an account of all the stakeholders concerned to evaluate their co-operation or resistance and to draw attention 'to …the inter institutional linkages' which exist (Aligica, 2006, p.79).

Subsequently, Stakeholder Analysis should be used for specific security projects or strategies within SPIRS and other Category A railway stations as it can distinguish the relevant 'stakeholders and map out their relative power, influence, and interests' (Aligica, 2006, p 80). Moreover, Stakeholder Analysis should be used to denote the significance of the stakeholder's interests and how these will influence the completion of the project within the space of SPIRS or other Category A railway stations. Stakeholder Mapping is an integral part of Stakeholder Analysis and Aligica (2006, p.80) proposes it is a method which should be utilised to recognise the stakeholders concerned in a specific policy or strategy and 'for identifying potential coalitions for support…and for assessing the relative risks entailed'. Therefore, Stakeholder Mapping has played an integral and critical process within this research; it is detailed further in Chapters Five and Six.

Jepson and Eskerod (2008) present a similar stance to Freeman (1984) and maintain the use of Stakeholder Analysis is an important process in project management and this research contends in the operational management of Category A railway stations. This stance will ensure all stakeholders are accounted for when considering the resilience of the space to current and future security threats and therefore, it can be a valuable tool in maximising decision making in projects and operational activities. Jepson and Eskerod (2008) maintain Stakeholder Analysis should be carried out at the start of a project so issues and opportunities can be identified. This is a critical element in the planning stage of either building or retrofitting existing railway stations, and all the stakeholders who can affect the resilience of space to security threats should be consulted from the outset of a project.

2.5 Further Defining Stakeholders

Projects that are refurbishing existing or building new railway stations will have a 'coalition of temporary stakeholders' (Anderson, 2005, cited in Jepson and Eskerod, 2008, p.335). Whereas, the operation and the responsibility for security and resilience of SPIRS and other Category A railway stations, the stakeholders involved are more likely to have a permanent nature. Consequently, temporary, or permanent stakeholder relationships are important for

project management and operational strategies are vital as they in theory for successful delivery and outcomes (Jepson and Eskerod, 2008). Stakeholders whether temporary or permanent do hold control and power over projects and day-to-day running of operations. This is due to stakeholders having the power in some way and level whether through conflict or increasing control and influence by collaborating with further stakeholders, thus combining agendas and power. According to Mitchell *et al*. (1997), it is possible to organise stakeholders in terms of their power, legitimacy, and urgency. The power of stakeholders can be defined as 'the ability of those who possess the power to bring about the outcomes they desire' (Salancik and Pfeffer, 1974, p.3, cited Mitchell *et al*., 1997, p.865). When considering the power of stakeholders, it should be viewed in terms of how it is exercised and therefore it can be regarded as a

> coercive power, based on the physical resources of force, violence, or restraint; utilitarian power, based on material or financial resources; and normative power, based on sym-bolic resources.
>
> (Mitchell *et al*., 1997, p.865)

Moreover, the legitimacy of stakeholders can be regarded in simplistic terms of behaviours, which are considered socially normative and conventional for the institution or organisation, and it is often linked to power when stakeholder associations are appraised (*Mitchell et al*., 1997). However, Mitchell *et al.* (1997) suggest that legitimacy and power can be perceived as an authority and it is incorrect to presume that stakeholders who are considered as legitimate should also be regarded as powerful and vice versa. Additionally, stakeholders and urgency can be organised and considered in terms of two characteristics

> **time sensitivity**-the degree to which managerial delay in attending to the claim or relation-ship is unacceptable to the stakeholder, and (2) **criticality**-the importance of the claim or the relationship to the stakeholder.
>
> (Mitchell *et al*., 1997, p.867)

Furthermore, the stakeholders of SPIRS can be divided into primary and secondary categories (illustrated in Chapter Six) (Freeman, 1984) depending on the importance of the stakeholder to the institution's overall welfare and existence (Jepson and Eskerod, 2009).

- Primary stakeholders are directly affected positively or negatively, by a project or operations

- Secondary stakeholders have a transitional function and can have a key impact on the project or operations
- External stakeholders do not directly participate, yet can be impacted on by a project or operations

The process of refining stakeholders in an institution such as SPIRS or for an issue such as security threats that can specifically affect an individual issue has both advantages and disadvantages. One advantage of having very precisely defined groups of stakeholders is 'they are more likely to embrace homogeneous groups of people' (Friedman and Miles, 2006, p.14). Whereas, such precision in categorisation of stakeholders can lead to confusion as responsibilities can 'overlap and actions will be greater' (Friedman and Miles, 2006, p.14) for some stakeholders.

Jensen (2001) states it is important to recognise the process of Stakeholder Analysis can be the product of institutional/organisational agendas, which does need to be considered when undertaking this for SPIRS and other Category A railway stations. Therefore, the complexity of the stakeholders and their potential involvement in a project must be managed by the analysing institution or organisation by acknowledging that not all stakeholders will be treated equitably, and they will need to make compromises for changes in policy, strategy, operational processes to be effective. It must be noted whichever process of refining of stakeholders is used, whether looking at them in terms of power, legitimacy, and urgency or if they are considered as primary, secondary, and external, these are fluid and dynamic, and temporal and spatial and therefore must be considered as social constructs.

2.6 Stakeholder Power and Social Control

As discussed in section 2.1 Stakeholder Theory can further delineate the stakeholders into normative or strategic roles. Normative stakeholders can amalgamate all forms of stakeholders from all entities and 'reflect social norms, such as that of legitimacy or validity' (Friedman and Miles, 2006, p.11) for the specific space such as SPIRS. However, strategic stakeholders further reflect the power over an institution which stakeholders can have, and can have a considerable influence over its survival (Friedman and Miles, 2006, p.11). At this point it is important to recognise Stakeholder Theory, and the concept of Resilience and Social Control are connecting and intersecting and support each other when applying them to the stakeholders in SPIRS and other Category A railway stations in England and

Wales. Yukl (1998, cited in Bourne and Walker, 2005, p.653) classifies stakeholders into areas of power:

- Position power derived from statutory or institutional authority: formal authority; control over rewards; control over punishments; control over information; and ecological (physical/social environment, technology, and institution) control.
- Personal power derived from human relationship influences or traits: expertise; friendship/loyalty; and charisma.
- Political power derived from formally vested or conveniently transient concurrence of objective and means to achieve these: control over decision processes; coalitions; co-option; and institutionalisation.

Social control is a collection of social procedures and actions which function as a method, by which the populace is manipulated and regulated in the way they 'think, act and behave' (Erskine, 2002, p.227). However, regardless of this simplicity, the concept of social control can be perceived as either negative or positive. Moreover, it argued it can be 'directly coercive' (Blakemore, 2003, p.101) and can control an individual's or a society's liberty, autonomy and behaviour or it can be 'subtly oppressive' (Blakemore, 2003, p.101) by persuading individuals to conform to society's norms or restrain their individualism in less evident ways.

The legitimacy of many institutions, such as the railway station is intrinsic to the control of the actors within it. March and Olsen (1996, p.99, cited in Peters, 2005) further suggest institutions are legitimised and demarcated by their permanence and robustness, an ability to sway and control the actions of 'individuals for generations' (March and Olsen, 1996, p.99, cited in Peters, 2005). Institutions can effectively control the behaviour of actors and or stakeholders, whether it is informal or formal. However, Shearing and Stenning (1987, cited in Newburn, 2007, p.238) maintain rather than the explicit methods of social control, institutions such as the railway station can instigate the control of individuals by using 'moral discipline'.

Moreover, the railway station is a 'hybrid' (Newburn, 2007, p.321) public space, thus meaning it is a privately-owned space, which to operate must permit access to the public. Other comparable spaces are retail shopping centres and sports stadiums for instance. This

research proposes the concept of social control is entrenched within the physical building of the railway station and its routine and practices, therefore it is virtually imperceptible to the individual (Newburn, 2007). Actors and or stakeholders within the institution of the railway station are labelled, assigned a role, for instance an employee, passenger, enforcer, or deviant, and then controlled through means of individual surveillance (Foucault, 1977). Hence, institutions such as the railway station have a dual purpose, to 'order, manage and facilitate as well as constrain and oppress' (Newburn, 2007, p.323). For instance, CCTV can regulate individual's behaviour within railway stations, if they are aware of the constant surveillance. Additionally, the non-coercive system of social control is 'consensual' (Newburn, 2007, p.329), as all those individuals who use the station are unconsciously agreeing to the control mechanisms. SPIRS and other Category A railway station's security relies heavily on formal social control, CCTV, barriers, and restrictions and informal social control, where passengers are requested to be vigilant of suspicious behaviour, items, thus they become informal guardians of the space. Passengers are/do feel obliged for their own and the safety of other users while in the railway station environment. However, surveillance can also be viewed as an instrument of those who are in possession of power as it separates out the abnormal, those displaying criminal tendencies from those perceived as normal individuals (Foucault, 1977, p.199). CCTV, surveillance, and security in the railway station are examined in greater detail in Chapter Four of the thesis.

Moreover, the research contends within railway stations such as SPIRS, the behaviour of individuals is shaped and altered by institutions just as the institutions themselves are moulded and changed by the actors within them (Jones, 2001, p.22, cited in Peters, 2005, p.30). The institutional norms are its 'dominate...values' (Peters, 2005, p.30) and will sway the decisions of the actors within. Nonetheless, whatever the institutional norms are; they are open to interpretation by actors (Peters, 2005). Hence the requirement for institutions to control the behaviour of their members, through the reinforcement of the 'dominate...values' (Peters, 2005, p.30) of the institution. If actors participate in deviant behaviour, in most institutions there is an 'enforcement mechanism' (Peters, 2005, p.30) to handle the deviation from the expected normative behaviour within the institution (Peters, 2005). Hence, some institutions can be criticised for disproportionately distributing control among 'social groups' (Raitio, 2011, p.2). Moreover, North (1996, p.20) puts forward an especially scathing criticism of institutions stating they 'are not always or even usually created to be socially efficient, rather they...are created to serve the interests of those with

the bargaining power to create new rules'.

The second part of this Chapter looks at the concept of resilience within the context of Category A railway stations in England and Wales and it will examine the how the multiple and complex stakeholders can affect this space, in terms of how it can counter, challenge, and defy human malign security threats.

2.7 The Contested Concept of Resilience

Over the past decade to confront human malign security threats, the concept of resilience in the built environment has 'become a dynamic field of research' (Bourbeau, 2013, p.3). Thus, it has become increasingly and widely used with UK Critical National Infrastructure (CNI) and national security policies (Coaffee *et al.,* 2009, Joseph, 2013, Bourbeau, 2013, Chandler and Coaffee, 2017). Furthermore, the concept of resilience is used in numerous disciplines, for instance, ecology, physical, human, and social sciences Despite the widespread use and research of the concept by the Government and academics 'there is little coherence and consensus as to the nature and substance of resilience' (Bourbeau, 2013, p.3). Moreover, it is well recognised by commentators, such as Bosher (2014), Coaffee *et al.* (2009), White and O'Hare (2014), Coaffee and Fussey (2015 and 2017), Chmutina *et al.* (2016), the concept of resilience is extremely hazy and blurred, and thus making it highly contentious. Yet the majority definitions do highlight the ability of a system; organisation; community or individual to effectively modify in the case 'of disturbance, stress or adversity' (Norris *et al.,* 2007, p.129). Furthermore, the sheer number of academic disciplines and Government agencies who espouse and modify the concept for their own purposes and agendas further exacerbates this issue. White and O'Hare (2014, p.1) propose the use of the concept has been undertaken without question and 'this servile acceptability and burgeoning normalisation have proven instrumental to its rapid incorporation into the contemporary lexicon of academics and policy makers'. Coaffee *et al.* (2009) and White and O'Hare (2014) contend within British policy, the definition of resilience is not completely standardised, yet the UK Cabinet Office has offered the following definition.

> Resilience is the ability of assets, networks and systems to anticipate, absorb, adapt to and/or rapidly recover from a disruptive event
> (Cabinet Office, 2011, p.15).

The below table illustrates the evolution of the definition of resilience through the different academic disciplines over the last four decades.

AUTHOR	YEAR	DEFINITION	TYPE OF ANALYSIS
Holling	1973	The persistence of relationships within a system; a measure of the ability of systems to absorb changes of state variables, driving variables, and parameters, and still persist	Ecological
Gordon	1978	The ability to store strain energy and deflect elastically under a load without breaking or being deformed	Physical
Masten	1990	The process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances	Individual
Egeland	1993	The capacity for successful adaptation, positive functioning, or competence…despite high-risk status, chronic stress, or following prolonged or severe trauma	Individual
Brown	1996	The ability to recover from or adjust easily to misfortune or sustained life stress	Community
Sonn	1998	The process through which mediating structures (schools, peer groups, family) and activity settings moderate the impact of oppressive systems	Community

Adger	2000	The ability of communities to withstand external shocks to their social infrastructure	Social
Paton	2000	The capability to bounce back and to use physical and economic resources effectively to aid recovery following exposure to hazards	Community
Waller	2001	Positive adaptation in response to adversity; it is not the absence of vulnerability, not an inherent characteristic, and not static	Ecological
Ganor	2003	The ability of individuals and communities to deal with a state of continuous, long-term stress; the ability to find unknown inner strengths and resources to cope effectively; the measure of adaptation and flexibility	Community
Klein	2003	The ability of a system that has undergone stress to recover and return to its original state; more precisely (i)	Ecological

		the amount of disturbance a system can absorb and still remain within the same state or domain of attraction and (ii) the degree to which the system is capable of self-organisation (see also Carpenter *et al*. 2001)	
Godschalk	2003	A sustainable network of physical systems and human communities, capable of managing extreme events; during disaster, both must be able to survive and function under extreme stress	City
Bruneau	2003	The ability of social units to mitigate hazards, contain the effects of disasters when they occur, and carry out recovery activities in ways that minimise social disruption and mitigate the effects of future earthquakes	Social
Bodin	2004	The speed with which a system returns to equilibrium after displacement, irrespective of how many oscillations are required	Physical
Ahmed	2004	The development of material, physical, socio-political, socio-cultural, and	Community

		psychological resources that promote safety of residents and buffer adversity	
Kimhi	2004	Individuals' sense of the ability of their own community to deal successfully with the ongoing political violence	Community
Coles	2004	A community's capacities, skills, and knowledge that allow it to participate fully in recovery from disasters	Community
Longstaff	2005	The ability by an individual, group, or organisation to continue its existence (or remain more or less stable) in the face of some sort of surprise…. Resilience is found in systems that are highly adaptable (not locked into specific strategies) and have diverse resources	Ecological
Pfefferbaum	2005	Theabilityofcommunity members to take meaningful, deliberate, collective action to remedy the impact of a problem, including the ability to interpret the environment, intervene, and move on	Community
Resilience Alliance (Retrieved 10/16/2006 from http://www.resalliance.org/564.php)	2006	The capacity of a system to absorb disturbance and reorganise while undergoing change so	Ecological

		as to still retain essentially the same function, structure and feedbacks—and therefore the same identity	
Butler	2007	Good adaptation under extenuating circumstances; a recovery trajectory that returns to baseline functioning following a challenge	Individual

Table 2.0 The evolution of the definition of resilience. Source Norris *et al*. (2008, p.1290)

Furthermore, when considering the resilience of the railway station to human malign security threats, the concept can be considered in terms of their 'embedded security and risk management' (Coaffee, 2008, p.4633) and 'their ability to absorb or recover from a shock or attack' (Schulman and Roe, 2007, p.42). Norris *et al*. (2007, p.130) describe resilience as 'a process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance'. It is suggested to increase the resilience in a transport infrastructure such as a Category A railway station; the organisational administration (Norris *et al*., 2007, p.130) should be improved rather than redesigning security and 'technical systems' (Schulman and Roe, 2007, p.42). If an institution can improve its organisational administration of resilience, it promotes 'a more organic capacity to deal with rapid onset shock' (Australian Government, 2010, p.13). This contemporary organic concept of resilience can be defined as 'third generation resilience'; and in terms of the railway station, it would envisage the probability of a malicious act and through embedded resilience can adapt their operations (Birmingham University, 2012).

Moreover, Bosher (2008, p.13) takes a holistic perspective on maintaining a resilient built environment and in cases such as SPIRS and other Category A railway station, they

> should be designed, located, built, operated and maintained in a way that maximises the ability of built assets, associated support systems (physical and institutional) and the people who reside or work within the built assets, to withstand,

> recover from, and mitigate for, the impacts of extreme natural hazards and human-induced threats.

However, it can be argued the built environment has arisen due to neo-liberal philosophy and practices, through the intentionally reduced capacity of the state as the overseer of resilience and a decline in building controls (Johnson *et al.,* 2013). Thus, it is contended the state through the processes of Governmentality has devolved the responsibility for the security of the built environment to the forces of a free market. Therefore, resilience is a medium of 'governance which emphasise[s] responsible conduct' (Joseph, 2013, p.40). Furthermore, the concept of resilience and the operations of SPIRS and other Category A railway stations in England and Wales exemplifies Governmentality as defined by Foucault (1991) where the Government endeavours to mould and influence the management of behaviours of seemingly unrestricted institutions, organisations and people (Dean, 1999). Governmentality is discussed in further detail in Chapter Four of the thesis.

Commentators such as Bosher (2014) and Bosher and Dainty (2012) state the concept of resilience to security threats and more importantly as an operational practice cannot be considered in isolation. It should be a pre-emptive, combined, and united concern by the frequently multiple stakeholders who are both 'responsible for the delivery, operation and maintenance of the built environment' (Bosher, 2014, p.240). Furthermore, Sircar *et al.* (2013) support this standpoint and propose involving the multiple stakeholders in discussions around the issues of resilience can enhance and develop a mutual understanding resilience. The physical and intangible aspects of resilience can be described as 'structural and non-structural approaches' Bosher (2014, p.240) and can be attained if they are built in from the conceptual stages of a project (Bosher *et al.,* 2007 and Bosher and Dainty, 2011). However, it can be argued that all spaces require assistance to 'become more resilient' (Chandler, 2013, p.217) and resilience should be viewed as a continuum (Chandler, 2013, p.217). Thus, this research contends resilience in terms of SPIRS and other Category A railway stations is not definitive as

> 'the process can never be fully completed; the process is inherently dynamic and always in movement. Furthermore, resilience is always normatively open, depending on the conceptualisation of both the referent system and the crisis or shock to it." (Bourbeau, 2013, p.11)

The resilience of Critical National Infrastructure (CNI) is examined in Chapter Three. While

Chapter Four discusses UK resilience and security policies and how this is inextricably entangled with the concept of resilience.

2.8 Chapter Summary

This chapter has introduced the theoretical and conceptual frameworks of Stakeholder Theory and Resilience that underpin the research and the subsequent thesis. These theories in the context of the research findings from the case study railway station, SPIRS, will support the understanding understand how the space can be impacted on by the multiple and complex stakeholders through governance and operation resist, confront, and defy security threats. This thesis will anchor itself in the appropriate and important literature and demonstrate there is a substantial justification for this research. Moreover, the chapter has demonstrated that Stakeholder Theory is well documented. However, there is a significant gap in the knowledge given there is insufficient literature that examines Stakeholder Theory, and which can be conceptualised in relation to Category A railway stations in England Wales. The concept of Resilience has been examined and without a doubt, it is an ambiguous and highly contested position. However, the following two chapters demonstrate there is little research that examines the complex stakeholder relationships and the resilience of Chapter A railway stations in England and Wales to human malign security threats.

CHAPTER THREE- THE RAILWAY STATION, CRITICAL NATIONAL INFRASTRUCTURE (CNI) RESILIENCE AND POLICIES

3.1 Chapter Introduction

This third chapter of thesis comprises of three interconnected parts and it commences by looking at the function and role of Category A railway stations in England and Wales, examining the interrelated nature between the size of a railway station and the potential operational complexities. The second part of the chapter examines what role the railway station plays within the UK's CNI and the concept of resilience within the context of the case study railway station, SPIRS and other Category A stations in England and Wales. The practicalities of resilience to human malign security threats are examined in further detail in Chapter Four specifically in terms of crime and terrorism. The third part of this chapter reviews the policies and drivers, which affect SPIRS and other Category A railway stations and the subsequent resilience to security threats.

The railway station, especially those classified as a Category A is a complex facet of the railway infrastructure in England and Wales. They sit within an extremely multifaceted intricate and fragmented railway infrastructure, and from its outset in the 1800's, some commentatorshave viewed it as 'a quasi-state' (Wolmar, 2003, p.49). As mentioned in Chapter One, depending on the location, the correlated size, and complexity of the railway station it can be either defined as a part of the CNI or critical local infrastructure. It is contended the chosen unique case study station of SPIRS is a vital part of the CNI, given its size, location and multiple functions as a railway terminus and international hub. Moreover, it part of the underground network, there is a five-star hotel, which also houses luxury apartments and flats. Additionally, it is a retail and leisure destination for the public and uses of the railway network. In such a case, the complexity of the space is compounded due to the numerous and divergent stakeholders responsible for the physical, operational, and legal functions of the railway station. The decision to conduct the research around this unique case study is discussed in Chapter Five. The vast complexities of the railway network in England and Wales present a lack of distinction and ambiguity in terms of the accountability for its operations and the legal framework that surrounds it (Hawkins, 2008). The repercussions of this involved and complex component of the railway infrastructure are discussed in the context of the railway stations current and future resilience to human malign security threats.

PART ONE: THE FUNCTION OF THE RAILWAY STATION

3.2 Definition of the Railway Station

From the outset, the emphasis of this thesis focuses on the complex and multiple stakeholders, resilience to human malign security threats within SPIRS and with the experiences and findings being replicable in other Category A railway stations in England and Wales, most of which are Network Rail operated. The research and subsequent thesis do not focus the railway network infrastructure such as tracks, signalling and bridges. Therefore, the research focus mirrors the UK official Governmental definition of the railway station under Section 83(1) of the Railways Act 1993

> any land or other property which consists of premises used as, or for the purposes of, or otherwise in connection with, a railway passenger station or railway passenger terminal (including any approaches, forecourt, cycle store or car park), whether or not the land or other property is, or the premises are, also used for other purposes (Legislation.Gov.UK, 2013)

However, the research argues in later sections of this chapter and further demonstrates in Chapter Six, that to define the space of the railway station is far more complex than the above simplistic definition.

3.3 The Function and Role of the Modern Railway Station

The historical origins of the railway network and stations in England and Wales are discussed in Chapter Six and demonstrate just how complicated the developments in the railway network over the last two centuries have been. Therefore, this will provide some background and a contextual indication of how the current responsibilities and operations of railway stations have come about. Thus, today railway station has numerous roles, a macro approach (Bertolini, 1996 and 1995) can be used to define the usage of the railway station, which can be seen 'in terms of node (the connectedness with other places) and place (possible activities around the station)' (Reusser *et al.,* 2008, p.191). Similarly, the spatial 'urban development potentials' (Zemp *et al.,* 2011, p.447) further demarcates the role of the railway station as such environments where 'high value activity are recognised as having a positive impact on the city' (Bruinsma *et al*., 2007, p.2). This spatial value is discussed in Chapter Six in terms of SPIRS and its neighbouring railway station of Kings Cross.

Moreover, Zemp *et al.* (2011) findings highlight the operational complexities are amplified with increasing size and importance of the railway station. Given the lack of research into

the functionality of Category A railway stations in England and Wales, it is proposed through Zemp *et al.* (2001) analysis of Switzerland's 1600 railway stations, the role of these Category A railway stations today can be defined through a framework of five functions, which are

1. linking catchment area and transport network
2. supporting transfer between modes of transport
3. facilitating commercial use of real estate
4. providing public space
5. contributing to the identity of the surrounding area

(Zemp *et al*., 2011, p.446)

For this thesis and the subsequent research findings, the five highlighted functions are highly transferable and applicable to examining SPIRS. Moreover, Zemp *et al.* (2011) have indicated the size and location of the railway station is a crucial factor linked to the increasing operational and security complexities for the multiple stakeholders who are located within the space of the station. These essential five functions of the railway station in relation to SPIRS are discussed in detail in Chapter Six. Moreover, what is constituted as a security threat to the railway station and SPIRS is examined in the following chapter.

Network Rail defines the physical space of the Category A railway stations in England and Wales, and SPIRS into three specific zones, each with its own function. However, in some smaller railway stations, the zones, in fact, intersect in their function, and the access, facilities and platform zones are all located in the same area, Network Rail (2011, p.5 and p.34) demarcates the zones as follows:

3.3.1The Access Zone

This is the area of (and surrounding) the station is where departing rail travellers arrive at the station, or where people who have just arrived by train commence the next leg of their journey, includes access to:

- Public transport
- Pick-up/dropoff
- Carparks

- Walking routes
- Cycle storage

3.3.2 The Facilities Zone

This is the area of the station (typically, but not exclusively, the concourse or booking hall) where users gather information, make purchases, or otherwise avail themselves of the facilities on offer. In many stations, the Facilities Zone may also include a waiting area. Includes facilities such as:

- Ticket retailing
- Waiting facilities
- Information
- Tickets
- Retail units

3.3.3 The Platform Zone

In this area, users alight from trains, wait for, and board trains, or interchange between trains, it can include facilities such as:

- Waiting facilities
- Information
- Access to/from
- Platforms
- Boarding/alighting

Source (Network Rail, 2011, p.5 and p.34).

The functional zones of SPIRS are examined in Chapter Six. As discussed in the previous sections of this chapter, the thesis, and the research focus on SPIRS, with the theories and research being generalisable to other Category A railway stations in England and Wales. At the time of writing, Network Rail classified their two thousand five hundred plus railways stations into six categories, *A through F*. SPIRS is classified as a Category A railway station. The classification of the railway station relates to its size, location and role in the railway network and it subsequently has an impact on the level of security that is required by the Department for Transport (DfT). The classification of categories and number of railway stations

are explained in the section below.

Category A –28 stations
National Hubs – these are the largest stations in the UK, serving the most important cities. They provide the highest number of facilities for passengers and the public. For instance, these are railway stations such as SPIRS, London Kings Cross, Bristol Temple Meads, Liverpool Lyme Street, and Birmingham New Street.

Category B –67 stations
Regional Hubs – are stations that generally serve important cities and towns. These are large stations providing a gateway to the rail network from a large area. More than one Train Operating Company (TOC) with a mix of service types often serve them. These stations may be a terminus for some services. For instance, railway stations such as Cardiff Central, Liverpool Central and Newcastle.

Category C –248 stations
Important Feeder – these are significant 'feeder' stations, on a busy trunk route or as a subsidiary hub station. These railway stations often provide services from more than one TOC and a regular long- distance service, such as Cardiff Queen Street and Southampton Airport Parkway.

Category D –298 stations
Medium Staffed – These are medium-sized, staffed railway stations, with a core interurban business or high-volume inner suburban business.

Category E – 679 stations
Small Staffed – Are small, staffed station often with just one member of staff at any one time, or for only part of the day.

Category F – 1200 stations
Small Unstaffed –These are defined as small, unstaffed stations.

(Adapted from Network Rail 2012 and Network Rail, 2011, p.17)

3.4 The Pseudo-Public Space and Control

In terms of providing a public space, railway stations in England and Wales are privately owned spaces which the public has apparent free and unrestricted access. Subsequently, they cannot be considered as public spaces; they are described as 'pseudo-public spaces'

(Copper *et al.,* 2007, p.14), or as a hybrid area (Raco, 2003 and Newburn, 2007). For instance, SPIRS and the other significant Category A city based stations in England and Wales are becoming extremely

> commodified and newly regenerated spaces, which are seen as important and valued, and thus individuals and corporations fight for a presence there.
>
> (Massey, 2011, p.191)

Moreover, Category A railway stations in England and Wales are constantly under measures of surveillance, prevention, and governance, to ensure their smooth operation and security. Therefore, not everyone using or passing through is greeted warmly in these rejuvenated and frequently gentrified spaces, stakeholders such as Network Rail and the British Transport Police (BTP) actively dissuade street people and substance users from loitering in or around the margins of the railway station. Thus, reiterating and supporting the statement that railway stations are 'pseudo-public spaces' (Copper *et al.,* 2007, p.14). Redeveloped Category A railway stations such as SPIRS are conceived and designed for more affluent members of the public do not cater for the local community, who according to Raco (2003, p.1871) are frequently 'culturally and even physically excluded'. Therefore, legitimate citizenship of such spaces is centered on being a consumer of services and goods (Atkinson, 2003, p.1834). Thus, the boundaries of the Category A and SPIRS whether it is a public or private space is fuzzy and contestable.

3.5 Stakeholders and the Railway Station

As discussed in Chapter One, there is a significant gap in the knowledge surrounding the multiple stakeholders within a complex Category A railway station in England and Wales. These railway stations and the case study railway station SPIRS sit within an extremely multifaceted complex and fragmented railway infrastructure. This is without doubt due to the numerous levels of public and private sector stakeholders who are responsible for the physical, operational, and legal functions of the station and even from its outset some commentators have viewed the railway station as 'a quasi-state' (Wolmar, 2007, p.49). The history of these developments and complexities are discussed in Chapter Six. As discussed already in this chapter, the greater the size, location, and importance of the railway station thus the operational complexities increase (Zemp *et al*., 2011).

Therefore, SPIRS and as such other Category A railway station in England and Wales have

numerous key organisations, stakeholders, and forums that are involved in deciding on policy, strategies, and thesubsequent current and future resilience of the railway station to human malign security threats. The concept of resilience and its actual application to the railway station is examined in section 3.7 of this chapter.

Stakeholders within the railway station can be seen in terms of organisations with an interest in the institution, but also in a wider context of 'any group of people, organized or unorganized, who share a common interest or stake in a particular issue or system' (Grimble and Wellard, 1997, p.75). There is a clear difference between organisations and institutions, as conventions are set by institutions, the railway station, and these are acted out in organisations, the stakeholders (North, 1990, cited in Raitio, 2011, p.2). It is the critical elements of an organisation, such as the 'actors and role, structures and goals' (Hasselbladh and Kallinikos, 2000, p.698), which determine efficient plans and systems. These are social processes, 'embedded in complex networks of beliefs, cultural schemes and conventions that shape their goals and practices' (Meyer and Rowan (1977/1991, cited in Hasselbladh and Kallinikos, 2000)

To fully understand the role and resilience of SPIRS, the complex and multiple stakeholders within must be identified and 'reference to their goalsandrequirementsismade' (Zemp*etal.*, 2011, p.447). Grimble and Wellard (1997) propose this understanding can be achieved through the utilisation of Stakeholder Analysis; this is discussed in greater detail in Chapters Five and Six. However, to introduce Stakeholder Analysis, it presents a method of analysis by

> understanding a system, changes in it, by identifying key actors or stakeholders and assessing their respective interests in that system.
>
> (Grimble and Wellard, 1997, p.173)

Therefore, it is critical when operating, retrofitting, or when building new railway stations, for the complex relationships between multiple stakeholders to be fully understood and accounted for in these projects by the construction industry, operators, and providers of security for the stations (Zemp *et al*., 2011). It is critical to research and examine the highly complex mix of both public and private stakeholders in the railway station and the significant level of organisation to 'legislate, regulate, implement, and police' (Loukaitou-Sideris *et al*., 2006, p.737) effectively the space against existing and future security threats.

Therefore, it is the multiple stakeholders with differing and frequently conflicting agendas and standpoints, which can create considerable difficulties from both the perspectives of the operation of the infrastructure to the social implications of their decisions (Zemp *et al.,* 2011). The complex and multiple stakeholders of SPIRS are examined in further detail in Chapter Six, where they are discussed and visually mapped using Stakeholder Analysis.

PART TWO: THE RAILWAY STATION, CRITICAL NATIONAL INFRASTRUCTURE (CNI) AND RESILIENCE

As discussed in Chapter Two, the concept of resilience is increasingly prevalent in Critical National Infrastructure (CNI) policy, becoming inextricably interwoven in the UK's 'security and civil contingencies policy' (Coaffee *et al*., 2009, p.111). This is the case when looking at how current UK policy deals with security threats, resilience has evolved into 'a key policy metaphor underpinning the reaction of the state' (Coaffee *et al*., 2009, p.111). The security policies which are relevant to the railway station are examined in Chapter Four.

The majority of CNI in the UK is owned and operated by the private sector. The railway network and infrastructure are operated and managed, apart from Category A stations, by Network Rail. Therefore, the national resilience, security policies and prevention measures and individual organisation policies are operationalised by private sector companies, which have their own definitions of the concept and how Governmental policy and initiatives are interpreted. However, to further reinforce the complexities of SPIRS' stakeholders and control, it is owned by High-speed One, which in turn is funded by a foreign pension fund, and subsequently operated by Network Rail High-speed. These complexities are examined in Chapter Six, Seven and Eight.

3.6 Critical National Infrastructure (CNI)

For SPIRS and other Category A railway stations, the wider railway network, and other transport systems to operate effectively and efficiently, the interdependencies between transport and other forms of CNI must be analysed. CNI's are defined as critical because if they were to be devastated or severely disrupted it 'would cause major disruption to the service being provided' (Institution of Civil Engineers, 2009, p.5). The Government describes CNI as

> those facilities, systems, sites and networks necessary for the functioning of the country and the delivery of the essential services on which daily life in the UK depends.
>
> (CabinetOffice,2010,p.4)

Infrastructure can also be described as either 'national or local assets' (Cabinet Office, 2010b,p.8),thusmeaning

> *CNI*, that is, infrastructure which is deemed critical on a national scale; and *other critical infrastructure* which may be critical within a local area.
> (CabinetOffice,2010b,p.8)

Within the UK CNI is delineated by The Cabinet Office into nine key sectors and further sub-sectors where applicable:

Communications,
Broadcast
Post
Telecoms
Emergency-5 services,
Ambulance – The health sector manages this sub-sector
Coastguard–Thetransportsectormanagesthissub-sector
Fire
Police
Energy,
Electricity
Gas
Oil
Financial services
Food
Government
Health care
Transportation
Aviation
Highways
Ports
Rail
Water

Table3.0UKCNI. Source:(TheCabinetOffice2010,p.5)

3.7 Critical National Infrastructure (CNI) and Resilience

The Government accepts that CNI, such as the railway network must be prepared to increase their resilience to criminal activities and acts of terrorism, given it is fundamental to everyday life, from the social to the economic aspects of it (Schulman and Roe, 2007). Hence, CNI has crucial components, which the interruption, failure, or destruction of would have a critical bearing on the availability or integrity of essential services leading to severe economic or social consequences or to loss of life in the UK. These critical elements make up the CNI (Cabinet Office, 2010, p.4). As discussed above, the UK Government defines resilience of CNI as 'the ability of a system or organisation to withstand and recover from adversity' (Cabinet Office, 2011, p.5). This further demarcation of the function of CNI fails to acknowledge the role the railway station can be critical at international, national, and local levels. The Government contends because of the railway networks 'structure and varied nature; it has an inbuilt overall resilience but can be affected at a local level across all sub-sectors' (Cabinet Office, 2010, p.20). Therefore, railway stations which fall into the E to F Network Rail Categories would be classed as critical local infrastructure as they would have an impact on the lives of people and the economy at a local level if they were to be disrupted. However, Category A to D railway stations in England and Wales can be classified as CNI as the impacts would be felt nationally if they were to be disrupted and even internationally when considering the case of SPIRS and the Eurostar.

The resilience of the UK's CNI is reliant on the weaknesses created by its interdependency being recognised and improved on. The operations of many CNI's frequently rely on a 'chain of dependencies' (The Parliament Office of Science and Technology, 2010, p.3) from other CNI. For instance, the high-speed railway, both currently and in the future, is reliant on the National Grid for the electricity to power the overhead cables for the trains. In turn, both infrastructural sectors rely on the communication infrastructure for the organisation and management of their operations. If one element of the infrastructural interdependent sequence is disrupted it has a knock-on effect on the other elements. This effect is described as 'cascade failure' of a 'single point of failure' (The Parliament Office of Science and Technology, 2010, p.3) and can be described as numerous infrastructural sectors being localised in one region/area. Furthermore, much of the core CNI in the UK is under private ownership, and as such, the resilience of these assets is reliant on the financial investment of their owners (The Parliament Office of Science and Technology, 2010). There have been

objections to this disparate multiagency approach and endeavours have been undertaken to reduce the vulnerability of CNI to both current and future human malign security threats.

Furthermore, the Government recognises the resilience of CNI and as such Category A railway stations in England and Wales must not merely rely on target hardening and protection measures (this is examined in the following chapter). Resilience should be a holistic concept that incorporates a 'good design of infrastructure networks, effective emergency response, business continuity planning, and recovery arrangements' (Cabinet Office, 2010, p.5). The role of resilience can be viewed as a decentralised and shared process of 'responsibilisation' (Garland, 1996), from Governmental offices and departments, the devolved Governments, the regulators, and the operators of infrastructures all establishing the 'standards, determining priorities, and meeting costs of improving resilience for that sector' (The Cabinet Office, 2010, p.6). Resilience and security strategies both at a national and a local level are entangled, and both often rely on the other form of policy to achieve their end goal.

PART THREE – POLICY AND DRIVERS SURROUNDING THE RAILWAY STATION AND NETWORK

3.8 Policies and Strategies

As noted in the above sections, the complex and disparate nature of SPIRS and other Category A railway stations in England and Wales is not only mirrored by its history, which is examined in Chapter Six, and the currentsystemofcomplexandmultiplestakeholders,butitis furtherseen in the patchwork of policies and agendas which surround it. Therefore, these policies cannot be viewed in isolation from the multiple, complex, and often seemingly disparate stakeholders who enact and operationalise policies and strategies within the space of the railway station. Chapter Four examines the often-entangled security prevention measures and policies such as the CONTEST Strategy, Crime and Disorder Act 1998 and SIDOS (Security in Design of Stations). that are enacted within the space of the SPIRS and other Category A railway stations in England and Wales.

The strategic decisions and the operations of the railway network and stations in England and Wales are administered through numerous levels of Government, national, regional, local, European, and then the privately-owned stakeholders (Cabinet Office, 2010), these levels of stakeholders are discussed in more detail in Chapter Six. The process of policymaking is decided at different political and legal levels and is a set of logical and rational decisions, which centers on a goal ofsolving specific societal challenges and quandaries (Kaufmann

et al., 2008). Firstly, the issue must be politicised by the stakeholders/actors; secondly, solutions are sought, and resolution is legitimised; thirdly, the policy is put into operation and enforced 'at different institutional and territorial levels' (Kaufmann *et al.,* 2008, p.12-13).

Legislations which surround the development and operation of the railway network are not a modern phenomenon. In fact, the obsession and frenzy which surrounded the developmentand growth of railway network in Britain during the nineteenth century can be judged when over a four-year period, between 1844-8, over '600 railway acts' (Biddle, 1986, p.16) were passed through Parliament. Subsequently, in Chapter Four contends the resilience of railway station to human malign security threats cannot be disconnected from security policies, strategies, and various political agendas, as it cannot be considered in isolation without taking into consideration the multiple and complex stakeholders play a role in the railway station.

Appendix 1 indicates the complexity of the multiple policies that are currently enacted within the space of the railway station. However, to summarise some of the critical policies that affect the operation and subsequent resilience to security threats are discussed briefly. One of the primary acts that affect the railway stations and the wider railway network in England and Wales is the Railways Act 2005. The Act is to deal with historic structural issues of the railway. It gives the power from the state to devolved administrative organisations such the Office of Rail Regulation (ORR) to issue the Train Operating Companies (TOCs) with their franchise and operating licenses. This act also covers the access contracts such as the Station and Light Maintenance Services. However, the Treasury has the power to impose financial controls over the ORR to control how the public subsidy for the railway industry is allocated. The Secretary of State provides monetary aid for any purpose regarding railways grants.

Moreover, the Railways Act 2005 superseded the Transport Act 2000 that granted the ORR power to request the TOCs or Network Rail to upgrade or build new railway stations or facilities. A further devolution of power to the local level can be seen in the Act as it permits the TOCs, subject to the approval by the Secretary of State, to create bylaws that aid them and the BTP to control the actions and behaviour of the public using the rail system. The Rail Passengers' Rights and Obligations Regulations 2010 is a statutory regulation that demands

that the TOCs and Network Rail have acceptable security measures in place, such as having a formal agreement with the BTP regarding the policing of assets and services. Again, the ORR was tasked with taking this devolved requirement and ensuring it is enforced at a local level.

Furthermore, there is a raft of safety legislation which is also pertinent to the railway station (see Appendix 1), again with the ORR being given primary responsibility for many of these. For instance, the Railway and Transport Safety Act 2003 in section 31 outlines the BTP's jurisdiction and permits them the power to pursue suspects or handle crimes related to the railway away from the boundaries of the railway infrastructure. The Health and Safety at Work etc. Act is responsibilised in terms of safety for the railways by the ORR. The crime and terrorism policies and strategies which affect the resilience of the railway station to human malign security threats are examined in Chapter Four.

3.9 Levels of Policy Making Impacting on the Railway Station

Within the confines of English and Welsh railway stations, it is the responsibility of the numerous and often private sector stakeholders to enact and enable the transport policies that are set by the Government and the European Union. Butcher *et al.* (2010, p.9) propose that many of the stakeholders create their own company policies which sit within the transport policy structure. This proposition is discussed in further detail in Chapters Seven and Eight.

3.10 Government and the European Union

Transport policy presently falls under the domain of the DfT, and the Secretary of State for Transport heads it up. However, other Governmental departments do have policy leads which impact the area of transport, these departments are:

The Treasury is responsible for deciding on taxes and budgets which affect transport areas

- The Department for the Environment, Food and Rural Affairs, make decisions concerning the inland waterways and environmental policies
- Communities and Local Government, decide on planning policy
- The Home Office are responsible for transport related offences

(Butcher *et al*., 2010, p.8)

Furthermore, the European Union has legislative powers over UK transport policy, for

example, interoperability for the Eurostar, which operates through both the UK and Europe. It should also be noted that within the UK there are four devolved Governments, London, Scotland, Wales, and Northern Ireland that have responsibility for their own transport policies (Butcher *et al*., 2010).

3.11 Regional bodies

The decentralisation and the devolution of Governmental powers are high on the current Conservative Government's political agenda. Regional bodies at present have a greater influence over how Governmental funds are allocated on transport priorities in their areas. The regional bodies that are accountable for put into operation transport policies and strategies are structured as follows:

- Government Office
- Regional Assembly
- Regional Development Agency

Source: Butcher *et al.* (2010, p.12)

The 2009 the Local Democracy, Economic Development and Construction Act, a section was established to amalgamate each regional transport strategies into a Regional Spatial Strategy, which states how employment, land usage and housing policies are impacted and benefited by local transport infrastructure (Butcher *et al.,* 2010, p.12).

3.12 Local Authorities

The next level of policymaking and implementation are the Local Authorities; it is their duty to enact the transport strategies set out by the regional bodies. Within two tier councils are accountable for local transport as follows:

- County Councils should generate local transport strategies and operational plans.
- District Councils are accountable for passing planning permission for transport projects.

(Butcher *et al.,* 2010, p.13)

However, single tier or Metropolitan or Unitary councils have sole responsibility for all local transport strategies and operational plans, and local planning resolutions (Butcher *et al.,* 2010).

3.13 Integrated Transport Authorities

In 2009, the Integrated Transport Authorities (ITAs) were established in the metropolitan regions in England and were granted control over transport governance in these areas (Butcher *et al.,* 2010, p.3). ITAs are composed of local council representatives. Their objective is to encourage better public transport across UK regions. ITAs are funded through the taxpayer, Government, EC grants and the private sector.

3.14 PassengerTransportExecutives

The Passenger Transport Executives (PTEs) are accountable to the ITAs. PTEs are regional agencies and accountable for local integrated public transport plans, and they publish strategies on how to improve the local transport system. PTEs work in partnership with the DfT to plan and manage local rail services. Furthermore, they may also provide investment towards local stations. There are six PTEs in England; West Yorkshire; South Yorkshire; Tyne and Wear; Merseyside and Greater Manchester. They have a combined budget of £700m per annum and provide a service to over eleven million passengers. Funding for the PTE's is provided by Governmental grants, revenue from council taxes.

3.16Non-Departmental Public Bodies and other organisations

The Non-Departmental Public Bodies (NDPBs), do not belong to Government departments, however, they do have input into 'the processes of national Government' (Butcher *et al.,* 2010, p.13). The NDPBs and other organisations which are sponsored by the DfT and which are relevant to the railway station are as follows:

- BTP, Railway Heritage Committee, and Transport Focus are classified as an executive NDPB
- The ORR is classified as a DfT sponsored organisation.
- The ORR regulates the twenty-four TOCs and the seven freight operating companies (FOCs), which operate on the railway network. Their allied industry groups often lobby the Government.

(Butcher *et al.,* 2010)

3.17 General Transport Policy in the UK

To understand the policies that, impact on the current and future resilience of railway stations to human malign threats it is essential to examine how it sits within the general

transport policies for the UK. Ever since people have used mass transport for their journeys, successive Governments have had to contend and address the conundrums of the mass transit of passengers, namely 'where they have come from, where they are going and perhaps most vexingly, how they get there' (Butcher *et al.*, 2010, p.6). It is recognised future demographical changes in the population, especially in the South East of England and London will affect transport infrastructure, demand and the capacity of the railway network will be stretched. The ageing population transport needs in these areas must be considered now, for example, what type of transport they will need and the areas they will be living in (The Parliament Office of Science and Technology, 2010).

Growth in travelling by train has grown significantly in comparison to the number of journeys made by car, 'between 1998 and 2008 the number of passenger kilometres made by train in Great Britain increased by 17%; from 44 billion passenger kilometres (bpkm) to 51 bpkm.' (Butcher *et al.*,2010, p.31). With changes in technology and improvements in all modes of transport, it has allowed for increasing numbers of people to be transported. However, it is recognised that as transport services, such as the railway network have become more efficient, the charging of these to the public has increased rather than reduced (Butcher *et al.*, 2010).

It is widely acknowledged that using public transport has less of a harmful impact on the environment than using a car. However, older diesel trains do impact on the environment by the pollution they produce, yet because they are transporting masses of passengers 'they are generally held to be green' (Butcher *et al.*, 2010, p.31). Moreover, travelling on the railway network can reduce congestion on the roads and thus result in fiscal benefits (Shaw and Farrington, 2003). Furthermore, the railway is the 'most space and energy efficient way of moving large volumes of people and freight' (Shaw and Farrington, 2008, p.108). Cars driven in an urban setting are four times less 'energy efficient per passenger kilometre' (Shaw and Farrington, 2003, p.108) than trains and suburban railway uses thirteen times less space than a road to transport an equal number of people (Shaw and Farrington, 2003, p.108). However, regardless of the proposed future environmental benefits of the rail network, it can also be argued that the railway network and ageing infrastructure currently, 'uses non-renewable fuels and 'takes' land in the same way as roads' (Shaw and Farrington, 2003, p.108).

The 1992 white paper titled the New opportunities for the railways: the privatisation of British

Rail recognised the cost and energy benefits which transporting passengers and freight by the railway network. Regardless of the privatisation of the railway one objective which had to be met was to 'continue developing the environmental benefits of rail and to maintain its existing high environmental standards' (Butcher *et al.,* 2010, p.28). Docherty (2003) contends the Labour Government's agenda of improving transport was implemented through 'economic, environmental and social sustainability' (Docherty, 2003, p.3). A public transport network, including the railway, which was deemed unreliable, was challenging economic growth and sustainability. Issues surrounding environmental sustainability was being threatened by increased greenhouse gases through 'transport-related pollution' and community sustainability was being tested through a deficiency in equal 'access to transport' (Docherty, 2003, p.3), which could lead to people experiencing an exacerbation of social exclusion. However, according to Docherty (2003) to achieve these goals would have called for a radical vision and the transport white paper, 1998 A New Deal for Transport: Better for everyone transport, was regarded by a number of critics as Docherty and Hall (1999) and Glaister (2001) as a 'poorly focused and indecisive document' (Docherty,2003, p.13). The 'Third Way' rhetoric came to the foreground as 'integration transport' (Docherty, 2003, p.13) rather than sustainable transport, leading to what were considered 'less radical, more business...friendly policies' (Docherty, 2003, p.14).

The development and improvement of the railway network key in decreasing 'the dominance of the car' (Docherty, 2003, p.3). After the reflecting on the objectives of the 2010 Transport Plan, the Government and various lobbying groups are still committed to the promotion to the general public of the environmental benefits of using public transport and relying less on using the car for journeys (Butcher*et al.,*2010). This is demonstrated through several reforming measures targeting the railway network. However, Network Rail must have greater answerability to the TOCS and the public; the agreement of a high-speed rail up to the North of England at a minimum; rail franchise lengths so be increased; allowing other agencies to make minor improvements. Butcher *et al*. (2010, p.25) suggest rail policy has moved towards trying to manage existing infrastructure with improved and greater efficiency, rather than the 'predict and provide model'. A recognised current issue, which must be addressed by the Government, is how to evaluate the contribution which transport infrastructure makes to the economy against the effects they have on the environment (Butcher *et al.,* 2010). The level importance placed on improving the railway network is demonstrated below in the CNI in which the Government envisages major infrastructure

investment in the UK:

- maximising the potential of existing road and rail networks;
- transforming energy and transport systems to deliver a low carbon economy;
- transforming the UK's strategic rail infrastructure;
- meeting future challenges in providing sustainable access to water for everyone;
- protecting the economy from the current and growing risk of floods and coastal erosion;
- reducing waste and improving the way it is treated; and
- providing the best superfast broadband in Europe.

(HM Treasury, 2010, p.9)

3.19 Future Rail Expansion Policies and Strategies

CNI must meet the needs of current and future generations in the UK and The National Infrastructure Plan 2013 recognises this. Arguably, this is applicable to the wider railway network as many parts of it are

> many decades old, means that maintenance and upgrades are essential to ensuring that current and future generations can continue to benefit from it; upgrading infrastructure also keeps running costs low and ensures smooth and efficient operation with minimal disruptions.
>
> (HM Treasury 2013, p.13)

The Government acknowledges the vital role in which effective modes of transport will aid the economy to develop and expand in the future. SPIRS and other Category A railway stations in England and Wales can be considered as part of 'nationally significant infrastructure' (Department for Communities and Local Government, 2009, p.20). Therefore, they cannot function in isolation and to operate it must engage the services of other CNI. The Government is adamant 'these networks are integrated and resilience is vital... not only for growth but also the UK's international competitiveness' (HM Treasury, 2010, p. 7).

Consequently, the impact of globalisation is recognised by the British Government, with other countries such as USA and China investing billions in either building or improving their railway networks (HM Treasury, 2010). The Government does not wish to be seen as failing to improve and develop the CNI of the UK and therefore envisages that the following future major infrastructure investments will be specifically relevant to the railway station:

- maximising the potential of existing road and rail networks
- transforming energy and transport systems to deliver a low carbon economy
- transforming the UK's strategic rail infrastructure
- protecting the economy from the current and growing risk of floods and coastal erosion

(HM Treasury, 2010, p.9)

These major infrastructure projects must be achieved to meet the future demand of the growing population, given that 'the Office for National Statistics forecasts that the UK population will grow to over 73 million people by 2035' (HM Treasury, 2013a, p.14). The Government states that from 2014-2019 thirty-eight billion pounds will have been invested in such projects, which not only increase the capacity of the railway network but additionally upgrading the existing railway infrastructure (Gov.UK, 2014a). The Government will be investing in the below major railway projects between 2014-2019:

- CrossRail – currently the largest infrastructure project in Europe
- Thameslink improvements in London
- Stronger east to west links from Liverpool to Newcastle through the
- Northern Hub
- Opening the Bedford to Oxford line
- Electrifying the network on the Great Western line
- A new 'Electric Spine' between Yorkshire, the Midlands and the south
- Replacing diesel trains with faster, more reliable electric trains on the Great Western Line to Wales and East Coast

  (HM Treasury, 2013b, p.19).

Furthermore, the Government's commitment to the modernisation programme of the railway infrastructure is demonstrated in the investment in projects such as the Thameslink and CrossRail Projects and the High-speed Rail 2 (HS2) project. The Thameslink project, approximately £5.5 billion, will create further capacity in the Home Counties and London. During peak hours, it is estimated that Thameslink will operate up to twenty-four trains per

hour. The project is due to be fully completed by 2018 (First Capital Connect, 2011). Additionally, the CrossRail project, approximately £16.6 billion will connect East and West London (Department for Transport, 2009). The estimated completion date for the project is 2018 (CrossRail, 2011). HS2 will create a high- speed route from London to eventually Scotland, with the first stages of the route being 'planned from London to the West Midlands' (Department for Transport, 2009, p.8). The projected costs of the project are £32 billion, and it is anticipated the first part of the route will be fully operational in 2026. It is interesting to note that a potential HS2 was not mentioned in the published 2000 ten-year travel plan, Transport 2010, rather than building new routes the report focused on the existing routes and infrastructure requiring upgrading (Gourvish, 2010).

What is apparent from the Governmental literature reviewed around the railway station and CNI is that there are discrepancies between the Governmental departments as to whether the railway station is part of the CNI or whether it must be considered as critical local infrastructure. As discussed in the previous sections, this is dependent on the size, location, and function of the railway station. It suggested regardless as to whether the railway station is considered to be critical 'local' or 'national' infrastructure, it is a component part of this system (Department for Communities and Local Government, 2009, p.20), and cannot function in isolation. Therefore, them to operate, they must engage the services of other CNI. The Government is adamant 'these networks are integrated and resilience is vital... not only for growth but also the UK's international competitiveness' (HM Treasury, 2010, p.7).

Therefore, the role of the railway station is critical to the current and future sustainability of the urban environment (Conticellia, 2011). The complex and interconnected physical, operational, and legal functions of the railway station and the concept of resilience need to be seen in current and future terms of a 'balance between economic, social, and environmental priorities' (Banister, 2005, p.3). However, potential conflicts between the differing agendas and targets of the railways 'physical and functional' (Conticellia, 2011, p.1097), and sustainable urban redevelopment must be established to ensure effective assimilation of policies. It is important to realise a 'resilient and sustainable future for the built environment' (Bosher *et al.*, 2007, p.236), particularly for minimising the effects of emergencies at the design stage of projects, rather than an as an add-on or retrofit measure. Hence, decisions, which are made now concerning the construction of major infrastructure projects, will have an undoubted effect on future generations.

At present, the building of new railway stations is deemed a 'nationally significant infrastructure project' (Department for Communities and Local Government, 2009, p.20) and is covered by Chapter 29 of the Planning Act 2008, established by the Infrastructure Planning Commission. Along with conforming to the Planning Act 2008, for railway stations to be constructed they must also gain planning permission for 'permitted development' as stated in the Town and Country Planning (General Permitted Development) Order 1995) (Department for Communities and Local Government, 2009, p.29). The importance of the sustainability political agenda can be seen in section eight, part ten of the Planning Act 2008, which stipulates the Secretary of State has a responsibility to ensure that new railway station projects contribute 'to the achievement of sustainable development' (Department for Communities and Local Government, 2009, p.17). This should be achieved through a high-quality design that mitigates and adapts to climate change (Department for Communities and Local Government, 2009, p.17). From reviewing this policy, it is clear to see the sustainability agenda is considered critical when building new or refurbishing railway stations. However, there is a policy disconnect which fails to consider security measures and ensuring public safety in the Planning Act 2008. In the following chapter, security measures are discussed in the policy section, yet these also show significant disconnections in policy and much to do with security is guidance, rather than legislation.

As discussed in section 2.6 of this chapter, the railway station in England and Wales is interdependent on numerous CNI's; these interdependencies will produce unintentional tensions with other political agendas. Within the Infrastructure Plan 2010, the Government is quite clear that energy infrastructure should be progressing towards achieving the objective that by 2020, fifteen percent of the energy generated in the UK will originate from renewable sources of energy. These sources of renewable energy will also aid the Government in achieving a reduction of 'greenhouse gas emissions by 34 percent relative to 1990 levels' (HM Treasury, 2010, p.9). This directly affects the railway infrastructure in the UK, specifically in terms of energy for powering trains and within the railway station, as it will be targeted to reduce its emissions.

Within the 2010 National Infrastructure Plan, the Government quite clearly mentions that the political agenda surrounding the issues of climate change is a driver towards upgrading and investing in Britain's CNI and estimate by 2015 to have invested £200 billion pounds during this undertaking (HM Treasury, 2010, p.7). However, they are very ambiguous when

acknowledging 'other threats and hazards' (HM Treasury, 2010, p.7). The railway station is not mentioned as an individual part of the railway infrastructure within the confines of the National Infrastructure Plan 2010. Therefore, it can only be assumed the railway station currently is regarded by the Government as part of the railway infrastructure.

3.20 Meeting Future Policy Challenges for the Railway Network

The railway network and therefore inevitably the railway station will continue to feature prominently in the future transport programmes within the UK. It has been proposed that by 2055 intelligent transport infrastructure systems will require minimum investment but will be able to produce efficiently a maximum return (Curry *et al.,* 2005, p.6). Furthermore, it is highly probable that the role of the railway station will be impacted on by changes in the way we live and work, which could see people having to commute less for work and thus allowing the railway network to operate with more efficiency (Curry *et al.,* 2005). Therefore, these intelligent transport infrastructure systems will utilise developments in technology and science to create a system, which is 'robust, sustainable and safe' (Curry *et al*., 2005, p.5).

Moreover, when considering either the short or long-term future of resilience of the railway network to both natural and malicious threats policy makers and stakeholders cannot fail to acknowledge the problems 'of climate change and global warming' (Curry *et al.,* 2005, p.5). To develop a sustainable infrastructure with environmental responsibility, the Government and the railway sector should be aspiring to three long-term goals; capacity is increased, a quality service for passengers and realising the full environmental capability of the railway infrastructure.

3.21 Chapter Summary

This chapter has examined the function and nature of SPIRS and other Category A railway stations in England and Wales. It has discussed the size, complexities of the railway station and the intrinsic link in the nature of the railway station to the increased complexities in the multiple stakeholders involved in the design and operation of the railway station. The current diverse functions of the railway station are vital in securing its place in the future in the urban environment as a crucial element of a 'multilayered integrated transport network' (Bruinsma *et al.,* 2007, p.5). However, SPIRS and other Category A railway stations in England and Wales are extremely disparate and complex in its governance, with both public and private sector stakeholders charged with its physical, operational and legal functions including upholding the current and future resilience to security threats. The following chapter investigates the

existing and potential security threats, which can impact on the resilience of the railway station, the prevention measures and resilience and security policies that can be utilised to increase the resilience of the space to such threats.

CHAPTER FOUR SECURITY THREATS

4.1 Chapter Introduction

This chapter is concerned with examining the potential human malign security threats to SPIRS and other Category A railway station. Chapter Two has detailed the complexities of the function and operation of the railway station, which combined with the knowledge in this chapter, presents areas of explanation of how the multiple stakeholders in such a multifaceted and entangled space currently plan, prevent, and manage human malign security threats.

SPIRS and other Category A railway stations in England and Wales, due to their function are essentially open access spaces, as discussed in Chapter One, at certain points during the day, such as peak rush hours in the morning and the evening can be considered as crowded spaces. Therefore, a greater number of passengers and other members of the public are channeled within a comparatively constricted area, which both historically and presently means railway stations can be considered as prime targets for both terrorist and criminal activities (Gregson-Green, *et al.*, 2103 and Kimmance and Harris 2013).

Furthermore, the space at these peak times is favourable to crime and disorder issues such as 'pickpocketing, indecent assaults, robbery and vandalism' (Morgan and Cornish, 2006, p.1). Thus, this chapter will examine these two forms of human malign activity separately, while looking at how fear affects passengers and the public perception of both terrorism and crime. Crime prevention measures (CPMs) and counter-terrorism measures (CTMs) will be analysed. The first part of the chapter will examine the definitions and theories that surround the concepts of crime and terrorism.

PART ONE – THE DEFINITIONS AND CONCEPTS OF CRIME AND TERRORISM

4.2 Definition of Security Threats

It is critical to understand how security threats are defined, thus the research and the subsequent thesis defines security threats to the railway stations 'as any human malign action from terrorist activity to low level crime such as anti-social behaviour' (Gregson-Green *et al.*, 2013, p.35). The distinction between crime and terrorism is exceedingly disputed; they have extremely heterogeneous drivers and objectives (Gregson-Green *et al.*, 2013). Cochrane and Talbot (2008, p.2) suggest that 'the search for security and the threat of insecurity' have become critical and entangled concepts today.

Terrorism should be recognised as a crime given the actions of both 'cannot be morally condoned' (Stevens, 2005, p.525). It should be noted that the cornerstone of many CTMs, such as target hardening are based essentially on existing crime prevention strategies (Fussey, 2007, p.174). These measures should be individually considered but it does not necessarily denote 'they are-or should-be used in the same way' (Fussey, 2007, p.187). Chapter Seven will examine the duality of prevention measures (Fussey, 2011) within the context of SPIRS and other Category A railway stations in England and Wales.

4.3 Definition and Theory of Crime

To discuss crime within the context of the railway station, itis important to understand the key arguments of what is meant by crime and why it happens. However, as with numerous other theories, the definition of crime is contested, its disposition being governed by temporal and spatial dynamics and by the conjectural standpoint of whoever is delineating the concept (Henry, 2006). Therefore, the question of 'what is crime?' is profoundly reliant on which of those essential principles are being highlighted or adhered to (Henry, 2006). However, Tilley (2002) asserts that crimes are interdependent and are influenced by the socially constructed emotions of, risk, fear, and insecurity. Moreover, 'crime' is defined depending on 'the historical and cultural contexts in which it is embedded' (Hughes, 1998, p.56). Hillyard and Tombs (2004, cited in Newburn, 2007) argue a more radical line that 'crime has no reality beyond the application of the term to particular acts' (Newburn, 2007, p.6). Furthermore, it is the powerful actors in society who delineate an act as criminal, 'through social and cultural processes that are...played out separate from the essence of the act itself' (Presdee, 2000, p.16).

Nonetheless, regardless of the disparities between the definitions of crime, there are inherent factors, which are located in the temporal and spatial dynamics, which do establish whether an action is considered a crime. These are detailed below;

- **Harm** – refers to the type of victim, injuries obtained, the extent of them and the severity and nature of them
- **Social agreement or consensus** – considers whether society as a whole sets the constituent norms on whether harm has occurred
- **Official society response** – legislative consensus on what actions and any subsequent harm can be determined as a crime. This also encompasses law enforcement

against those committing the predefined harms. (Adapted from Henry, 2006, p.79)

4.4 Definition and Concept of Terrorism

As with the theory of crime, terrorism is extremely contested and per se, there is not a definitive fixed definition of the term (Laqueur, 1999). It is this lack of an unqualified definition which some commentators have argued has led to the definition becoming polymorphic (Gregory, 2003, p.19), and interchangeable 'according to political necessity' (Brennan, 2003). This transposable and 'polymorphic' requirement is demonstrated by the three-different state's legal definitions of what represents acts of terrorism in these specific countries.

In the UK, section 1 of the Terrorism Act 2000 offers a legal state definition of what constitutes acts of terrorism and 'the prosecution of certain offences, the preservation of peace and the maintenance of order' (UK Parliament 2000, p.6). The Act defines terrorism as

> the use or threat of action which is designed to influence the government or to intimidate the public or a section of the public, and the use or threat is made for the purpose of advancing a political, religious or ideological cause.
> (UK Parliament 2000, p.6 and Roach *et al*., 2005, p.7)

In the United States, the United States Code, Title 22, Chapter 38 defines terrorism as

> premeditated, politically motivated violence perpetrated against non-combatant targets by subnational groups or clandestine agents.
> (National Counterterrorism Centre, 2011)

However, the Dutch Government defines terrorism as follows;

> terrorism is (...) threatening, making preparations for, or perpetrating, for *ideological reasons*, acts of serious violence directed at people, or other acts intended to cause property damage that could spark social disruption, for the *purpose of bringing about social change or creating a climate of fear among the general public, or influencing political decision-making*.
> (van de Linde and van der Duin, 2010, p.2)

What can be seen from the above extracts is the definition and concept of terrorism are extremely challenging, and as such, it is probable a 'definitive' definition will be perpetually contested. Thus, it can be rationalised that the only givens in the numerous definitions of

terrorism are all acts of terrorism implicate and contain 'violence or threats of violence' (Laqueur, 1999, p.6).

4.5 Crime and Terrorism Contested

Security threats to SPIRS are presented by both criminal and terrorist activities. Yet again, the demarcation between crime and terrorism is extremely contested. Fussey (2007) maintains the divisions between those considered as terrorists or criminals have become indistinct and traditional CPMs are being deployed to combat the risk of terrorist attacks. Fussey (2007) further argues the lower levels of criminal activities will have a reduced level of incentive and motivation in comparison to a terrorist, yet many CPMs will deter or hinder their activities. Moreover, Clarke and Newman (2006) state, that regardless of the rationale and purposes which lie behind any act of terrorism, it should still be perceived as a type of crime. However, it is the underlying motivations of terrorism, which can weaken prevention methods of 'reducing opportunities for attack' (Clarke and Newman, 2006, p.vii). Equally, Stevens (2005, p.525) proposes acts of terrorism should be perceived as a crime given both actions 'cannot be morally condoned'. Conversely, Jones (2011, p.352) contends that acts of crime and terrorism have very diverse purposes and goals, 'terrorism...is to inflict the greatest number of casualties and achieve maximum publicity and psychological impact.' The debate of how prevention strategies are operationalised within the railway station will be examined in subsequent sections of this chapter.

4.6 The Fear of Security Threats in the Railway Station

Public concerns surrounding the problems of security in the built environment can lead to an increase in the fear of security threats, and CTMs and CPMs can be used to lessen this apprehension. Katz (2004, cited in Graham, 2004, p.17), puts forward the argument that terrorism, leads the public to experience a 'pervasive crisis in feelings of safety in everyday life' (Graham, 2004, p.17). This fear of terrorism is exemplified when incidents occur, such as power outages, failures in telecommunication networks, and aviation accidents are instantly questioned as potential terrorist attacks.

The fear of crime can be defined as 'a rational or irrational state of alarm of anxiety engendered by the belief that one is in danger of criminal victimization' (McLaughlin, 2006, p.164). The fear of crime has become normalised within society and even if people are not the victims of an actual crime, they are still victimised by the 'threat and some of us live in fear of it' (Furedi, 2006, p.2). Moreover, this fear can be amplified by the physical

environment of the railway station and issues such being a crowded space at peak times during the day and a lack of physical presence or supervision by members of staff (Morgan and Cornish, 2006, p.1). This can be outside of peak hours and can be seen to 'contribute to vandalism, graffiti, robbery of staff and passengers, assaults of staff and passengers…fare evasion' (Morgan and Cornish, p.3).

The fear of crime is spatialized and temporal, altering with the locations and times people find themselves in (Taylor, 2001 and Waters, 2006). Hence, the fear of security threats is a social construction, and the multiple stakeholders regardless of their position and function in the railway station must account for how and where the public consider the issue of crime to be situated (McLaughlin, 2006). It is contended 'the search for security and the threat of insecurity' (Cochrane and Talbot, 2008, p.2) are entangled concepts that are social constructs. This pursuit occurs on a broad continuum, from national to global issues, which are construed and interpreted temporally 'into national and local policy initiatives relating to…crime control' (Cochrane and Talbot, 2008, p.2). For instance, the issue of 'personal security (feeling safe from threats of violence or incivility)' (Cochrane and Talbot, 2008, p.3) is positioned in the personal and localised space of the individual and can be viewed in terms of local policies, such as CPMs to keep the public safe from crime.

In recent years, the media has portrayed railway stations as places rife with crime, which strike fear and concern for passengers (Cozens *et al.,* 2004). This coverage through amplification can raise the public's awareness of issues within the railway to be disproportionate. It is recognised in passenger surveys that the fear of crime being committed while in a railway station in Britain is a key worry for passengers. Much of the research into the railway station and crime has been centered on the fears and concerns of passengers over their personal safety while waiting or passing through it. The research of Cozens *et al.* (2004) focused on these fears, specifically in terms of visibility, of passengers waiting on railway station platforms in Wales. Platform shelters often provided passengers with reduced visibility, which could lead to fears of personal safety, resulting in passengers feeling less secure (Smith, 2011). Passengers and customers using railway stations have expressed dissatisfaction with their perceived personal safety within both the railway station and the associated car parking facilities (Smith, 2011). Additionally, there is a level apprehension and fear articulated by passengers regarding a lack of staff presence and

their availability at railway stations (Smith, 2011). Indeed, 46% of passengers, who frequented unstaffed/partly staffed stations, regarded their personal security as poor (Smith, 2011, p.14).

However, the danger and fear of terrorism can be viewed as 'national security (protects the nation from internal and external threats)' (Cochrane and Talbot, 2008, p.3), and this is positioned in distant space of uncertainty and insecurity. Yet, without a doubt, the concepts of security and insecurity are intrinsically interconnected in the everyday and specifically when considering the resilience of SPIRS. Therefore, the pervasive implementation and operation of prevention measures in a railway station, 'from CCTV…to security announcements…may serve to remind us continually of the threat, paradoxically making us feel more insecure' (Cochrane and Talbot, 2008, p.7).

Cozens *et al*. (2004) and Waters (2006, p.249) suggest the fear of crime can be reduced by 'manipulating the physical environment to improve perceptions of personal safety'. Railway stations should have money invested in their prevention measures to break the 'vicious spiral' that can develop from a lack of investment which 'will not only harm the transport system but also the communities that depend on them' (Morgan and Cornish, 2006, p.3). Therefore, the organisational multiple stakeholders of the railway station must undertake initiatives to reduce and minimise these worries over security threats, crime, and terrorist (Cozens *et al*., 2004). However, there are differences in the perception of being a victim of crime and the actual empirical data of becoming one (Taylor, 2001). There are discrepancies between the actual and the seeming chances of being a victim of crime (Innes, 2011). For instance, in the period 2010-11 the Crime Survey reported the number of actual reported violent crimes as three percent, whereas those taking part in the survey, thirteen percent 'thought that they were very likely or fairly likely to be a victim' (Innes, 2011, p.84) of this type of crime. The below table highlights the 'factors contributing to fear' (Morgan and Cornish, 2006, p.8) among passengers and the public.

Table 4.0 Factors leading to increased fear in passengers and the public (Source: adapted from Morgan and Cornish, 2006, p.8)

Lack of visibility	Inappropriate or inadequate lighting Poor lines of clean sight Recesses allowing hiding places for potential offenders Overgrown vegetation around the boundaries
Perceived lack of protection or assistance	Lack of other passengers Lack of visible rail staff Lack of CCTV surveillance Insecurity caused by poor design features – corridors and long flights of stairs
Passenger uncertainty	Lack of familiarity with the space Inadequate or confusing signage
Perceived lack of control or care	Badly maintained space – litter or graffiti Presence of perceived disorderly people – drunks, beggars, homeless people, and rowdy young people Overcrowded spaces Lack of boundaries between the station and surrounding area
Previous victimisation or awareness of others being victimised	Having been a victim of crime previously in the space or similar Observing others being the victims of crimes

Network Rail is endeavouring to address these concerns, by proposing during the period of 2014-2019, through a programme of refurbishments and improvements, the National Stations Improvement Programme (NSIP). It is anticipated these refurbishments and improvements will help to enhance the security of passengers, for instance;

- enhancing the ambience of railway stations
- increasing levels of lighting
- "open" architecture
- parking amenities are enhanced
- upgrading and improved CCTV

(Network Rail, 2011f, p.104)

The merits and disadvantages of these measures are discussed in further detail in

Chapter Seven.

4.7 The Railway Station and Crime

Acts of terrorism are not the only threat posed to the railway station. In fact, passengers and the public who use the station are more likely to be the victims of criminal activities, rather than the victim of a terrorist attack (Powell and Fletcher, 2010). The Association of Train Operating Companies (ATOC), the trade association for the TOCs, state a primary factor to the increase passenger numbers on the railway will be the continued improvement and investment in the security and policing of the railway network (ATOC, 2010). Therefore, ATOC argues the continued visibility of the BTP to rail passengers, is a critical part of reducing the anxieties and concerns towards crime on the railway networks.

Since 2003/2004, reported crime figures for the railway network have dropped by 21,000 cases (ATOC, 2010). In the period 2010/11, there was a consecutive seventh annual reduction in reported crimes on the British railway network. Reported figures for violent crime and robberies decreased by 2.8% and 1.6% respectively for the period (British Transport Police, 2011). However, an acquisitive crime such as the theft of copper cabling on the railway network, according to the BTP increased by 70% between 2009/10 and 2010/11 (Chaplin *et al.,* 2011). It can be speculated that at the time there were sudden high rises on the world markets for copper, which could well have spurred this rise in the theft of copper cabling from the railway network (Chaplin *et al.,* 2011).

Reported crime figures from the BTP are excluded from the Crime Survey, these annual figures are comprised of Home Office only police forces. Furthermore, a considerable number of crimes committed on public transport are not reported. Cozens *et al.,* (2004) propose there are many reasons why victims do not report crimes to the BTP such as lack of time, no appropriate authority figure, and believe perpetrator will not be apprehended. The definition of crimes and anti-social behaviour recorded by the BTP for the railway and underground networks are as follows:

Robbery – is defined in common law as taking the property of another, with the intent to permanently deprive the person of that property by means of force or fear.

Violence against the person – is the act of intentionally causing injury.

Staff assaults – are a specific violence against the person crime, targeted at staff of transport

operators.

Sexual offences – includes rape, serious sexual assault and assault where a person intentionally touches another person, the touching is sexual, and the person does not consent.

Hate crime – is any criminal offence that is motivated by hostility or prejudice based on the victim's disability, race, religion or belief, sexual orientation or gender.

Theft and handling – is the dishonest appropriation of property belonging to another person with the intention of permanently depriving the other of it.

Criminal damage – crimes where a person intentionally or recklessly destroys or causes permanent damage to another person's property.

Disturbance – in its simplest form is an interruption of a state of peace or quiet, including public disorder and bylaw regulation breaches.

Fraud and forgery – is an intentional deception made for personal gain.

Line of route – formerly known as trespasses and vandalism. It includes putting obstructions in front of trains, trespassing, and vandalising the railway infrastructure.

Drugs – includes distribution, purchase, sale, and delivery of controlled substances.

Pedal cycle thefts – the dishonest appropriation of a pedal cycle.

(Greater London Authority, 2010, p.85-86)

PART TWO – TERRORISM AND THE RAILWAY STATIONS

4.8 The Risk of Terrorism

There is no certain or singular method of evaluating the risk of terrorism, just as there is not an uncontested definition of terrorism. However, it is possible to consider terrorist risks to the railway station as consisting of three elements 'threat, vulnerability and consequences' (Willis *et al*., 2005, p.xvi). Individuals or groups who wish to 'advance a political, religious, or ideological cause of action' (Townshend, 2002, p.3) can use the threat of deadly acts of violence against the state, citizens or organisations. Threats of attacks on the railway station can be considered in terms of 'the probability' (Willis *et al.,* 2005, p.xvi) of them being the target of a terrorist attack. It is contended the operationalisation of prevention measures has two implications 'it reduces the probability that the attacker will target the...site and it reduces the probability that an attack will succeed' (Meyer, 2011, p.2). The Cabinet Office

(2010) has produced the 'National Risk Assessment', which endeavours to predict 'the most significant emergencies that the United Kingdom…could face over the next five years' (The Cabinet Office, 2010, p.2). Nevertheless, the actual risk level of terrorist attacks in the UK is complicated to calculate and it extremely difficult to model every current and probable act of terrorism scenario (Bosher *et al.,* 2007, p.242). Moreover, Borrion *et al*, (2014) propose that railway systems worldwide are under threat of terrorist action against them.

Arguably, acts of terrorism generally only have a limited impact on the public, infrastructure, and economy (Bosher *et al.,* 2007, p.239). The vulnerability of the railway station can be considered in terms of the actual damaged caused if it were to be attacked, loss of life/injury and damage to buildings/economic consequences (Willis *et al.,* 2005). Therefore, the consequences of a threat can be viewed in terms of extent and destruction/disruption of a 'successful terrorist attack' (Willis *et al.,* 2005, p.xvi). If the railway station is resilient to an act of terrorism, it should 'only have short term consequences' (Greenberg *et al.,* 2007, p.732, cited in Coaffee, 2008, p.4633).

4.9 The Railway Station and Security Threats

As previously discussed, railway stations are locations for criminal activities at all levels, from acts, which are deemed as anti-social behaviour to terrorist attacks (Gregson-Green, *et al.,* 2013). Acts of terrorism can 'impose some of the most serious direct and indirect costs' (Cornish and Smith, 2006, p.195) to railway stations not just in England and Wales but internationally. Due to the open nature the railway network in England, it is vulnerable to criminal and terrorist activities and as such, it must be recognised that 'railways ... cannot be protected against all...attacks' (Wolmar, 2007, p.50). This has presented and still presents the police with a challenge of countering attacks, such as explosive devices and 'the marauding shooter scenario' (Dwyer, 2011, p.10), which was exemplified by the 2008 terrorist attacks in Mumbai, India. CTMs against such attacks on the railway network and stations are extremely limited given

- the authorities are not given prior notice of the threat
- targets are crowded places
- target hardening measures such as CCTV do not act as a deterrent
- the type of attack, suicide, generally means terrorists do not have to be concerned over capture

(Dwyer, 2011)

The consequences of a terrorist attack on a railway station can

> result in deaths and injuries to passengers, staff, and members of the public; damage to vehicles and infrastructure; massive disruptions to services; and the further costs incurred on repairs to the system, medical expenses and enhancing security against further attacks'
> (Cornish and Smith, 2006, p.195)

Acts of terrorism which have taken place in the UK, Europe and USA, in the main have been against 'soft' (non-military) targets' (Bosher *et al*., 2007, p.242). Past terrorist attacks on this type of target have shown the methods chosen by terrorists are unpredictable and variable. This has been demonstrated throughout Europe during 2015, 2016 and 2017, with bombs, mass shootings, groups and lone wolf attacks at airports, music venues, sports venues, gatherings, and attacks against individuals. There have been numerous threats from different terrorist groups, with differing political agendas, and objectives, from extremely large groups to groups consisting of only a few members and to just the individual (Laqueur, 1999, p.5). It has been proposed the fewer number in membership a terrorist group consists of, the more likely the group is to be 'radical...and the more difficult to detect' (Laqueur, 1999, p.5). Furthermore, the Government acknowledge the threat of terrorism to the UK is and for the near future are from

- Islamic terrorism (considered to be the greatest threat)
- Residual terrorist groups associated with Northern Ireland
- Cyber attack
- Lone terrorism – variable motivations
- Extreme Right-Wing terrorism

(Adapted from Home Office, 2011d, p.17 and Home Office, 2011c, p.29-32)

The potential terrorist threats to the UK are defined as both state and 'non-state actors: terrorists, homegrown or overseas; insurgents; or criminals' (Home Office, 2011d, p.3). The Government maintains the current and indeed the future terrorist threats faced by the country are not the traditional hazards of war and invasion, rather the threats of modernity, such as conventional terrorist attacks, cyber terrorism, terrorist actions using weapons which are chemical, nuclear or biological, and natural hazards and accidents (Home Office, 2011d).

The greatest threat railway stations and passenger trains face currently is being the target of a terrorist bombing (Borrion *et al.,* 2014 and Powell and Fletcher, 2008). However, the infrastructure of the railway network is less of a target than trains or railway stations - 'crowded places' (Kappia, *et al.,* 2009). Many larger city and international railway stations, such as SPIRS, during the rush hour periods, can be classified as 'Crowded Places...with a transient population often unaware of the unfamiliar environment in which they find themselves in' (Jones, 2011, p.352) and as such they present an appealingtargetforterrorist attacks (Jones, 2011, p.352). Historically, in the UK when the Irish Republican Army (IRA) targeted railway stations their aims were to cause maximum fiscal and social disturbance, rather than the loss of life (Powell and Fletcher, 2008, p.12). The attacks on the railway networks and infrastructure both nationally and internationally railway infrastructure have highlighted the ability of the terrorists to inflict mass causalities in crowded places. Contemporary acts of terrorism against the railway station, national and international, have demanded the concept of resilience and security measures within the confines of the station are reconsidered and based on 'more proactive' (Coaffee and Rogers, 2008, p.104) rather than reactive strategies.

4.10 Historic Terrorist Threats to the Railway Station: The IRA

To understand current threats and CTMs, it is important to understand a little of the history of terrorist threats faced by the railway station being the target of criminal transgressions, the phenomenon of terrorists targeting the railway station is not a contemporary risk (Powell and Fletcher 2008). This is demonstrated when considering the Irish Republican Army (IRA) and their approach and methods of carrying out acts of terrorism against British railway stations. Lacquer (1999, p.33) proposed the objective of the IRA in their campaigns was 'not the total destruction of their enemy but merely a united Ireland'.

An example of a historic IRA terrorism campaign against British railway stations was the 1939 S Plan, which was a series of rapid attacks against targets. The objective of the campaign was to fiscally impact on Britain by swiftly launching numerous small-scale attacks on the CNI such as power stations, the London Underground and the railway network. During the campaign, a total of nine stations were bombed, causing significant damage to stations in London and Birmingham, with one fatality and several people were seriously injured (Bowyer Bell, 1997).

However, Powell and Fletcher (2008) argue the IRA 1991 bombing of Paddington and

Victoria railway stations in London and the threat of bombs being planted in the remainder of mainline railway stations in the capital was a more momentous terrorist drive by the IRA against British railway stations. The importance of this specific attack can be seen in the decision to evacuate the capital's mainline railway stations 'for the first time in London's history' (Cherry *et al*., 2008). Yet, more commonly, the IRA created fiscal disruption in cities in the UK by making hoax threat telephone calls, for example in 1991, five hundred stations in London were closed for five hours after a hoax bomb threat was called into the authorities. This hoax bomb threat approximately cost forty-nine million pounds and caused the maximum disturbance, with minimum risk to the perpetrators of capture and with no loss of life. Thus, this hoax was equally as effectual in causing fiscal and social disruption to the capital as an actual bomb being detonated (Powell and Fletcher, 2008, p.12). These attacks demonstrate how terrorist attacks have progressed from causing disruption, the IRA bombing campaigns in the UK, to presently where the aim of terrorist attacks against railway stations is to 'indiscriminately kill and injure as many people as possible' (Powell and Fletcher, 2008, p.7).

PART THREE: PREVENTION MEASURES IN RELATION TO THE RAILWAY STATION

4.11 Crime Prevention Measures

To minimise the opportunities for security threats to take place, a variety of procedures and practices need to be in position and activated. Situational Crime Prevention (SCP) is based on this principle which locates 'physical barriers between the opportunistic criminal and the object of the crime' (Cochrane and Talbot, 2008, p.16). The building of new railway stations or the refurbishment of existing stations aim to from the planning stage to design out crime, this is demonstrated in the SIDOS (2012) guidance, which is discussed in detail in this chapter and ChapterSeven.

The prevention measures, which are appropriate to the railway station, will be examined in the greatest depth will be those based on Crime Prevention Through Environmental Design (CPTED) and SCP measures. These forms of prevention measure are founded on altering 'the immediate conditions in which crimes are committed' (Tilley, 2009, p.103), rather than concentrating on tackling societal causes of crime (Tilley, 2009, p.103). Prevention measures are founded on 'altering the physical and social environment so as to influence behaviours' (Cochrane and Talbot, 2008, p.16). CPMs became increasingly popular during the 1980s when they were perceived to complement existing policing strategies and could potentially

offer a reduction in crime figures and the penal population (Tilley, 2002). Furthermore, the cornerstone of many CTMs, such as target hardening are based fundamentally on existing crime prevention strategies (Fussey, 2007, p.174) and are discussed as such within this review. Additionally, there is a lack of research which considers the duality of these measures (Fussey, 2011). These measures should be individually considered in terms of potential impact, conflict and benefits (Kappia*, et al*., 2009), this is because duality of function does not necessarily mean they 'should-be used in the same way' (Fussey, 2007, p.187).

CPMs as with the definition of crime are temporal, spatial, as shifting threats and targets shape discourse, and political agendas surrounding prevention measures. CPMs can be defined under the broad terminology of the 'geographies of crime' (McLaughlin, 2006, p.185), which aim to understand the multifaceted and intricate connections which are 'constructed through crime, space and place' and how individuals behave in public and their connection with city spaces (McLaughlin, 2006). Undoubtedly, crime rates within cities are higher than other environments, thus cities

> bring together large numbers of people, some of whom wish to commit crime, large numbers of crime targets of various kinds, and a relatively high level of anonymity. (Tilley, 2009, p.8)

Given the nature, size, and location of many larger railway stations, the above observation is highly significant and appropriate to SPIRS and other Category A railway stations in England and Wales and the risk of security threats.

For a crime to occur the following elements are required, 'space, time, victims, targets and offenders' (Tilley, 2009, p.8), thus by removing or limiting one of these elements reduces the opportunity for crimes to occur (Tilley, 2009, p.8). Routine Activity Theory (RAT) is also based on similar principles, for a crime to happen, three elements need to be in place, a target, an offender, and the lack of a capable guardian. Rational choice perspective is based on similar principles and argues criminals make reasoned decisions and can 'use offenders' accounts of their criminal activities to build step by step descriptions of how offenders commit their crimes' (Morgan and Cornish, 2006, p.13). Therefore, the theories claim to prevent crimes from occurring, one these elements need to be addressed to reduce the opportunity for a crime to occur (Hopkins Burke, 2005). Consequently, CPMs are relatively

simple to initiate once patterns of crime have been established, given crime 'is not randomly distributed' (Tilley, 2009, p.8) and these patterns have been acknowledged. However, CPMs are advocated for crimes committed in the public sphere and not those committed in the private sphere, for example, child or domestic abuse (Walklate, 1996). Consequently, for this literature review and subsequent chapters within the thesis, CPMs will be considered only in terms of deterrence and protection, and not the reformation of criminal (Hughes, 1998, p.18) behaviours or qualities.

Nevertheless, within in the discipline of criminology, there are many conflicting frameworks and typologies concerning crime prevention, frequently based on targets of successes (Hughes, 1998, p.18). Therefore, the concept of crime prevention is extremely obscure, with diverse meanings for different sections of society, and at different points in time. Consequently, as new crimes evolve, so too CPMs must develop and progress to face these. Hughes (1998, p.13) claims crime prevention is 'a chameleon concept'. Walklate (1996, p.297) endeavours to encapsulate the nature of crime prevention by proposing they are based on 'predicting an outcome and intervening in that process to change this predicted outcome'. Concomitantly to this, Hughes (1998, p.24) endeavours to summarise a crime prevention as

> the specific and changing institutional practices and ideological components of changing discourses of crime control structured around the symbolic and politically useful notion of prevention.

According to McLaughlin (2006, p.186), CPMs stem from geographical criminology and that the built environment through appropriate and adequate planning and usage, and the utilisation of surveillance systems can benefit from 'a reduction in the fear and incidence of crime and improvement in the quality of urban life'. As already discussed in this chapter, the fear of crime impacts on passengers and the public's perception of the railway station. It is recognised in relation to the railway station, designers and planners should be challenged to have a greater and more detailed appreciation of 'environmental criminology and patterns and trends in crime as they relate to the built environment' (Cozens, 2011, p.482 and Brantingham and Brantingham, 1998, p.53).

Moreover, the Rail Safety and Standards Board (RSSB) propose a comparable stance when

responding to crime, disorder, and fear in the railwaystation,basedontheirfour'Es'principles:

1. Engineering (similar to SCP)
2. Enforcement
3. Education
4. Enabling

(Morgan and Cornish, 2006, p.12)

These can be seen as implementation processes, 'with the need to develop avenues of co-operation and partnerships with the community anditsagencies' (MorganandCornish,2006, p.12-13).

4.12 Crime Prevention Through Environmental Design (CPTED)

CPMs, which consider and strive to design out crime (Cozens, 2011) through the understanding of how the environment affects the behaviour of potential offenders, are known as Crime Prevention Through Environmental Design (CPTED). CPTED measures were developed by Jeffery (1971, cited in Tilley, 2009) who advocated the environment could be planned and constructed to pre-empt human malign acts. Furthermore, the concept of 'defensible space' which is incorporated within the many CPTED measures was coined by Newman (1972) who maintained crime could be influenced and managed by creating and developing defensible spaces, through 'increasing difficulty and risk for prospective offenders' (Tilley, 2009, p.123) which utilise

> a range of mechanisms; real and symbolic barriers, strongly defined areas of influence and improved opportunities for surveillance; that combine to bring an environment under the control of its residents
> (Newman, 1973, p.3, cited in Cozens, 2011, p.482).

The aim of CPTED is to reduce perpetrators opportunities to commit crimes and consequently reduce the fear of being a victim of crime. Therefore, the built environment does not have to suffer from crime and the populace to be afraid. However, this can be only achieved through 'the proper design and effective use of the...environment' (Crowe, 2000, p.1, cited in Cozens, 2011, p.482). A community which is 'both safe and perceived by its populace to be safe from crime' (Cozens, 2011, p.481) is acknowledged to be sustainable. Cozens (2011) proposes CPTED measures which have been enacted in numerous countries, through policies, recommendations and approaches are an ideal

vehicle to achieve this sustainability.

However, CPTED measures are only valid and successful when they are considered in conjunction with 'spatial and temporal dynamics of the immediate and local crime problems' (Cozens, 2011, p.483). Cozens (2011) further suggests the restrictions of CPTED such as the fear of crime in an urban space are not fully acknowledged. Schneider and Kitchen (2007, cited in Cozens, 2011) advocate to reduce crime and the interrelated fear of crime, designers must design out crime by incorporating various 'academic disciplines..., theories and evidence from the field of criminology' (Cozens, 2011, p.485). Thus, by acknowledging evidence from academic research, the experiences of the multiple stakeholders within the railway station, the perception of the public concerning crime, planners can utilise a CPTED approach which is 'more holistic...beyond a simplistic, formulaic approach' (Cozens, 2011, p.490). Regardless of the merits of CPTED, crimes are too numerous, temporal and spatial in their nature, hence within the railway station, it is not possible to 'identify with reasonable certainty, any specific tactic against specific crimes' (Eck, 1997, p.16 cited in Cozens *et al*., 2004, p.25).

4.13 Situational Crime Prevention

Over the last four decades, SCP has become at the forefront of CPMs and CTMs. It proposes crimes can be averted by designing out the opportunities and provocations in the environment, systems or products that permit criminal behaviour. Therefore, SCP stresses the importance of 'the immediate features of the environment (or situation) in which an act might be committed' (Hughes, 1998, p.60). SCP endeavours to answer the question of how a crime can be prevented rather than why is a crime committed. Within the railway station, SCP can comprise of two fundamental principles, surveillance, and target hardening, again these can be applied to both the prevention of crime and terrorism. The former can be implied or explicit, public or private control measures, such as informal guardianship by individuals or formal measures such as CCTV cameras. The latter's objective is to make the committing of crime harder, frequently this can entail 'strengthening and... securing' measures in the immediate environment (Hughes, 1998, p.60).

Moreover, Tilley (2009) views SCP measures as endeavouring to seek systems to lessen and ease issues caused by crime, through modifying the opportunity structure. However, Clarke (1997, p.4, cited in Tilley, 2009, p.106) affords a formal explanation of SCP measures which

comprises opportunity-reducing measures that (1) are directed at highly specific forms of crime; (2) involvement management, design or manipulation of the immediate environment in a systematic and permanent way as possible; (3) make crime more difficult and risky, or less rewarding and excusable as judged by a wide range of offenders.

Furthermore, Morgan and Cornish (2006, p.14-15) propose that SCP can aim to reduce criminal opportunities by

- increasing the effort required to commit the offence in question
- increasing the risks of offending
- reducing the rewards of committing the crime
- reducing pressures and provocation to offend
- removing the excuses for offending

According to Mayhew *et al*. (1976, cited in Tilley, 2009, p.108) there are possibilities of utilising SCP for providing security and solutions through the use innovative low-profile measures, exploiting advances in technology, the architecture of buildings, and to 'take advantage of the natural supervision of the environment by ordinary individuals'. Specifically, within the space of the railway station, Jones (2011, p.353) advocates the following design principles should be applied to reduce the criminal opportunities:

Measure	**Location**	**Rational**
Natural Surveillance	Perimeterand interior of the station	Need to reduce areas where items and people can be obscured
Clear lines of sight	Perimeterand interior of the station	Reduced passengers fear of crime, permits easier monitoring of individuals

Zoned areas	Perimeterand interior of the station	Areas should be divisibletocontrol public access and to converge resources
Restricted areas	Perimeter an interior of the station	Should be adequately secured and monitored for unauthorised access

Table 4.1 Jones' design principles to reduce criminal opportunities in the railway station.

These measures are very similar to those delineated by Clarke's (2005, cited in Tilley, 2009) twelve methods of SCP.

Impact on potential offender behaviour/actions		
Increasing the risk	**Increasing the risk**	**Reducing the reward**
Target Hardening	Entry/exit screening	Target removal
Access Control	Formal surveillance	Identifying property
Deflecting Offenders	Surveillance by employees	Removing inducements
Controlling Facilitators	Natural Surveillance	Rule setting

Table 4.2 Clarke's twelve methods of SCP (Source: Clarke, 1995, p.109, cited in Tilley, 2009, p.112)

However, the concept of SCP has expanded further than criminal opportunities and currently accounts for 'temptations, inducements and provocations' (Cozens, 2011, p.488). Four further aspects of the direct environment could lead to probable criminal actions;

- Environmental cues can prompt criminal behaviour
- Social forces can exert pressure on individuals and encourage offending
- Situational factors can weaken moral prohibitions and permit criminal behaviour

- Immediate environment can also provoke criminal behaviour

(Cozens, 2011, p.488)

A practical illustrative example of a SCP scheme and guidelines, which are utilised in railway stations in England, Wales, and Scotland to minimise the fear of security threats, is the Secure Station Scheme (SSS). It is an example of multi-partnerships/stakeholder partnership work, 'including Local Authorities, local transport operators…local police' (Morgan and Clarke, p.21) and the BTP. Prevention measures are designed to reduce fear and crime and can include

- TheinstallationofCCTV
- Refurbishment and redecoration of facilities
- Improved lighting and signage used in stations
- Landscaping works by…community service offenders
- Removal of graffiti
- Introduction of customer service offices
- The improvement of lighting around stations
- The closing of redundant areas
- The installations of security mirrors

(Morgan and Cornish, 2006, p.21-22)

It is a national accreditation scheme for every railway station in England, Wales, and Scotland, and underground stations in London. This scheme is discussed in further detail in ChapterSeven.

4.13 IssueswithPreventionMeasures

Guerette (2008) established there are over two hundred studies, which observe and note the successes of SCP. However, CPMs are not without their critics, Tilley (2002, p.29) provides a comprehensive critique of CPMs, a summary of which are below:

- The issues of crime are overestimated, and that tolerance is required
- Risk is decreased by creating a "fortress society"
- Urban areas and communities are divisible by safe and unsafe area labels
- Individuals and groups considered at risk of committing crimes are excluded from areas of society
- CCTV and other forms of surveillance are an invasion of privacy and led or heighten

discrimination towards certain communities/individuals

- Crime is displaced into locations which cannot access CPMs or unable to implement prevention strategies
- Social inequalities and tensions are overlooked with CPMs, thus the potential of exacerbating existing crime levels or inducing new crimes
- Societal / moral problems cannot be quantified, through target setting
- Underestimation of 'social forces producing crime'
- Greater social control through 'inclusive policy' prevention measures is the only way to reduce crime figures

The criticisms of CPMs are also applicable to CTMs. A major criticism of SCP is that it does not account for aetiology, the internal predilection and dispositions or the external situation and positions, which influence the behaviour of individuals (Hughes, 1998). Young (1994, cited in Hughes, 1998, p.61) contends that SCP measures fail to deal with aetiology by implying the causations of crime 'are either relatively unimportantorpoliticallyimpossibletotackle'.

Furthermore, CPMs fail to account for the historical and cultural contexts in which crimes are committed or the rationale and incentives that influence the behaviour of would be offenders (Hughes, 1998). Hence, Young (1994, cited in Hughes, 1998), advocates the value of social crime prevention, which accounts for and strives to alter for societal factors, such as poverty, inadequate housing and unemployment, which can be could be attributed to the causation of crime (Hughes, 1998). It can be contended as well as SCP; social crime prevention additionally needs to be considered. Both, crime prevention frameworks have the propensity to be operationalised through multi-agencies, such as in the railway station, rather than just the reliance on the law enforcement of the police (Hughes, 1998). The fundamental objective of social crime prevention is to 'strengthen socialization agencies and community institutions to influence those groups that are most at risk of offending' (Bright, 1991, p. 64, cited in Hughes, 1998, p.20).

Moreover, CPMs can be conflicted, a space such as the smaller railway station can be vital to a local community. However, the socioeconomic status of the community (Taylor, 2001) and that of the railway station may not have access to the full range of CPMs which larger railway station garner due to their dominance in terms of economic and political status and

actors. This is illustrated by CPMs which lead to crime being displaced. For example, if CCTV is operationalised to combat graffiti within and on the exterior of the railway station, if successful graffiti may reduce in these areas, but may become more prevalent on buildings, walls, fences or other areas of the community a further distance from the station.

Some prevention measures are crime specific, even being broken down into further sub-categories of crime, for instance in a commercial setting, SCP often focuses only on the theft of high-value items only (Taylor, 2001). Nonetheless, in the defence of SCP, Tilley (2009, p.106) maintains, while it is not a prevention for all crimes in the targeted area, the measure of success is achieving 'the balance of effort, risk and reward are sufficiently altered that they decide not to commit the offence'. Hayward (2007) does recognise the contribution that SCP has made to influencing and reducing acquisitive or property crimes, however, he argues that in relation to 'expressive' crimes, for instance, graffiti, fighting and acts of terrorism, it is restricted. Namely, many current crimes are appearing to circumvent the process of rational choice and are

> the by-product of a series of subjectives and emotions that reflect the material values and cultural logic associated with late modern consumerism.
> (Hayward, 2007, p.232)

CPMs are based on an economic and utilitarian objective formula, and as such ignore human emotions and 'existential meanings of crime' (Hayward, 2007, p.233). Thus, suggesting CPMs are 'micro-preventative strategies' and are a temporary form of prevention as they overlook 'macro-level policy intervention' (Hayward, 2007, p.234) which are considerably costlier than CPMs. Therefore, prevention measures are not a cure for all crimes.

4.14 Counter-Terrorism Measures

The majority of CTMs deployed within the railway station are based on traditional CPMs (Fussey, 2007). Jones (2011, p.353) defines the rationale behind CTMs as 'security measures must always be to decrease the vulnerabilities and mitigate the identified threat and credible risk', thus increasing the resilience of spaces to terrorism threats. Furthermore, Grosskopf, (2006, p.1) labels CTMs as 'those physical, technological and operational measures intended to devalue, deter, deny and defend against acts of terrorism'. Many of CTMs are interconnected and interdependent on each other for the maximum resistance against terrorist attack (Jones, 2011). Moreover, Borrion *et al.* (2014, p.176) state when

looking at the security measures which need to be deployed in a railway station they must be considered in terms of three functions; 'prevention' (of attacks) by some, 'deterrence' (of offenders) by others, 'detection' (of offenders)'. They further define the 'security functionality of a system is its capability to influence the state of the world in a specific way which contributes to one or more security objectives' (Borrion *et al*., 2014, p.176).

CTMs and their resilience have evolved in relation to the changing threat of terrorism, as well as hardening the physical properties of the urban environment. The 'fast recovery of the system' (Kappia *et al*., 2009, p.2) is a primary concern, as the Government and security experts now widely accept it is not possible to design in or adapt CTMs that will guarantee 100% resilience/protection against a terrorist attack. Clarke and Newman (2006, p.vii) advocate that their approach to counter-terrorism endeavours to keep one-step ahead of terrorists and to 'act quickly to close the new opportunities they have discovered..." outsmarting terrorists"'. They further maintain that terrorism can be combated by applying the same principles as which form the basis of SCP, by identifying opportunities for attack and then determining 'economical and acceptable' (Clarke and Newman, 2006, p.vii) methods to obstruct such actions. However, CTMs must account for the 'psychological dimension to terrorism that is not always found in other types of violence' (Silke, 2011, p.1). Thus, acts of terrorism are not just founded on causing fatalities and wounding, they also encompass the psychology of fear and how society reacts and enacts these emotions (Silke, 2011, p.1)

The majority of CTMs which are currently in place British railway stations follow the SCP formula of the four d's; 'delay, detect, deter and deflect' (Jones, 2011, p.351). Thus, by utilising these principles it is anticipated the vulnerability of the railway station to acts of terrorism is lessened by

> aiming to make a station more difficult or unwelcoming to terrorists to operate within, or reducing the impact of an incident, should it occur.
> (Jones, 2011, p.351)

Jenkins (2004) suggests an effective security system can provide passenger reassurance and lessen panic if an attack does happen. There are a number of factors, which affect the decisions made to instigate the installation/improvement of CTMs within certain railway stations:

- Whether there has been a recent terrorist attack on the UK transport infrastructure
- The official governmental threat level to terrorist attack
- The role of the media in portraying terrorist attacks globally
- How up to date the CTMs are
- The power and sway of stakeholders

(Kappia *et al*., 2009, p.5)

In Singapore, the Mass and Light Rapid Transit systems through the adoption of best practice measures from the UK, France, Japan, USA and France (Dolnik, 2007) have two goals for their security strategy. Firstly, minimising causalities through deterrence, prevention, and mitigation measures and secondly, to reducing interruption of operations through stakeholder communication and robust contingency plans are in place (Dolnik, 2007, p.16).

Furthermore, the financial commitment to railway station CTMs in the USA are demonstrated by over $450 million being spent on improved and increased security measures during the renovation of New York City's Pennsylvania railway station, some of the increased and more advanced measures implemented are as follows:

- Greater levels of policing
- The utilisation of dog bomb team
- Chemical, biological and radioactive substance sensors
- Trace scanners to detect materials used in the manufacture of bombs
- Bins which are blast resistant
- Alarm systems to detect interlopers
- Barricades to prevent vehicle access

(Marcuse, 2004, p.264)

CTMs which are, balanced, appropriate, and financially viable can be accomplished through risk assessment, which can be used jointly to fully understand the likelihood of an attack on the railway station in question (Jones, 2011). However, to evaluate the cost benefits and efficacy of counter-terrorism is complex to measure and commentators such as Powell and Fletcher (2008) propose a framework, which considers the management of risk, is a more appropriate measure to determine efficacy and adequacy.

4.15 Active and Passive CTMs in the Railway Station

There are differences between CTMs, which can be employed in the railway station and can be described as 'active' or 'passive' (Kappia *et al.,* 2009). Active forms of CTMs require human operation and interventions, for instance, CCTV cameras are an active CTM since they require an operator, who if notes suspicious behaviour or an incident, is required to inform a security agent or the police to intervene. These forms of CTMs incur ongoing financial costs, for labour and equipment (Kappia *et al.*, 2009, p.2). However, 'passive' CTMs within the railway station will generally incur one off costs as they are by and large retrofitted or built into the fabric of the building (Kappia *et al.,* 2009, p.3). By considering both active and passive CTMs during the planning stages of new builds or the retrofitting of railway stations, it can aid to 'make an attack more difficult, minimise damage from an attack and recover quickly...'designing-in resilience' (Kappia *et al.,* 2009, p.4).

CTMs can also be referred to as 'target hardening' and many are founded on the principles of Newman's 'defensible space', 'to deter...through real and symbolic features' (Coaffee *et al.,* 2009, p.8). The fortification of spaces can be overtly executed, aiming to reassure the public's fears over their personal safety and that potential terrorist activities are 'likely to be in vain or at least will require a significant degree of effort' (Coaffee *et al.,* 2009, p.8). In one sense Dwyer (2011, p.5) reinforces that target hardening measures used to combat terrorism within the railway station are of value as they restrict the 'freedom of movement' of potential attackers. Effective target hardening of the railway station does not just rely on physical measures but also the education and co-operation of railway station staff and passengers. Dwyer (2011, p.5) describes how passenger information on terrorism moved from the emotive 'look out for bombs' to more reassuring and specific instructions of 'Keep your belongings with you' and to be aware of unattended bags and to report them to members of staff. Additionally, the BTP trained railway station staff to establish whether an object was suspicious by operationalising the proactive approach of 'HOT';

- **Hidden** – is the object concealed?
- **Obviously** suspicious
- **Typical** of the environment

(Dwyer, 2011, p.5)

However, as with lesser crimes on the continuum, target hardening a vulnerable part of the built environment against the potential threat of a terrorist attack, could merely spatially

displace that threat to a 'softer' target (Fussey, 2007). Additionally, it can be further contended the concept of displacement not only becomes spatial but also tactical, as terrorist alter and modify their targets and modus operandi to correspond with CTMs (Fussey, 2007). However, lower levels of criminal activities will have a lower level of incentive and motivation in comparison to a terrorist, and thus many prevention measures in the railway station will deter their activities (Fussey, 2007).

4.16 Airport Style Screening Security Measures in the Railway Station

By increasing and hardening airports to terrorism, it has displaced the threat to softer and more open forms of mass transport systems (Dolnik, 2007). Given the railway station must have open access as an operational necessity to function, the hardened airport style security measures are not effective forms of prevention (Dolnik, 2007 and Jones, 2011). Security measures, which are in place in airports, are practical as they operate on a restricted access for passengers. It is not only the cost implications of endeavouring to retrofit scanners in historical railway stations, which do not have the capacity to accommodate such measures, it is also the implications on the flow of passengers trying to navigate and utilise the network (Jenkins, 2004). Therefore, it is expected for the foreseeable future this form of security will not become a common measure in English railway stations. However, airport style security screening of passengers has proved to be successful in those railway stations in England, which are international hubs, allowing rail travel to Europe (Jones, 2011). Moreover, Kappia *et al.* (2009) propose CTMs would achieve greater acceptability from the public and the TOCs if they do not obstruct or hinder the transfer flow of the journey through the railway station to either entering the trains or exiting the building. The acceptability of CTMs in the railway stations to the public must gain acceptability with the multiple stakeholders in terms of operational and fiscal viability (Kappia, *et al.*, 2009).

Hence, the implications of CTMs, the 'acceptability...cost and performance' (Kappia, *et al.*, 2009, p.2) must not be considered in isolation rather as a whole. Jones (2011) furthers this argument by advocating there are 'acceptable' security processes, which can be integrated within the railway station, which is balanced, appropriate, and financially viable. However, Loukaitou-Sideris *et al*. (2006) contend within the cities: London, Paris, Tokyo, and Madrid, counter-terrorism strategies within the railway station are frequently in conflict with the aesthetics and openness of the network, leading to trade-offs between the differing agendas of stakeholders. One potential trade-off is that the stakeholders in the railway

station may put passenger reassurance before 'actually improving security when they view the existing risk' (Meyer, 2011, p.1).

4.17 Securing the Railway Station

Therefore, within the railway station, all hierarchical levels of stakeholders must ask what criminal behaviours within the space are 'socially and economically acceptable limits and around an average that will be considered as optimal for…social functioning' (Foucault, 1978, p.5). A prohibitive law is made up of interrelated elements, what should not happen, the ethical maxims, the punishment, processes of deterrence, and methods of surveillance (Foucault, 1978, p.2). The problem of theft can be examined by the 'apparatus of security' (Foucault, 1978, p.6) and he described it as

> security inserts the phenomenon in question, namely theft, within a series of probable events. Second, the reactions of power to this phenomenon are inserted in a calculation of cost. Finally, instead of binary division between the permitted and the prohibited, one establishes an average considered as optimal on the one hand, and, on the other, a bandwidth of the acceptable that must not be exceeded.
>
> (Foucault, 1978. p.6)

Foucault (1978) discussed the security of planned urban developments, which it is proposed is applicable to SPIRS and other Category A railway stations in England and Wales. As examined in Chapter Three, historically, the railway station, like the urban area, was built within a vacant space, and security would try to capitalise on 'the positive elements, for which…provides the best possible circulation, and of minimising what is risky and inconvenient, like theft…knowing they will never be completely suppressed' (Foucault, 1978, p.19). The location of the building of railway stations during the 19th century and the impacts on crime in the area are discussed in Chapter Six of the thesis.

Additionally, the functions of the space of the railway station need to be planned and controlled in terms of their 'poly-functionality' (Foucault, 1978, p.19), as discussed in Chapter Three and Six, SPIRS and other Category A railway stations in England and Wales have multiple functions, which increase in complexities in relation to the size and location of the railway station. Moreover, Foucault (1978, p.20.) also maintains that future considerations must be accounted for when the function of the space is devised and constructed.

However, the future function and requirements of the space are uncontrollable, not accurately measured (Foucault, 1978, p.20) and yet, the security plans of space should allow for future occurrences and needs. Therefore, the approximating of these unknown future possibilities, 'is…the essential characteristic of the mechanisms of security' (Foucault, 1978, p.20). Thus, the resilience and security of SPIRS are fluid and dynamic, and spatial, with its functions having to account for these improbabilities.

PART FOUR: SECURITY STRATEGIES AND THE RAILWAY STATION

This next section will discuss security policies and strategies that influence the current resilience of the railway station to security threats. As already discussed in Chapter Three, in respect to the railway station, resilience and security policies are interconnected and cannot be considered in isolation in terms of the spaces resilience to human malign security threats.

4.18 UK Resilience Strategies

As discussed in Chapter Three, the decisions which are made now concerning the construction of major infrastructure projects will have an undoubted effect on future generations. However, commentators such as Bosher and Chtmutina (2017) and Coaffee and Fussey (2017) acknowledge this interconnection yet argue both agendas are 'responsibilised' (Garland, 1996) by different levels of actors. The threats of terrorism and events such as 7/7 have pushed the resilience agenda from a top level down, with the state being 'a 'facilitator' instead of a 'builder' of resilience' (Bosher and Chtmutina, 2017, p. 268). Local level stakeholders are 'responsibilised' (Garland, 1996) and 'the security agenda [is] centralised' (Bosher and Chtmutina, 2017). Coaffee and Fussey (2017, p.293) maintain the rhetoric of resilience and its enactment is through explicit security measures are now becoming narrower forms of 'security-driven resilience'. Therefore, creating numerous consequences for governance, 'scaling and coercive implications' (Coaffee and Fussey, 2017, p. 293).

Moreover, Bosher *et al.* (2007, p.236) present an argument of a co-ordinated 'and proactive multi-stakeholder approach' to potentially reduce the vulnerability of CNI to both these and natural disaster threats. Designing new and the retrofitting of railway stations to increase resilience to security threats relies on the construction industry attaining 'an in-depth understanding of the expertise and knowledge on avoiding and mitigatingtheeffectsofthe

hazard' (Bosher,2008,p.3). This could be augmented practically by engaging and creating cross sector, public and private stakeholder relationships (Rogers, 2017 and Sircar *et al.*, 2013) with the intention of enhancing 'the quality and flow of communication…as well as the interoperability and resilience of best practice' (Rogers, 2017, p.21-22). Thus, stakeholders in complex spaces like SPIRS could be made aware of the causes of disasters and fully participate in a 'negotiated census' (Bosher *et al*., 2007, p.245) of which losses are considered acceptable and those which are not. However, there are issues with this approach being undermined by conflicting resilience agendas arising between the complex stakeholders and the Government, with tensions being caused by threats being miscalculated, the burden of resilience implementation expenditure, and the burden of obligated regulations on the private sector (Schneider, 2002, p.14, cited in Bosher *et al.*, 2007, p. 237).

The UK's political stance on the resilience of the CNI of the UK is defined by the Critical Infrastructure Resilience Programme as 'the ability of a system or organisation to withstand and recover from adversity' (Cabinet Office, 2010, p.5). The Government states regardless of difficulties, resilience methods and plans in CNI and businesses should mean central aims and operations should be attainable and realisable (Cabinet Office, 2010). The Government proposes resilience should be a holistic concept, which incorporates a suitable amalgamation 'of infrastructure networks, effective emergency response, business continuity planning, and recovery arrangements' (Cabinet Office, 2010, p.5). Yet, it is must be questioned whether this form of bridging resilience as a form of 'organising principle' can constructively beneficially unite 'whatever needs to be bridged' (Randalls and Simon, 2017, p.40).

The Sector Resilience Plan for Critical Infrastructure 2010 concedes the high level of dependencies and interconnections between the UK's CNI. However, resilience strategies within the UK are disconnected and are treated as two distinct political agendas, as resilience to natural hazards and to human malign security threats are dealt with by separate Governmental departments and policies and strategies (White and O'Hare, 2014). This is evident in the 2010 Sector Resilience Plan for Critical Infrastructure, its core aims are to create resilience plans for each of the nine defined sectors and their respective sub-sectors by 'setting out the current level of resilience of critical infrastructure and essential services to natural hazards' (Cabinet Office, 2010, p.4). Moreover, Rogers (2017, p.17) contends the

concept of resilience in policies such as the Civil Contingences Act (CCA) (2004) which deal with disasters has not overlooked the division 'between security threats and ecological or technological disasters' it has more accurately been motivated 'by comprehensive capability across all hazards'.

However, despite this cross sector and multi-hazard recognition and the recommendations of the 2007 Pitt Report concerning the floods of the same year, to date, there is not a coalesced or multi-hazard approach to reducing the vulnerability against these risks (White and O'Hare, 2014). The Sector Resilience Plan claims in subsequent plans 'other types of hazard, will be included' (Cabinet Office, 2010, p.4), yet it is proposed this statement is ambiguous as to whether human malign security threats will be incorporated into future resilience plans. Thus, the concept of the resilience in terms of the railway station is currently a two-tiered approach, which deals with natural and human malign security threats through separate policies.

A key policy that was triggered into action by natural occurring incidents is the Civil Contingencies Act (CCA) (2004). The CCA 2004 is the emergency planning policy for England is divided into two parts, emergency powers, and civil protection at a local level. Through this piece of legislation, the concept of resilience is presented through Governmentality through 'empowering local responders, whilst also providing opportunities to attempt restructuring, imposing economies of scale on a number of key agencies' (Rogers, 2011, cited in Rogers, 2017, p.18)

At this level, the Act states there are two forms of responders, category one and two, who are considered as frontline and which defines their responsibility and role in disasters to situations at a local level (Bosher 2014), see Table 4.3 below.

Category one	**Category two**
Emergency services	Private sector stakeholders, including voluntary agencies
Primary local Government authorities,	Network Rail and other transport operators

National Health Service (NHS)	National Grid
Strategic Government agencies	Utility companies

Table 4.3 Source Bosher (2014, p.245) Emergency planning in the UK

The political view of the concept of resilience in policies such as the CCA 2004 and Critical Infrastructure Resilience Programme advocate the position of 'governmentality from a distance' (Joseph, 2013, p.43), with the Government not taking 'a direct role in the process' (Joseph, 2013. P43).

4.19 Governmentality and its impact on resilience and security policies

When exploring how UK policy deals with human malign security threats, resilience has transformed into a fundamental political rhetorical statement used as an appropriate response by the government for the UK institutions, businesses and citizens to resist and recover from acts of crime and terrorism (Coaffee *et al.,* 2009, p.111). Moreover, the upsurge 'of resilience has…coincided with a greater global focus on the impact of crisis, disaster and security' (Rogers, 2017, p.16). Yet, there is not one definitive 'security resilience' (Randalls and Simon, 2017, p.39) There are many policies which coalesce elements of security and resilience 'aimed at cyber systems, critical infrastructure, and so on' (Randalls and Simon, 2017, p.39), which signify varied consequences and governmental repercussions. Resilience and security are acted out in spaces such as SPIRS and other Category A railway stations and hence it has moved forward from being 'a state based to a society-based' (Chandler, 2013, p.217) responsibility for security and prevention measures. Consequently, the role of resilience and security is becoming a decentralised/shared responsibility, from Governmental offices and departments, the devolved Governments, the regulators, and the operators of infrastructures all establishing the 'standards, determining priorities, and meeting costs of improving resilience for that sector' (The Cabinet Office, 2010, p.6).

Governmentality deals with the decentralisation of policies and responsibility of these from central Government. It questions and confronts the normalised model of top-down approaches to power by endorsing and emphasising diffused and decentralised policies such as CPMs and CTMs within spaces such as SPIRS. Moreover, Governmentality allows

'social order and socially approved conducts [to] be promoted by extending the 'reach' of the state's powers' (Fergusson and Muncie, 2008, p.119). Governmentality has been examined by post-Foucauldian commentators such as Joseph (2013) and Dean (2007) who are critical of liberal forms of governance, paying particular attention to the concept of the state withdrawing and allowing the prominence of a laissez-faire strategies to model and influence political agendas surrounding public institutions, the concern in terms of this research surrounds the responsibility of securing pseudo-public spaces, which the case study railway station of SPIRS falls into that specific category. The growing responsibility for organisational and individual awareness, readiness and 'adaptability…'bounce back'…fit with neoliberal approaches…[for] the responsibility of the individual to govern themselves in appropriate ways' (Joseph, 2013, p.41).

Foucault (1991a, p.96) proposes that Governmentality is located in the divisions of the fundamental functions of the everyday private and public institutions such as the 'family, economy, education, hospitals, prisons'. The intentions of these common and everyday institutions create a state discipline 'through neo-liberal values and customs' (Mythen and Walklate, 2005, p.385) and control through creating frames of knowledge. However, governments rely on both influencing through legitimate entitlement of explicit and implicit 'expressions of power' (Mythen and Walklate, 2005, p.385). Therefore, it is the power of the government and institutional knowledge, which control and normalize acceptable behaviour in a given society (Mythen and Walklate, 2005, p.385)

Governmentality has developed from 'the governmental practices constitutive of a particular regime of power…but 'the way in which one conducts people's conduct' (Senellart, 2009, p.388). Therefore, the concept of Governmentality is intrinsic 'to the micro-powers, whatever the level of analysis being considered (…individual-public power)' (Senellart, 2009, p.388). Foucault (1978, p.2) maintains a series of methods play a part in safeguarding processes of power. Consequently, these processes of power are not 'self-generating' (Foucault (1978, p.2), but an inherent and central part of relationships. Foucault's apparatuses of security are operationalised by Governmentality by incorporating policing; the armed forces and any other institution which endeavours to achieve the ideal and correct operation of the economy, 'vital and social processes' (Dean, 2010, p.29). It is argued that these relationships of power exist today in the space of the railway station and the stakeholders who interact with each other. Passengers, TOCs, BTP, Network Rail, the

Government, regulators, criminals all exert some form of power over other stakeholders. It is possible to examine these processes of power in SPIRS to identify what is specific about them at a given moment, for a given period, in a given field' (Foucault, 1978, p.2). Foucault's perception of governance helps us to discover 'what the concept of resilience is actually doing' (Joseph, 2013, p.40). Resilience can be seen in terms 'of the changing organisational structure of the advance liberal societies' (Zebrowski, 2008, cited in Joseph, 2013, p.40) and not just by means of 'the changing nature of security threats' (Joseph, 2013, p.40). Thus, resilience through governmentality should endeavour to evolve past reactive 'bounce backability' to be a vehicle which generates 'adaptable subjects capable of adapting to and exploiting situations of radical uncertainty' (O'Malley, 2010, p.12, cited in Joseph, 2013, p.40).

Within spaces such as SPIRS, governmentality through the enactment of resilience and security policies and strategies, 'responsibilisation' (Garland, 1996) is at the heart of crime and terrorism prevention measures. The control of prevention measures in SPIRS has 'devolv[ing] responsibility for crime prevention onto agencies, institutions, and individuals which are quite outside the state and to persuade them to act appropriately' (Garland 1996, p.452). Consequently, as more of the complex and multiple stakeholders are responsibilised and given the power to secure a railway station, thus 'so are the powers of Government are extended to how [the stakeholders] conduct themselves' (Fergusson and Muncie, 2008, p.119). However, paradoxically, the more responsibility and control that is dispersed to the multiple stakeholders in the railway station, the power of the state is tempered as they 'cannot monitor and control' (Fergusson and Muncie, 2008, p.119) their actions.

4.20 Resilience and Security Responsibilisation Strategies

Thus, there has been a development of a new mode of political regulation concerning security strategies, which Garland (1996) described as a '*responsibilisation strategy*'. The Government has sought to enhance overt methods of state agencies crime control such as the police and the judicial system, by operating covert methods 'to activate action on the part of non-state agencies and institutions' (Garland, 1996, p.452). This strategy is the cornerstone of the devolution of the Government's crime prevention strategies, with discourses of "'partnership', 'inter-agency co-operation', 'the multiagency approach', 'activating communities', creating 'active citizens', 'help for self-help' (Garland, 1996, p.452) being at the forefront. Responsibility for the control of crime has shifted to 'agencies,

organizations and individuals which are quite outside the state and to persuade them to act appropriately' (Garland, 1996, p.452).

With respect to the resilience of SPIRS and other Category A railway stations to human malign security threats, this overt method of crime control has become prevalent in the UK, with a number of stakeholders charged with tasks of prevention, from Network Rail, retailers, TOCs, passengers and public. The Government operationalises responsibilities and strategies by ensuring non-state agencies conform to these new duties through statutory changes and or encouraging modifications or innovative behaviour or halting existing practices (Riley and Mayhew, 1980, p.15, cited in Garland, 1996). The BTP, Network Rail, TOCs and retailers are all expected at a local level to unify and implement their corporate (often national) resilience and security policies alongside national Governmental resilience and security policies. Thus, private sector key stakeholders and even the public within SPIRS and other Category A railways stations in England and Wales are and have intersecting responsibilities for controlling and preventing crime and terrorism. The public and passengers alike, except when they are in the railway station to be in a safe and secure environment. Rogers (2017, p.20-21) maintains in terms of resilience, on the whole, the public has a 'passive role…recipients of warning and informing information…not directly consulted or engaged…governance fulfils its obligation to protect by providing generic information on dangers'.

Contrary to Rogers' (2017) position of a passive public in terms of governance and resilience, there is a very strong reliance on the public to be the informal eyes and ears in railway stations today. The BTP and Network Rail use campaigns to increase and maintain passenger/public vigilance to security threats, with the objective of such strategies 'to raise consciousness, create a sense of duty, and thus change practices' (Garland, 1996, p.452). Moreover, Fergusson and Muncie (2008, p.119) maintain the state has become a 'dispersed, decentralised [form] of governing'. Hence, organisations and agents of security control have 'become self-managing and Governments 'govern at a distance' through them' (Fergusson and Muncie, 2008, p.119). Thus, the concept of resilience can be described as a neoliberal vehicle for governmentality, with 'the opening up of new areas…of private enterprise and individual initiative' (Joseph, 2017, p.162) with stakeholders such as designers and planners, Network Rail and retailers within spaces such as SPIRS responsibilised to make their own choices regarding CPTED and SCP and they are

'expected to follow competitive rules of conduct' (Joseph, 2017, p.162). An example of such a scheme is the Secure Station Scheme (SSS) which is a practical example of a crime prevention scheme for railway stations in England and Wales which governed by the state through the DfT, governed at a local level by the BTP and implemented by the TOCs and or Network railway within the stations.

Furthermore, at a state level, the Government executed through the DfT protects transport, its infrastructure and the public through a policy called 'Managing the risk to transport networks from terrorism and other crimes' (Gov.UK, 2012). The overarching remit of this security policy purports that security protection should not come at the cost of effectiveness and efficiencies of transport systems should be proportionate, and risked based (Gov.UK, 2012). There is a suite of policies and strategies that are applicable to the resilience of SPIRS to human malign security threats, which are part of the wider counter-terrorist strategy CONTEST 2011 (Gov.UK, 2012). However, it is argued that the Government stance regarding CONTEST is considerably less laissez-faire then crime prevention strategies, with CONTEST being openly 'guaranteed by the state and the apparatuses of security' (Joseph, 2017, p.162).

4.21 CONTEST Strategy

The Centre for the Protection of National Infrastructure (CPNI) provides protective security advice aimed at reducing the vulnerability of CNI to national security threats but has no such role in relation to natural hazards (Cabinet Office, 2010b). At present, a wide-ranging strategy is charged with the protection of the UK's CNI from terrorism, this forms part of the UK's principal counter-terrorism strategy (CONTEST), where the area sponsor departments, such as the DfT, are responsible for determining the appropriate security methods for their areas and CPNI supports this programme of work. The CONTEST strategy is an example of a policy that straddles the interwoven aspects of resilience and security (security-driven resilience, Coaffee and Fussey, 2017, p.294). It has provided the Government with a strategy which fits a neo-liberal model of 'responsibilisation 'for a powerful top-down, state driven logic for 'resilience' '(Coaffee and Fussey, 2017, p.295). There is also a strategic framework is in place (CNI Protection in the UK: Framework and Guidance) which provides a common foundation for activity by all those involved in national infrastructure protection from counter-terrorism and other national security threats. Chmutina *et al.* (2016, p.71) remind us that 'the resilience agenda goes hand in hand with the security agenda in the UK'.

Furthermore, the prepare strand and work under CONTEST are being taken forward by The Cabinet Office to build capabilities within the resilience community to respond to threats and hazards identified in the National Risk Register. The Critical Infrastructure Resilience Programme will seek to align with the CONTEST strategy and existing processes and procedures will be adopted where possible to provide a coherent and consistent approach to building resilience across sectors to all risks and threats, including natural hazards' (Cabinet Office, 2010b, p.11).

> The aim of CONTEST is to reduce the risk to the UK and its interests overseas from terrorism, so that people can go about their lives freely and with confidence.
>
> (Gov.UK, 2011)

Therefore, the primary objectives of CONTEST appear to holistically deal with terrorism, through the detection and capture of terrorists and supporting local communities to confront and challenge grass-roots extremism (Silke, 2011). Consequently, endeavouring to lessen the threat of acts of terrorism occurring and to lessen the effect of such incidents (Mottram, 2006, cited in Fussey, 2007, p.176). The concept of resilience is advocated in the strategy as Government maintains 'resilience best enables communities to adapt to new security risks, withstand threats and show continuity in the face of adversity' (Joseph, 2017, p.163)

Below are the four P's strands of the 2011 CONTEST Strategy:

- **Pursue**: to stop terrorist attacks;
- **Prevent**: to stop people becoming terrorists or supporting terrorism;
- **Protect**: to strengthen our protection against a terrorist attack; and
- **Prepare**: to mitigate the impact of a terrorist attack.
  (Home Office, 2011b)

However, the CONTEST strategy does not guarantee to eradicate the threat or the impact of acts of terrorism and this reflects 'the impossibility of entirely preventing terrorist attacks' (Fussey, 2007, p.176), given the principal of the strategy is 'to reduce the risk to the UK' (Gov.UK, 2011). Nonetheless, under the Protect strand, there has been a sustained effort to lessen the susceptibility of the railway station to terrorist attack, consisting of 'protective physical measures, selective screening and better security for transport infrastructure' (Home Office, 2011c, p.82). Such measures in major railway stations have incorporated putting in place fixed

vehicle barriers, retrofitting security systems when railway stations are being redeveloped and the recognition of potential forms of screening technologies for passengers (Home Office, 2011c). Randalls and Simon (2017, p.45) maintain security policies and strategies for infrastructure in the UK overtly aspire 'for self-healing systems and security that is emergent, inherent and 'designed in''. However, Gregory (2009) proposes that operationalising the Protect strand of CONTEST through planning and design is subject to discord among architects. However, the Royal Institute of British Architects maintains architects do have a function to play in designing out terrorism (Gregory, 2009).

Between 2011 and 2015, the following elements relevant for the protection of the railway station fell under the Protect strand of CONTEST:

- Strengthen UK border security (Relevant to Eurostar Hubs);
- Reduce the vulnerability of the transport network;
- Increase the resilience of the UK's infrastructure; and
- Improve protective security for crowded places.
  (Home Office, 2011c,p.80)

The CONTEST strategy already has a role in the protection of CNI from threats and acts of terrorism, with each of the nine CNI sectors sponsoring departments being accountable for determining the 'appropriate security approach to be taken for their sector' (Cabinet Office, 2010b, p.11). Moreover, the Government proposes the alignment of the CONTEST strategy and the Critical Resilience Program will endeavour to 'provide a coherent and consistent approach to building resilience across sectors to all risks and threats, including natural hazards' (Cabinet Office, 2010b).

The operationalisation of the CONTEST strategy is the responsibility of numerous Governmental departments, secret services, police forces, other public agencies, at both regional and local levels of Government, the private sector, and community groups (Gregory, 2009, p.1). It can be argued that resilience and security are 'responsibilised' (Garland, 1996) through multi-agency partnerships between organisations and also the public, yet in truth the Government is advancing a specific agenda when acts of terrorism advance the legitimacy of resilience and security policies and strategies.

'The government is constructing a sphere of governance which it oversees from a

> distance through the use of powers… Policy emphasises that individuals, communities and the private sector take responsibility for their welfare and economic and social well-being. These 'stakeholders' are required to familiarise themselves with possible risks and learn how to make informed decisions'.
> (Rogers, 2017, p.44)

The CONTEST strategy is an example of how through Governmentality that the concept of resilience has become a vehicle to address security issues and as such develop 'the growth of security-driven resilience' (Coaffee and Fussey, 2017, p.294).

4.22 Section 17 of the Crime and Disorder Act 1998

Section 17 of the Crime and Disorder Act 1998 specifically concerns the involvement of police crime prevention officers at the design stages of building and refurbishment projects of railway stations in England and Wales. The Act builds on the theoretical stance that if community safety programmes and CPMs and strategies are to co-exist and efficiently then it would need to be carried out as holistic multiagency and stakeholder work (Nacro, 2002). The Crime and Disorder Act 1998 is a critical piece of legislative evolution as it recognises that Home Office Police Forces could no longer be considered the 'primary crime prevention agents' and provides a statutory duty through 'a framework for partnership working at a local level' (Nacro, 2002, p.6) for Local Authorities and the police. This partnership must through the framework:

> identify, through local crime and disorder audits and consultation, key local crime and disorder priorities, formulate strategies to assist in tackling these key priorities and reduce crime at the local level monitor and evaluate those strategies.
>
> (Nacro, 2002, p.6)

Therefore, it should be noted that Home Office Police Forces must be involved from the design stage of building projects, and to work with a range of responsible stakeholders to ensure CPMs are viewed as critical as other legislative obligations. Conversely, when new railway stations are designed or refurbished, the BTP and their crime prevention officers or ALO's are not covered by this legislation or by any other legislation that provides them with power to be consulted in the design stage of the building or redesign of such projects (Gregson-Green *et al.,* 2013). In terms of inclusivity, this disconnect between the BTP and Home Office police force is discussed further in Chapter Seven.

4.23 Security in Design of Stations (SIDOS)

In 2012, the Government published a guidance only document called the Security in Design of Stations (SIDOS) to be used by consultants, designers, contractors, and security professionals when considering and incorporating physical security measures into major railway station redevelopments and the building of new railway stations. While the guidance recommends using a generic checklist to ensure the early consideration of security measures suitable for the specific space, and the inclusion groups of stakeholders are involved from the earliest stages of projects, it is only guidance. 'The document suggests CTSA/ALOs are involved at the early stages of projects, it is not a statutory requirement and therefore does not guarantee their involvement.' (Gregson-Green, *et al*., 2013, p.37)

4.24 Other Security Policies Relating to the Railway Station

Other policies which protect the infrastructure of SPIRS and other Category A railway stations in England and Wales from human malign security threats are briefly detailed below:

• Anti-terrorism Crime and Security Act, 2001

> Amends the Terrorism Act 2000; making further provision about terrorism and security; the provision of freezing of assets; immigration and asylum; amend or extend the criminal law and powers for preventing crime and enforcing that law; to make provision about the control of pathogens and toxins; to provide for the retention of communications data; to provide for implementation of Title VI of the Treaty on European Union; and for connected purposes.
>
> (Source www.legislation.gov.uk, 2015a)

• Railways Act 1993/2005

> An Act to provide for the appointment and functions of a Rail Regulator and a Director of Passenger Rail Franchising and of users' consultative committees for the railway industry…; to make new provision with respect to the provision of railway services and the persons by whom they are to be provided or who are to secure their provision;…the grant and acquisition of rights over, and the disposal or other transfer and vesting of, any property, rights or liabilities by means of which railway services are, or are to be, provided;…***to make provision with respect to the safety of railways and the protection of railway employees and members of the public from personal injury and other risks***

arising from the construction or operation of railways; to make further provision with respect to transport police;…to make provision for and in connection with the payment of grants and subsidies in connection with railways…; to make provision in relation to tramways and other guided transport systems; and for connected purposes.

(Source www.legislation.gov.uk, 2015b)

•Channel Tunnel (Security) Order 1994

This security order covers offences and the subsequent protection of the Channel Tunnel trains and the subsequent tunnel system in the UK. It defines areas such as the hijacking of Channel Tunnel trains and the sentence for such offences. It also highlights the power of the Secretary of State
(Legislation.Gov, 2015c)

4.25 Chapter Summary

This chapter has discussed the human malign security threats which SPIRS and other Category A railway stations in England and Wales must currently deal with. It has examined how the complex multiple stakeholders within the space endeavour to minimise crimes and threats of terrorism through prevention measures, strategies, and policies. The theories and measures of CPTED and SCP have allowed the reader to attain a greater understanding of the variety of 'opportunity reduction techniques and how these are currently being deployed' (Morgan and Cornish, 2006, p.27) within the space of the railway station in England and Wales. It has been proposed that prevention measures can be utilised for a dual purpose of crime and terrorism prevention, given the 'similarities between the different forms and methods of terrorist activity and the more mundane forms…of crime' (Cornish and Smith, 2006, p.196). Furthermore, this Chapter has examined Resilience and Security policies which impact on SPIRS and other Category A railway stations. It has demonstrated the concept of resilience and security within discourse and policy cannot be treated as separate concerns. The concept of resilience and subsequent security within the policies discussed demonstrate 'governmentality from a distance' (Rogers, 2017, p.43) and 'introduces a market of logic of competitiveness and initiative' (Joseph, 2017, p.163). 'Responsibilisation' of public and private sector, community and public stakeholders are obliged to acquaint 'themselves with the possible risks and learn how to make informed decisions…[taking] responsibility for their welfare and economic and social wellbeing' (Rogers, 2017, p.44). The next chapter looks at the methodology and research design that

has been undertaken to collect the research findings.

CHAPTER FIVE RESEARCH METHODOLOGY AND DESIGN

5. Chapter Introduction

This chapter examines the processes undertaken in researching the current and future resilience of SPIRS to security threats, while at the same time endeavouring to understand how the numerous stakeholders presented methodological complexities. The first part of the chapter examines research philosophies, design, and strategies. It examines the philosophies used to inform the research methodologies in this thesis. Also, discussed is the research design and the rationale behind choosing a single unique case study and the associated research methods. Subsequently, the second part of the chapter explains and justifies the form of analysis chosen. The rationalisation and methodology of undertaking Stakeholder Mapping are discussed in terms of the case study railway station, SPIRS, and the multiple stakeholders who operate within the space. The limitations of the research are discussed, and the impact of the researcher in terms of potential biases is explored.

PART ONE: POSITIONS, RESEARCH DESIGN AND METHODS

5.1 Epistemological and Ontological Positions

Social research problems rely on not only the research methodology but also the philosophical conjectures which are required to form the basis of the research, which in turn can be seen to impact on methods utilised to gather, examine, and understand the research data (Dainty, 2008, p.3). Therefore, the research methodology is interrelated to the epistemological and ontological stances and in this thesis, will not be considered in isolation (Dainty, 2008, p.3). Table 5.1 highlights this relationship and it is examined in further detail in the following sections to allow a greater appreciation of their interconnections and how exploiting these relationships allowed the researcher to build a research design around the unique case study of SPIRS which provided reliable, valid, and robust data and findings concerning the current and future resilience of the space to security threats.

5.1.2 Epistemological Positions

Epistemological issues question 'what is (or should be) regarded as acceptable knowledge in a discipline' (Bryman, 2004, p.11).

An epistemological position of interpretivism accepts the researcher must understand 'the subjective meaning of social action' (Bryman, 2004, p.540). Therefore, it looks at people's

actuality and behaviours thus,

> it has meanings for them and they act on the basis that they attribute to their acts and the acts of others.
>
> (Bryman, 2004, p.14)

The researcher wished to understand the resilience and security thinking of the SPIRS stakeholders, unravel, and explain their behaviours and their everyday reality from their standpoint (Bryman, 2004). Therefore, with this perspective in mind, the epistemological position of this research took the form of interpretivism, given the research question looked 'for culturally derived and historically situated interpretations of the social-life world' (Crotty, 1998, p.67), in the chosen case study railway station of SPIRS.

If the research had been based upon the epistemological positions of positivism or realism the research methodologies would have been different. Positivism 'advocates the application of the methods of the natural sciences to the study of social reality' (Bryman, 2004, p.11). It supports the creation of theories and thus the formation of theories, which can be assessed and verified and permits the clarification 'of laws… (the principle of deductivism)' (Bryman, 2004, p.11). Additionally, laws can be based on information, truths, and realities that are collected, '(the principle of inductivism)' (Bryman, 2004, p.11). Positivism ascribes to the principle that 'there is an external reality that is separate from our descriptions of it' (Bryman, 2004, p.12).

Moreover, an epistemological position of realism shares many of the above characteristics of positivism. Bryman (2004, p.12) describes two forms of realism, critical and empirical. Critical realism acknowledges that our reality can be understood and thus altered if we understand the formations 'that generate those events and discourse' (Bhaskar, 1989, p.2, cited in Bryman, 2004, p.12). Empirical realism states that by utilising suitable 'methods, reality can be understood' (Bryman, 2004, p.12).

5.1.3 Ontological Stances

Dainty (2008, p.3) proposes that in philosophical terms, ontology can be defined as the 'conceptions of reality'.

Constructionism as an ontological position is based on social occurrences and their significance being constantly being realised and undertaken by individuals, these are produced by individuals and are continuously being adjusted and modified (Bryman 2004). Moreover, it is important to recognise that the researcher will offer their personal construction of the reality they encounter and not a specific account. Therefore, constructionism is a philosophical perspective where it can be contended 'that all knowledge – not just that of the research participants – is socially created' (Seale, 2004, p.108). Creswell (2009, p.6) maintains constructionism is based on the principles of

- Understanding
- Multiple participant meanings
- Social and historical construction
- Theory generation

Therefore, constructionism has formed the basis of the ontological position of the research. Constructionism as an ontological perspective permitted the researcher to understand how temporally and spatially the complex and multiple stakeholders in SPIRS constructed their understanding of human malign security threats and resilience and the differences in these meanings (Crotty, 1998). Moreover, the ontological position of constructionism is related to the subsequent thematic analysis of the research data and this is examined in detail in section 5.7.1.

However, the ontological position of objectivism refers to social occurrences, a common discourse, and their significance, which has 'an existence that is independent of social actors' (Bryman, 2004, p.16). This can be exemplified when considering organisations, which are operated on frameworks of regulated and normalised practices, where roles are divided among the workforce, controlling them through order and encouraging their belief in corporate values.

5.2 Methodological Paradigms

A methodological paradigm provides the researcher with a structure of principles, which guides them how to use a method to determine 'what should be studied, how research should be done, and how the result should be interpreted' (Bryman, 2004, p.542). Table 5.1 illustrates the differences between the methodological paradigms. Moreover, it also highlights the complementary relationships between epistemological and ontological and

research strategies

The unique case study of SPIRS was chosen as the research design in which to mobilise an abductive position. An abductive stance is an iterative process which utilises an approach of systematic combining. Thus, meaning that each step of the case study involved the development of ideas and influenced further data collection and emergent theories (Spicer, 2004). In some areas of findings, the data collected can inform a 'new research focus' (Dubois and Gadde, 2002, p.553). The process of data collection within a case study design alters and creates a 'new view of reality' (Dubois and Gadde, 2002, p.553) for the researcher. Abduction allowed for the exploration of causal links within SPIRS, which were too complex and competing to be collected through quantitative data. Consequently, for the research programme, qualitative data was collected via documentary analysis and semi-structured interviews. Table 5.1 illustrates the key differences and similarities between the three methodological paradigms examined in this section.

There are two other methodological paradigms which can be considered when looking at social science research, induction, and deduction. Induction is a process of collecting data about facets of social life and making connections between them to arrive at a theory (May, 1997). Bryman (2004, p.9) states 'an inductive stance, theory is the outcome of the research…drawing generalisable inferences out of observations'. An inductive approach is normally associated with qualitative data, this is because this approach is fluid and flexible which allows the researcher to be iterative and move to and from the theory and data collected (Bryman, 2004, p.10). The process of deduction is where the theories are set out before the research (May, 1997). Therefore, the researcher with a prior knowledge of a field will determine a hypothesis (ses) to be researched (Bryman, 2004). An approach which is deductive is related to quantitative research but frequently does not always follow the above strict linear process, 'a researcher's view of the theory…may have changed as a result of the collected data' (Bryman, 2004, p.8).

Table 5.1 The differences between the methodological paradigms.

Methodological Paradigm	Deduction	Induction	*Abduction*
Epistemological Stance	Positivism	Interpretivism	*Interpretivism*
Ontological Stance	Objectivism	Constructionism	*Constructionism*
Research Strategy	Quantitative	Qualitative	*Mixed methods can be used*
Research Methods	Surveys, experiments	Interviews, focus groups, observations, visual and audio data	*Interviews, focus groups, observations, visual and audio data*
Analytical Approaches	Content analysis	Thematic analysis, grounded theory	*Analysisofthe continual interfaces between the data and theory* *Thematic analysis, grounded theory*

5.3 Research Strategies and Methods

Research strategies comprise of diverse methods of 'data collection, analysis and interpretation' (Creswell, 2009, p.233). This thesis uses the epistemological position of interpretivism, the ontological stance of constructionism and the methodological paradigm of abduction. Hence, the research strategy chosen to meet the aim and objectives of the research were multiple and qualitative research methods. The rich and in-depth qualitative data provided by participants permitted the researcher an understanding of 'their subjective meaning' (Lazar, 2004, p.14), which is not afforded by quantitative statistical information (Lazar, 2004, p.14).

5.3.1 Qualitative Research Methods

Qualitative research methods were used in this research to examine SPIRS' stakeholders 'in *naturally occurring* settings' (Spicer, 2004, p.295). The qualitative research methods provided 'diverse strategies of inquiry' (Creswell, 2009, p.173), with being data drawn from a variety of written and visual sources. The researcher used the following qualitative methods; semi-structured interviews, observations, and documentation to collect the research data.

5.3.2 Semi-structured interviews

A principle method used for the collection of research data was semi-structured interviews, which were used to gather information and data from thirty-four participants (Table 5.3). The open-ended questions of the semi-structured interviews enabled the participants to 'produce a narrative…of their own…experience[s]' (Wengraf, 2001, p.5) around SPIRS' resilience to current and future security threats. They were a valuable method of collecting data from the participants as they illustrated how the SPIRS stakeholders made 'sense of their social world and act within it' (May, 1997, p.129). Consequently, producing a purposeful dialogue (Bryman, 2004, p.181) as the open-ended questions permitted the expression their opinions and to discuss their experiences (Byrne, 2004, p.182) about how the current and future resilience of SPIRS to security threats are impacted by the complex stakeholders and policies within the space. The length of the interviews was not limited. The typical length of the interviews was an hour and a half to two hours long.

Ironically, the main benefits of the flexible collection of data, can have a negative impact on the participants (Fielding and Thomas, 2001, p.133). The socio-demographic qualities of the interviewer can affect the answers given by participants, to 'the extent where the…responses [can] be seen as socially acceptable to the interviewer' (Fielding and Thomas, 2001, p.133). The researcher can be offered false or disingenuous responses to the interview questions (Seale, 2004). Thus, the researcher acknowledged in the analysis of the data that the interviews were 'contextually situated practices' (Rapley, 2004, p.29) and the location of the interview and the proximity of the interviewer would have impacted on the dialogue produced by the participant.

5.3.3 Observations

As well as the research data gathered from qualitative semi-structured interviews and documentation, direct observations of SPIRS were collected and used in the analysis of the data. As the researcher had spent over eighteen months visiting SPIRS for interviews and travelling via the station to other interviews, it gave the opportunity for providing another source of evidence for the case study, through direct observations of the environment (Yin, 2009).

Direct observations were made of SPIRS and the meeting spaces where the interviews were held, whether they were external stakeholders or carried out in SPIRS. By making

observations as part of the research, the researcher became aware of the participant's status within the organisation (Yin, 2009). However, most of the interviews were either carried out in meeting rooms in the stakeholder's offices or in coffee shops in SPIRS or in neighbouring establishments. The direct observations and photographs used in Chapters Six and Seven of SPIRS provide additional understanding of prevention measures such as CCTV and hostile vehicle mitigation. Therefore, the 'photographs will help to convey important case characteristics to outside observers' (Yin, 2009, p.110).

5.3.4 Documentation

The collection of documentation was another method used to collect data. Various forms of documentation were collected for the policy review and which validated the semi-structured interview data. The term document covered the 'official documents deriving from the state…private sources' and 'mass media outputs' (Bryman, 2004, p.386). State documents were available for public scrutiny such as official press releases; memos; white and green papers and archived documents (Creswell, 2009). Given the sensitive nature of Category A railway stations in England and Wales security documents, such as the National Railway Security Programme (NRSP) were not publicly accessible. These documents were discussed in some of the interviews, but have not been examined due to the confidential contents. The data gathered from the documentation was examined using qualitative thematic analysis to understand its 'significance within the document' (May, 1997, p.172). Thematic analysis is examined in further detail in section 5.10.1.

5.3.5 Literature Review

The literature review played a key role in scoping the of and the context of the case study. It facilitated in highlighting the entangled physical, legal, and operational boundaries of SPIRS and other Category A railway stations in England and Wales. Furthermore, the conducted literature review examined resilience, security, Stakeholder Theory, which shaped and steered the initial semi-structured interview schedules for the data collection. The literature review also assisted in the initial draft of the Stakeholder Map, the methodology of which is examined in section 5.9.1.

The researcher accessed a wide range of electronic and traditional media sources. Using the keywords *"resilience", "railway stations", "crime", "terrorism", "crime and counter-terrorism measures", and "Stakeholders",* the researcher searched for peer-reviewed journal

articles published from 1980 until 2016. The preliminary searches produced many articles and were thus screened by title and then by abstract. Through this process, only articles and chapters considered relevant to the research aim were included in the body of articles to be reviewed.

5.3.6 Multiple data sources and triangulation

Rather than being dependent on a single type of data, the research utilised qualitative methods which gathered multiple sources of data such as documents, observations, and interviews. This research strategy supports Yin (2009) who maintains multiple sources of data for a case study help to strengthen the robustness and quality of the research. Triangulation takes the multiple methods of data collected to answer, 'the research question in order to crosscheck results for consistency and to offset any bias of a single research method' (Spicer, 2004, p.297). Therefore, the researcher triangulated the SPIRS data collected, thus permitting a more credible set of findings (Yin, 2009) by using diverse types of data.

5.3.7Quantitative research methods

However, the research could have employed quantitative research methods which offer a complementary methodology for the philosophical traditions of positivism and addressing hypotheses through structured questionnaires and experiments. The ontological position of the thesis (see Table 5.1), constructionism, does not position itself well to data collection via quantitative research methods, as the purpose of this ontological position is to understand how the participants construct their everyday experiences and working practices of resilience and security in SPIRS.

Methods such as questionnaires could have been used to collect quantitative data. This would have involved fixed questionnaires being delivered to a sample population to make generalisations to that population (Creswell, 2009). The purpose of the generalisation would make deductions regarding the actions, individualities, and opinions of the population sampled. However, it would not have been possible to select a random sample of stakeholders in SPIRS, as the data required for answering the research question did not require a stratification of 'specific characteristics of individuals' (Creswell, 2009, p.148) such as gender, age, education etc. are not necessary for the analysis of the data. Crucially, it is the depth of information gathered by qualitative methods which aided answering the

research question. Nevertheless, it should be recognised that if data had been collected via quantitative methods, it would have produced different results from those collected by qualitative methods. The data collected would have been interrogated via statistical methods, such as variances according to the stratified variables.

5.3.8 Mixed methods of data collection

Moreover, it would have also been possible for the researcher to combine both quantitative and qualitative research methods to facilitate the data collection. Spicer (2004, p.299) proposes using a mix method approach rather than just one method, it allows for the investigation of 'a broader range of issues to be addressed'. Therefore, this method can take quantitative data such as questionnaires or census data and then utilise qualitative methods to elucidate wider 'patterns emerging from quantitative analysis' (Spicer, 2004, p.299).

5.4 Research Design-The Case Study

The above section has discussed the research design which defines the methods of data collection and analysis undertaken by the researcher to address the research question and to offer a structure for carrying out the research (Dainty, 2008). A single case study was chosen as the design to carry out the research, an explanation and justification of which is discussed in the following subsections.

5.4.1Case Study

A 'case study is a research strategy which focuses on understanding the dynamics present within single settings' (Eisenhardt, 1989, p.534). Regardless of the type and nature of the case study, at their core is the fundamental propensity to attempt to clarify a situation, organisation, process or institution (Yin, 2009, p.17). A case study is 'an…all-encompassing method-covering the logic of design, collection techniques and specific approaches to data analysis' (Yin, 2009, p.18). The research question posed, and the subsequent PhD covers a new area of research, and the aim of the thesis is to

> *determine and examine the interdependencies and boundaries of the multiple stakeholders within St Pancras International Railway Station, and to analyse how their governance, operational and legislative requirements, and agendas influence both current and future resilience of complex Category A railway stations to human*

malign security threats.

This research is unique and exploratory; given the evaluation of current and future resilience of SPIRS and other Category A railway stations in England and Wales to security threats does not have an established set of conclusions.

From the outset, the unique case study of SPIRS followed a justified and 'methodological path' (Yin,2009,p.3). The rationale behind choosing a case study, the protocol followed and the issues around the choice of research design are discussed in detail in the subsequent section. However, case studies do have criticisms, with issues of rigour being an area of concern (Yin, 2009). Criticisms are often aimed at case studies which lack a formalised protocol and letting 'equivocal evidence or biased views to influence the direction of the findings' (Yin, 2009, p.14). More criticism case studies face is they cannot be used for 'statistical generalisation' (Yin, 2009, p.15). Yet, in-depth learning from a specific case study 'should be considered strength rather than a weakness' (Dubois and Gadde, 2002, p.554), and its purpose is the 'analysis of a number of interdependent variables in a complex structure' (Dubois and Gadde, 2002, p.557). There are many forms of case studies, single and multiple cases, with either holistic or embedded design; using quantitative or qualitative data, or a mixture of the two. The type of case study chosen to examine SPIRS is discussed in the below section.

5.4.2 Multiple case studies design

A multiple case study comprises of more than one case study. There are 'analytic benefits from having two or more cases' (Yin, 2009, p.61) rather than utilising a single case study design. However, a disadvantage of conducting a multiple case study is the amount of 'resources and time beyond the means of a single student' (Yin, 2009, p.53). The researcher must also consider when using multiple cases, there are issues of replication and sampling. This research could have taken the research question posed and used several Category A railway stations as a multiple case study. However, the justification for the decision to undertake a single case study is examined in the below sections.

5.4.3 Single case study design

A single case study was chosen as it complements the epistemological position of interpretivism and the ontological stance of constructionism. SPIRS' multiple stakeholders

make it an ideal subject for a single case study. Furthermore, a single case study design for SPIRS can be rationalised as it is 'an *extreme*…or *unique* case' (Yin, 2009, p.47). The justification for choosing a single case study design is discussed in the below section. By carrying out single case study for SPIRS, the data obtained was rich and in-depth, it additionally increased the understanding of the temporal and spatial elements of a complex Category A railway station, and how it's stakeholder practices and policies impacted on the current and future resilience of the space security threats. It is the in-depth nature of a single unique case study, which allowed the researcher 'to understand complex phenomena…and to retain the holistic and meaningful characteristics of real-life events (Yin, 2009, p.4) in SPIRS.

5.4.4 Justification of the single case study

To answer the research question posed it is the exploratory in-depth nature of the unique single case study, which permitted the researcher to examine and comprehend the complex phenomena of SPIRS' stakeholders and the resilience of the space while preserving the significant attributes of actual everyday occurrences and practices. SPIRS was chosen as a single case study to represent an extreme and unique case (Yin, 2009) of a Category A Railway Station in England and Wales. SPIRS is England's most unique and complex Category A railway station, with no other station in England or Wales housing such complex functions. In the overall space, there is an international travel hub, a national terminus, an underground station, a retail, and leisure destination, it has a five-star hotel with homes above it, and it is an iconic building in the capital of the country. Given the complexity, and unique and critical nature of the space it offered the researcher the chance to study examples of innovative and up-to-date security and resilience policies and strategies. By studying of SPIRS it revealed the extreme uniqueness and intricacies of the multidimensional of resilience and security governance due to the highly multifarious structure of the space and its stakeholders.

Consequently, SPIRS is 'eminently justifiable' (Yin, 2009, p.52) as an extreme and a unique single case study. This is because it has acted as a magnifying lens to concentrate on the converging interdependencies of the political, legal, and operational boundaries of the stakeholders in a Category A railway station, and how this influences the current and future resilience of the space against security threats. Furthermore, the choice of SPIRS as a single extreme and unique case was to investigate one case in- depth and not attain statistical

significance. Therefore, the aim of the unique single case study of SPIRS is one of 'theory development…the refinement of existing theories than inventing new ones' (Dubois and Gadde, 2002, p.559).

5.4.5 Unit of Analysis

Central to the SPIRS case study was the unit of analysis which was "typically a system of action rather than an individual or group of individuals" (Tellis, 1997, p.2). Case studies, either single or multiple have either a holistic or an embedded design. The holistic design case study takes a single unit of analysis as the focus of the case study. However, the embedded case comprises of one or more units of analysis. This is where the case study will focus on more than one element of investigation, the embedded units of analysis 'can often add significant opportunities for extensive analysis, enhancing the insights into the single case' (Yin, 2009, p.52).

Thus, SPIRS was chosen as a single case embedded study.

- The context of the case study was the concept of resilience to security threats.
- The case to be studied was SPIRS.
- The embedded units of analysis were the policies and stakeholders in SPIRS.

These two units of analysis provided the researcher with the chance 'for extensive analysis, enhancing the insights into the single case' (Yin, 2009, p.52-53). This allowed policies, strategies, measures, agendas, user/actor perspectives, the overall complex governance of SPIRS to be considered when examining how these affected the current and future resilience of the space to security threats. The diagram below depicts the case study design.

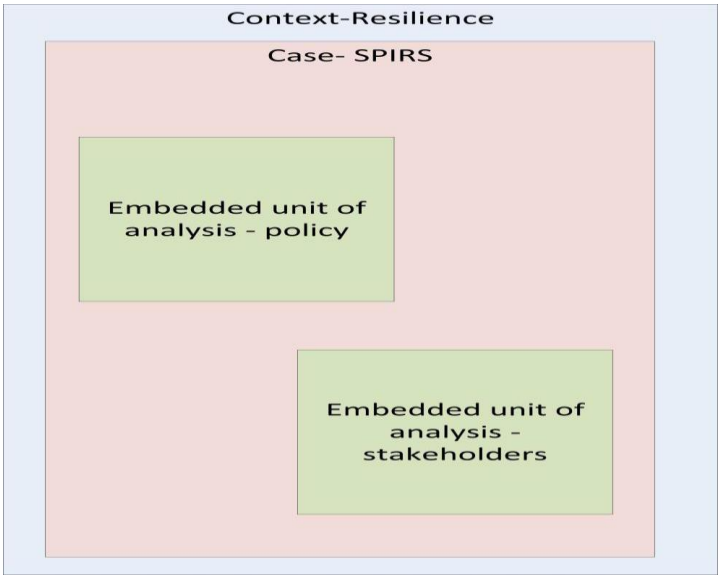


Figure 5.1 The SPIRS case study design

5.4.6 Systematic Combining

The SPIRS case study and the collection of the data were developed and conducted by using systematic combining in line with an abductive approach, meaning it was 'a process where theoretical framework, empirical fieldwork, and case analysis evolve[d] simultaneously' (Dubois and Gadde, 2002, p.554). Systematic combining allowed the researcher to go 'constantly back and forth from one type of research activity…to expand…understanding of both theory and empirical phenomena' (Dubois and Gadde, 2002, p.555).

5.5. The Case Study Protocol

The SPIRS case study was conducted by using a four-stage case study protocol. This guided the researcher in the process of collecting, analysing, and interpreting data. Moreover, it provided a critical framework for the reliability of the research findings, as it provided a logical model of proof through a blueprint of the research design. Yin (2009) recommends a case study protocol is designed and followed throughout the research process, and this is relevant for all types of the case study. The case study protocol developed and utilised for the research, facilitated the management of a complex research problem space, as there were multiple sources of data to handle and control. This allowed for the data collected to be triangulated which again increased the quality and reliability of the research.

The case study protocol consisted of four sections (Yin, 2009, p80-81):

1. The case study overview, objectives, literature review, design the study
2. Field practices, collection plan for the data, sources of data ethical procedures and data protection
3. Questions for the case study, and which sources of information will answer the question and objectives
4. Outline of the case study write up, analyse the case study evidence and develop the conclusions, recommendations, and implications

Importantly, by following the case study protocol, it kept the researcher on track with the research and as mentioned above it increased the robustness and quality of the research and its findings.

5.6 Section one of the case study protocol

Section one of the case study protocol has been addressed by the following Chapters and Table:

- The case study overview and design – Chapter 5
- Literature review and context – Chapter 3, 4 and 6
- Research objectives, Table 5.2 presents the forms of data collection and analysis which were utilised to meet the research objectives.

Table 5.2. Research objectives and data collection methods and analysis.

Research Objective	**Method**	**Analysis**
To critically examine the current literature and policy concerning resilience, governance, security, and prevention measures within the context of Category A railway stations in England and Wales.	Documentary analysis Archival analysis	Literature review and thematic analysis
To Identify those stakeholders within the case study railway station, SPIRS, who (in) directly influence the current and future resilience to human malign security threats, and to develop a unique and innovative stakeholder map of the space.	Documentary analysis Archival analysis Semi-structured interviews	Stakeholder Mapping and thematic analysis

To examine the SPIRS stakeholder's security, resilience, and operational policies, strategies, and agendas which (in) directly affect the current and future resilience of the space to human malign security threats.	Semi-structured Interviews Documentary Analysis Direct Observations	Thematic analysis and qualitative analysis
To identify the trade-off's, (un)intended consequences, and impacts of security and resilience policies and agendas which operate in the space of SPIRS. and to make recommendations to address the emerging themes from the research.	Semi-structured interviews Documentary analysis Archival analysis Stakeholder Mapping	Findings and discussion chapter, informed via thematic analysis

5.7 Section two of the case study protocol

The SPIRS case study was structured and informed by an abductive approach where the data and the evidence were collected from multiple sources. This approach can reduce potential issues with the research findings by 'establishing the construct validity and reliability of case study evidence' (Yin, 2009, p.114). Hence, the researcher collected data from semi-structured interviews, observations, documentation, and archival records.

5.7.1 Purposive Sampling

To collect the qualitative data for the research, the participants were sampled. The researcher took a portion of the population for the collection of data. 'Population' was not the public; rather it was specific to the population involved in SPIRS, security, and infrastructure. The findings of the research are not generalisable to all railway stations in England, the aim was to develop and generalise concepts and theories (Yin, 2009). Therefore, participants were chosen on the premise of their significance to, and knowledge of, SPIRS, the problem area of resilience and security issues, and thus they 'produce[d] the most valuable data' (Denscombe, 2010, p.35).

Some were sampled from several relevant stakeholders who took part in the Resilient Futures project due to their involvement or interest in the resilience of transport infrastructures in the UK. Consequently, in terms of sampling the participants, the researcher had strong gatekeepers in place for accessing participants within SPIRS. The gatekeeper's connections were

extremely significant to the sourcing of relevant participants to the research. The research sampling captured the 'diversity as well as relations and tensions between' (Saukko, 2003, p.20) SPIRS' different stakeholders. Another method of recruiting research participants occurred through snowballing sampling. The participants were asked if they were aware of other people or colleagues who would be appropriate to contact for the research. Moreover, the initial Stakeholder Map created from the preliminary literature and policy review assisted with the primary round of purposive sampling. The Stakeholder Mapping methodology is examined in section 5.11.1.

5.7.2 The research participants

The researcher interviewed thirty-four participants, between 2011 and 2012 for the data collection stage of the research (data from two interviews 5 & 6 was not analysed). These participants came from a broad range of stakeholder groups applicable to SPIRS. Table 5.3 illustrates the participants, their organisation, the date of the interview, and how it was recorded. As per the ethical considerations and the Data Protection Act 1998 (section 5.7.3), the participants have been anonymised. In addition, to minimise researcher bias and to mobilise the principles of researcher reflexivity, the location of the interviews and how they were recorded was documented for each interview.

Table 5.3. Participant Table.

	Stakeholder	Role	Conducted	Location and how interview was undertaken
1	BTP	Senior Policy Advisor	MAY 2011	BTP headquarters, meeting room, digitally recorded (R Futures research)
2	BTP	Senior Policy Advisor	MAY 2012	Loughborough University, meeting room, digitally recorded
3	BTP	CTSA and ALO	JUNE 2012	Loughborough University, meeting room digitally recorded
4	BTP	Senior Manager	JULY 2012	BTP station office at St Pancras International Railway Station. Notes taken by hand
5	LOUGHBOROUGH UNIVERSITY	Professor of Criminology	May 2012	Loughborough University, office, notes taken by hand. Data not used in research
6	CHINA STATE POLICE	Policing Expert CT Beijing – Crowded Places	May 2012	Loughborough University, office, notes taken by hand
7	CAMDEN BOROUGH COUNCIL	Civil Servant	MAY 2012	Camden Borough Council offices, meeting room, digitally recorded
8	BTP	Inspector	JAN 2012	St Pancras International Railway Station, East Midland Trains First Class Lounge, notes taken by hand

9	**BTP**	Inspector	JULY 2012	BTP station office, St Pancras International Railway Station, digitally recorded
10	**NETWORK RAIL**	Retail Manager	June 2012	St Pancras International Railway Station coffee shop, notes taken by hand
11	**NETWORK RAIL**	Security Manager	September 2012	Network Rail Offices, St Pancras International Railway Station, meeting room, digitally recorded
12	**ARUP**	Principal Consultant	June 2012	ARUP Offices, London, meeting room, digitally recorded
13	**NACTSO/BTP**	Detective Inspector	July 2012	BTP headquarters, Camden, notes taken by hand
14	**TPS CARILLION**	Director	June 2012	Telephone interview, notes taken by hand
15	**GALLIFORD**	Operations Manager	October 2012	Leicester Marriot Hotel, coffee lounge, notes taken by hand
16	**HS1**	Security Manager.	June 2012	St Pancras International Railway station, coffee shop, notes taken by hand
17	**CROSSRAIL**	Security Consultant	August 2012	St Pancras International Railway Station, coffee shop, notes taken by hand
18	**PASSENGER FOCUS**	Policy Advisor	October 2012	Telephone interview, notes taken by hand
19	**BTP SARGENT**	Sargent	December 2012	British Library, coffee shop, notes taken by hand
20	**EUROSTAR**	Security Manager	December 2012	Eurostar London Office, meeting room, digitally recorded
21	**NETWORK RAIL**	Security and Emergency Planning Specialist	November 2012	Network Rail York offices, break out area in an open plan office, notes taken by hand
22	**LONDON FIRE BRIGADE**	Planning Officer	December 2012	London Fire Brigade Headquarters, Southwark, coffee lounge, digitally recorded
23	**SERCO**	Security Manager	December 2012	British Library, coffee shop, notes taken by hand
24	**MARKS AND SPENCER**	Multi Retail Store Manager	February 2013	Marks and Spencer St Pancras International Railway Station, back office, digitally recorded
26	**NETWORK RAIL**	National Resilience and Continuity Manager	February 2013	Network Rail London Offices, coffee bar, digitally recorded
27	**LOUGHBOROUGH UNIVERSITY**	Emeritus Professor	October 2012	Telephone interview, notes taken by hand. Data not used in thesis
28	**TRANSPORT FOR LONDON**	Community and Crime Prevention Manager	April 2013	Transport for London Offices, St James Park, meeting room, digitally recorded
29	**TRANSPORT FOR LONDON**	Infrastructure manager	April 2013	Transport for London, St James Park, staff room, digitally recorded
30	**S015**	CTSA	May 2013	New Scotland Yard, Coffee area, digitally recorded
31	**BTP**	Liaison Officer	October 2013	St Pancras International Railway Station, East Midland Trains First Class Lounge, notes taken by hand

32	**RSSB**	Senior Manager	April 2013	Rail Security Strategy Board London offices, coffee area, digitally recorded
33	**NETWORK RAIL**		2012	Interview took place under the RFutures interview schedule, it was digitally recorded, and the interview was a team member of the RFutures project
34	**CPNI**		2012	Interview took place under the RFutures interview schedule, it was digitally recorded, and the interview was a team member of the RFutures project

Those stakeholders who were contacted to take part in the research but either declined or those who did not respond can be found in Appendix 5.3. The potential reasons behind the lack of participation by some of the stakeholders is examined in section 5.13. Furthermore, section 5.13 discusses the impact and biases of the researcher which could have affected the participants and their responses given in the interviews.

5.7.3 Ethical *Considerations and Data Protection*

The SPIRS research data was collected from human participants and potential issues surrounding ethics were considered. The researcher ensured the 'dignity, rights and welfare of research participants' (ESRC, 2010) and protected their professional reputation by following ethical guidelines. The ethical checklist devised by Loughborough University's Ethical Advisory Committee was followed and the appropriate approval was sought if required. The researcher considered the SPIRS participants, because of the research topic, not to be at risk of any significant harm by taking part in the research. Within the remit of the ethical protocol, the researcher considered the safety and confidentiality of the SPIRS participants. This was achieved through an information sheet and a transparent and unambiguous agreement called an informed consent form. The participant information sheet stated how the data would be collected, used and how the research findings would be disseminated. It delineated the research boundaries by highlighting the case study station and the type of stakeholders who would be interviewed as part of the data collection process.

Furthermore, the informed consent form has enhanced the reliability and confidence of the research (Creswell, 2009). Informed consent is 'central to most ethical guidelines' (Silverman, 2006, p.323) and because the researcher obtained the participants informed and signed permission, their rights were protected. Copies of the templates for the

participant information sheet and informed consent form are located in Appendix 5.4.
The participant's confidentiality was effectively managed 'at all stages of the process' (Ward, 2004, p.345), from approaching participants, data collection, safekeeping, and analysis, and the dissemination of the results (Ward, 2004, p.345). This research is compliant with the Data Protection Act 1998 and Human Rights Act 1998, so the rights of participants have been fully respected. The Data Protection Act 1998 provides a code of ethical practice surrounding the storage of personal data and thus covers the data collected for this research (see Appendix 5.2).

5.7.4 The Robustness and quality of the research

The multiple methods of data collection discussed in sections 5.3 illustrate and distinguish the types of qualitative research methods. By using documentation and archival records as evidence in the SPIRS case study it was key 'to corroborate and augment evidence from other sources' (Yin, 2009, p. 103). As part of the abductive systematic combining process, documentation was sourced through interview recommendations and vice versa, interviews were used to collect data and corroborate documentations. The multiple sources of evidence have strengthened the quality of the SPIRS case study as 'data will be less prone to the quirks deriving from any single source, such as an inaccurate interviewee or biased document' (Yin, 2003, p.83). Another strength of using multiple sources of information was the ability to triangulate the sources of evidence to corroborate the research findings (Yin, 2009).

It was critical the research design and the SPIRS case study protocol (detailed in the above section) was well-defined, developed and followed so the findings are reliable and dependable. The scientific origins of reliability and validity are not necessarily or should be applicable to qualitative research, particularly as constructionism has formed the basis of the ontological position of the research (Bryman, 2004). For a constructionist position, the research should be credible, transferable, dependable, and confirmable for it to be robust and reliable (Lincoln and Guba, 1985). A traditional 'truth value' (Seale, 2004, p.77) was exchanged for credibility through in-depth interviews, observations, and triangulation. The transferability of the research is found in the thick and rich descriptions and analysis of the SPIRS data which 'give the reader…the vicarious experience of 'being there'' (Seale, 2004, p.78). The dependability of the research is based on the case study protocol and auditing

of the methods used in the SPIRS case study. Auditing along with reflexivity established the confirmability of the research. To enhance the confirmability of the research the below verification approaches recommended by Creswell (2009, p.199-200) have been followed:

Table 5.4. Verification strategy adapted from Creswell (2009, p.199-200).

Triangulation	Multiple types of information, interviews, documentation, and observations are collected. This reinforces the internal validity and reliability of the research
Observations of SPIRS	Repeated observations of SPIRS, over a two-year period. This allowed for contextual observations to be triangulated with interview data and documentation
Clarification of data collection limitations	Limitations of the data collection is articulated and explained. Where stakeholders have not participated in the research this will be elucidated and public domain documentation will be sought
Clarification of researcher bias	The biases of the researcher to ensure external validity

5.8 Section three of the case study protocol

The type of questions devised to answer the overall research question and the sources of information used to answer this and the research objectives are detailed in Table 5. 5. A full semi-structured interview schedule can be found in Appendix 5.5

Table 5.5. Research question/area, data source and objective.

Question	Data Source/Method	Research Objectives
Role and Responsibility	Semi-structured interview	2,4,
Personal/role understanding of resilience	Semi-structured interview	3,4
What did resilience mean to the railway station	Semi-structured interview	3,4
The key strategies and policies in their role	Semi-structured interview Documentation	1,2,3,4

	Policy document	
Respondingtosecuritypolicyinitiatives (workwithpolicy makers)	Semi-structured interview Documentation Policy document	1,2,3,4
Aware of nationalsecuritystrategies, impact on role	Semi-structured interview Documentation Policy document	1,3,4
Consultation (stages) of stakeholders accounted for when stationsare designandretrofitted	Semi-structured interview Documentation Policy document Observations	1,3,4
Length of horizon that Network Rail security strategies look to	Semi-structured interview Documentation	3,4
The impact of these security strategies on stakeholders	Semi-structured interview	3,4
Recommended and or used prevention measures to protect the station	Semi-structured interview Documents Observations	1,3,4
Greatest fear of public safety (crime or terrorism)	Semi-structured interview	3,4
Stakeholder opinion impact on crime prevention and counter-terrorism station agendas	Semi-structured interviews Documentation	3,4
Reconciliation of crime prevention and counter-terrorism agendas	Semi-structured interview	3,4
Stakeholders within station dealt with, and not on the map	Semi-structured interview Stakeholder Map Documentation	2,4
Communication with stakeholders on the map	Semi-structured interview Stakeholder Map	3,4
Other stakeholders who would like to deal with	Semi-structured interview Stakeholder Map	2,3,4
Improvement/greatest threats to future resilience of station	Semi-structured interview	3,4

PART TWO: DATA ANALYSIS AND STAKEHOLDER MAPPING

5.9 Section four of the case study protocol

The second part of this Chapter looks at the analysis of the SPIRS case study data. Chapters Seven and Eight present the discussion and findings of the evidence, while Chapter Nine presents the conclusion, recommendations, and implications of the research.

5.10. Data Analysis

As with collection of the research data, it was critical the analysisof the data was of an

appropriate and high standard. The researcher followed Yin's (2009, p.160) 'four principles' which 'underlie all good social science research':

1	**Pay attention to all the data**	The research question must be covered by the analysis, including elaborating on opposing theories. Research findings are strengthened if all the data has been accounted for in the analysis
2	**Rival interpretations**	Account and address counter interpretations of the findings. Could these be expanded into rival theories? In turn, these could be the basis of future study recommendations
3	**Key aspects of the case study**	Analysis focuses on the key point of the case study, strengthens findings
4	**Expert knowledge**	The literature and policy review and published paper will demonstrate expert knowledge and awareness

Table 5.6. Yin's four principles of analysis. Adapted from (Yin, 2009, p.160- 161).

The four principles of analysis were applied to the process of thematic analysis, which is examined below. The analysis of the data was a continual process throughout the collection phase of the research. It followed an abductive process and systematic combining, discussed in section 5.4.6, where the researcher constantly analysed the data, and the multiple methods of data were used to inform new areas of investigation. These, in turn, informed the revised semi-structured interview schedules and the sourcing of new documents for analysis.

5.10.1 Thematic Analysis

The most appropriate form of analysis for the research findings was thematic analysis as it provided a clear and 'theoretically flexible approach to analysing qualitative data' (Braun and Clarke, 2006, p.77). It is a valid method of analysis in relation to the thesis' ontological constructionist position, given its flexible and adaptable nature. Consequently, thematic analysis enabled the researcher to 'provide a rich and detailed, yet complex account of data' (Braun and Clarke, 2006, p.70) within SPIRS. Thematic analysis can be defined as

> a method for identifying, analysing, reporting patterns (themes) within data. It minimally organises and describes your data set in (rich) detail.
> (Braun and Clarke, 2006, p.70)

The process of initial coding was based on the overarching theoretical concepts of the literature review, which had guided the initial, objectives, aim and semi-structured

interviews. However, as the analysis progressed to a more in-depth position, a thicker analysis of the data occurred by pulling out more obscure underlying and unspoken themes and codes. This was an inductive thematic analysis 'a process of coding the data *without* trying to fit it into a pre-existing coding frame, or the researcher's analytic preconceptions' (Braun and Clarke, 2006, p.80). Themes were developed from the data which were analysed using NVivo, the software used for the management of the research and for analysing and presenting findings from the data.

5.10.2 NVivo - Computer software aided analysis

NVivo software was chosen as the tool for the project management and data analysis of the research. It is an example of 'computer qualitative data analysis software (CAQDAS)' (Yin, 2009, p.128). As the SPIRS case study was a qualitative research project, it produced vast quantities of significant data. Therefore, NVivo was used as a storage facility, and for retrieval and analysis of data. NVivo was critical in maintaining the 'chain of evidence' (Yin, 2009, p.123). It did not transcribe the audio files, automatically code and analyse the subsequent data. NVivo aided the process of coding, it permitted the researcher to create memos about the initial and more in-depth coding, and allowed the chain of evidence to be maintained and strengthened. Moreover, it permitted sources of data to be cross-analysed, meaning codes were compared between sources, patterns and emerging outcomes were visually presented.

5.10.3 The thematic analysis process

The analytic process in line with abductive stance began after the first set of semi-structured interviews were carried out; a continuous process of 'moving back and forth between the entire data set' (Braun and Clarke, 2006, p.92). During the transcription process, the researcher started to observe items of interest, which in turn informed the revised interview schedule and documentation collection strategy. Braun and Clarke's (2006) six principles of thematic analysis, seen in the below table, was followed to examine and code the research data.

Table 5.7. Six Principles of thematic analysis, adapted from Braun and Clarke (2006).

Stage	Required	Action
Stage one	Data familiarisation and immersion	The literature and policy review provided familiarisation with the resilience of railway stations to security threats.

	Transcription	Transcription allowed the researcher to immerse and familiarise themselves with the data collected. The data was transcribed verbatim and stored in NVivo. Ideas on parent coding began to form during this process. Memos were created in NVivo to record the researcher's thoughts on initial coding (Table 5.8).
Stage two	Preliminary coding	Coding was an important part of the analysis and ascertained specific broad features of interest. The data set from the 32 interviews, observations and policy documents were coded. The preliminary parent codes can be seen in Table 5.7. These codes developed the next stage of interpretative analysis. These codes were theory based and came from the initial literature review and were data driven.
Stage three	Exploring themes	For this research, the initial themes were preliminary based on theory (Table 5.8) but as further analysis revealed data driven themes. Child coding emerged with analysis and was placed under the parent overarching themes.
Stage four	Evaluating themes	The researcher acknowledged inconsistencies in coding, deviant codes in data. The data was reviewed, and the themes corresponded and there were distinguishable differences between themes. Where themes were closely linked these were merged into one node for coding. The overarching parent themes/nodes were reviewed to ensure data fitted within them.

Stage five	Definition of themes	A thematic matrix was created via NVivo, which helped to define and refine themes, and further analysis. The full coding matrix generated in NVivo can be found in Appendix 5.7. Each theme had a detailed analysis.
Stage six	Writing up	The findings were written up in Chapters Seven and Eight to persuade the reader of the validity of the analysis.

Thematic analysis was carried out on the data collected from the thirty-two semi-structured interviews, and direct observations from expert meetings gathered in 2012 and 2013. Moreover, the policy review was also thematically analysed. Thereafter, the process of thematic analysis developed, using the theoretical analysis to guide topic areas for further investigation and thus creating parent and child codes.

Table 5.8 shows the overarching parent nodes for the coding of the research data, with how many transcriptions and documents (sources) had been coded. These parent nodes map against the research objectives two, three and four:

> **RO 2**: Identify those stakeholders within the case study railway station, SPIRS, who (in) directly influence the current and future resilience to human malign security threats, and to develop a unique and innovative stakeholder map of the space
>
> **RO 3**: Examine the SPIRS stakeholder's security, resilience, and operational policies, strategies, and agendas which (in) directly affect the current and future resilience of the space to human malign security threats
>
> **RO 4:** To analyse the tradeoffs, (un)intended consequences, and impacts of security and resilience policies and agendas which operate in the space of SPIRS, and to make recommendations to address the emerging themes from the research

Tables 5.8 details how the parent coding structures for themes of resilience, crime and terrorism were structured when undertaking the analysis in NVivo. Appendix 5.7 details the full list of nodes used and how many times the interview data had been coded to the nodes.

Name	Sources	References
BARRIERS FOR RESILIENCE	26	293
BUILT ENVIRONMENT	11	53
COMMUNICATION	28	321
DESIGN STAGE	18	271
EMERGENCY	15	167
FINANCIAL IMPLICATIONS	18	114
FUTURES	12	58
INFRASTRUCTURE	14	60
OPERATIONAL COMPLEXITIES	26	378
POLICY & GUIDANCE	30	446
RAILWAY STATION	25	300
RESILIENCE	20	249
SECURITY THREATS	25	698
STAKEHOLDERS	30	772

Table 5.8 Overarching parent nodes for thematic data analysis

Through the creation of the emergent codes collected from the interview data, the accounts of the participants during the interviews were at that point in time producing their own 'version of reality shaped through language' (Bryman, 2004, p.539). The data produced from the interviews, observations, and documentation, and thus the codes and subsequent analysis and findings are to be viewed in terms of how social and historical knowledge has informed the participant's opinions. Therefore, their language has been influenced by 'characteristic terminology and underlying knowledge base' (Seale, 2004, p.507), of the culture which surrounds the rail industry and its history has set as the dominant discourse pertinent to the research participants who work within the environment of the railway station. An example of an interview transcript can be found in Appendix 5.6.

5.11 Stakeholder Mapping

A key contribution to the knowledge concerning how the multiple stakeholders influence the current and future resilience to security threats in SPIRS, was the Stakeholder Map. While conducting the literature and policy review, the researcher had not been able to source a document that mapped the key stakeholders who impacted on the security of the space to security threats. Therefore, the researcher took the decisions that one of the research objectives would be to create and use a Stakeholder Map to understand the relationships and power of the stakeholders within SPIRS. The below section examines how the methodology was devised and used to create a comprehensive map of the stakeholders in SPIRS who could impact the resilience of the space to security threats.

The process of Stakeholder Mapping allowed the researcher to visualise the SPIRS stakeholder's authority and impact within the space (Bourne and Walker, 2005). For an

organisation like SPIRS to be efficient in terms of policy changes, strategies and projects, or day-to-day operations, it is critical the stakeholders are mapped (Freeman, 1984). Therefore, the SPIRS Stakeholder Mapping portrayed the critical stakeholders when looking at the resilience of the station to security threats and their interdependencies and concerns (Aliciga 2006). This became a comprehensive and precise listing of all the SPIRS stakeholders. They were categorised when considering alterations to policy, strategy, or operational processes. Therefore, the SPIRS Stakeholder Map encapsulated 'the essential elements of the strategic space: the actors, the rules of the game, the processes set into motion within those rules' (Aliciga, 2006, p.82-83).

However, as with all forms of analysis, Stakeholder Mapping can be subjected to the creator's biases and therefore it can be considered as subjective, dependent on who is devising the map and the policy, strategy, or operation being considered. The multiple SPIRS stakeholders considered the issues resilience of space to security threats subjectively. What and who was considered important to the issue was affected by differing business and personal agendas. Therefore, the SPIRS Stakeholder Map must be viewed in terms of the creator and it was generated from the choices made by their interpretation of the circumstances involved (Aliciga, 2006, p.82). It can be argued 'the measure of validity of an institutional map is given by its ability to guide the strategic decision-making' (Aliciga, 2006, p.82). The Stakeholder Map of SPIRS stakeholders has been used by the BTP for franchising decision making and the London Fire Brigade for resilience planning.

5.11.1 Stakeholder Mapping Methodology

The initial process took the stakeholders who could or be impacted on by security threats and mapped them in relation to SPIRS. The behaviours of stakeholders historical and future were examined to see how these could affect positively or negatively on specific goals of SPIRS (Freeman, 1984). This allowed for external influences, pressures, and susceptibilities of the SPIRS stakeholders to be recognised (Freidman and Miles, 2006, p.85). The SPIRS Stakeholder Map through participant verification allowed the stakeholders to be characterised as

1. primary stakeholders who are impacted constructively or adversely, by a project or operations,

2. secondary stakeholders have a transitional function and can have a key impact on the project or operations,

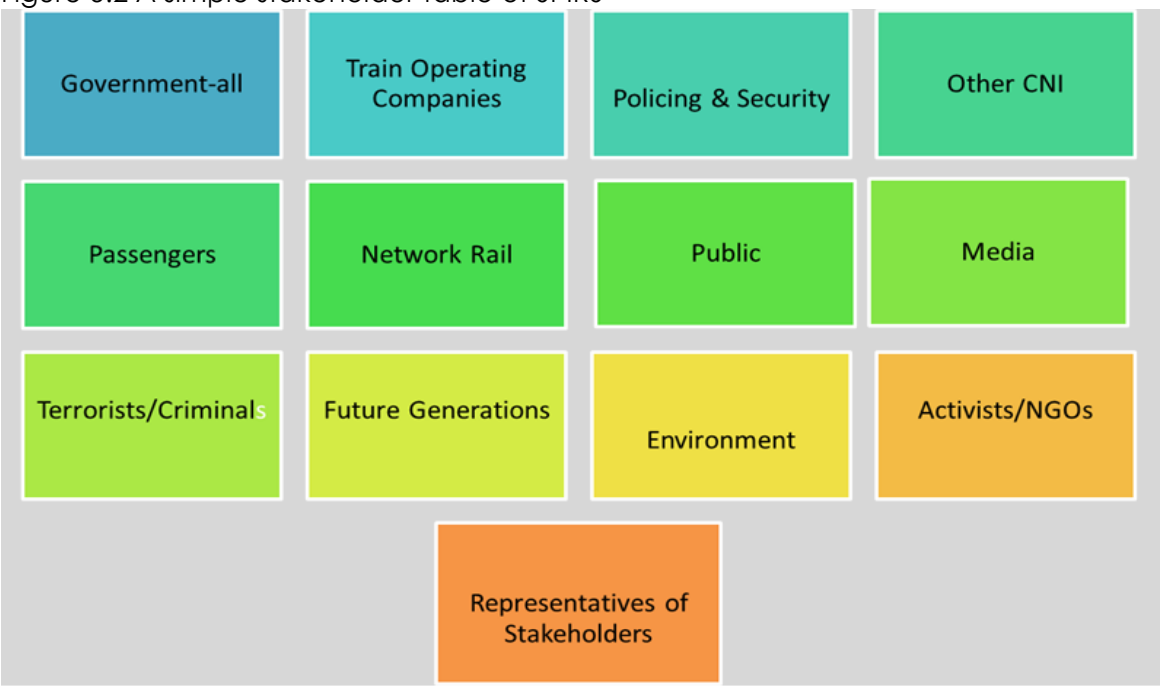
3. and external stakeholders do not directly participate, yet can be impacted on by a project or operations

(Jepson and Eskerod, 2009).

Coalitions and interconnections were also mapped as these can have a significant impact on the stakeholders' agendas and strategies.

The multiple stakeholders within SPIRS were researched via the internet, sourcing relevant information from websites such as the DfT, Network Rail, and the ORR and from the literature and policy documentation sourced for the literature review. Often the process of finding information concerning one stakeholder led the researcher to find out information and collaborations, responsibilities to/with other stakeholders within the boundaries of SPIRS. This led to the creation of a broad category stakeholder table, below is this first stage basic version of the SPIRS stakeholder map.

Figure 5.2 A simple stakeholder table of SPIRS



Subsequently, as more information was gathered through the literature and policy review, and semi-structured interviews, it was then entered to create a digital visual map in Microsoft Visio. This Stakeholder Map detailed the interconnections and complex stakeholder relationships within SPIRS and is examined in Chapter Six.

The map was empirically validated by the participants. They were SPIRS stakeholders who were responsible for or impacted on security measures and resilience strategies in the space or other Category A railway stations. This gave the participants the opportunity to make suggestions about other stakeholders who they thought should be included on the map. It should be noted, there is no one definitive or correct way to map stakeholders of a space, rather the map can be created from diverse standpoints 'inspired by different objectives and employing different techniques' (Aligica, 2006, p.81).

5.12 The Role of the Researcher

Social science researchers must accept that some form of bias in producing research is inevitable (Lazar, 2004). However, in the qualitative research process, the researcher cannot be removed (Lazar, 2004, p.25); rather a reflexive approach was adopted by the researcher to 'understand the political implications of our location as researchers' (Lazar, 2004, p.25). Reflexivity was exercised by the researcher to examine the value and efficiency of their

> research methods on the robustness of their results and debate the influence…that their enquiry has had on the phenomena that they have sort to observe.
>
> Dainty, 2008, p.8

Lincoln and Denzin (2000, p.1049, cited in Seale, 2004, p.64) assert

> the qualitative researcher is not an objective, authoritative, politically neutral observer standing outside and above context…Qualitative inquiry is properly conceptualised as a civic, participatory, collaborative project. This joins the researcher and the researched in an on-going moral dialogue.

To avoid researcher bias, the researcher had a level of awareness 'of the reactive affect that…her presence' (Seale, 2004, p.104) which could have impacted the participant's actions and replies. Therefore, when the interview questions and the subsequent research thesis were written, the researcher acknowledged these documents were socially constructed versions of reality.

5.13 Barriers to Data Collection

During the data collection phase of the research, the researcher experienced some barriers

to collecting data. The greatest barrier to data collection was trying to overcome issues of stakeholder support. Therefore, not all the stakeholders who were involved or impact on the current and future resilience of SPIRS to security threats had wanted to participate; for instance, the DfT proved to be one such critical stakeholder. Despite the researcher being provided with numerous contact details for potential research participants within the DfT, they were unable to secure the participation of any of them during the data collection phase of the research. One explanation for the lack of participation from some of the stakeholder groups was the lack of incentives to take part in the research. If the research had been a Government sponsored project, then it is anticipated the research would have received a more positive response from some stakeholders especially the civil service and the TOCs. Another contributing factor which may have influenced the lack of participation from the DfT is because there is often a quick turnaround of staff posts and contacts and experience is lost. Appendix 5.3 highlights the number of participants contacted to participate in the research, and who either declined or did not respond to the request for assistance.

These barriers to participation have been accounted for in the case study protocol. Therefore, to obtain the Government's position on the resilience of SPIRS to current and future security threats, publicly accessible reports, papers, and documents were retrieved as part of the interconnected archival analysis. These archival records have produced evidence that is not specific to SPIRS rather it is 'at the collective level' (Yin, 2009, p.12), which forms the centre of public transport policy aims.

Moreover, other than Eurostar, the other three TOCs who operate out of SPIRS, did not accept the invitation to participate in the research. This was the case for the St Pancras Marriott hotel, and as with the DfT publicly accessible documentation were sourced to offer some corporate opinion on the resilience of SPIRS to current and future security threats. This lack of participation was accounted for during the analysis stage of the research and is discussed in detail in the findings and discussion chapters of the thesis.

The researcher was aware when analysing and drawing findings from the research data that some participants had presented a corporate opinion when answering the interview questions. Moreover, the participant's responses were considered in a temporal and spatial framework, thus meaning their answers were shaped by the time and events at the point of

the interview. Therefore, these responses would not be replicated exactly if the research was carried out again at a future point in time, thus addressing issues of validity of the findings.

5.14 Chapter Summary

This chapter has discussed the how the research design and data collection strategies have been chosen to answer the research question posed. Furthermore, this chapter has examined the methodological position which was mobilised to carry out the research and the subsequent qualitative case study design and methods that were utilised to accomplish and realise the aim and objectives of the research.

The justification of SPIRS as a unique single embedded case study was presented. The case study protocol was depicted ensuring the research design and subsequent research findings were robust and valid. Reflexivity was considered when looking at where the thirty-two interviews took place and how they were recorded, and any researcher or participant biases. The chapter also discussed the how the data would be analysed by thematic methods. The methodology of howthe Stakeholder Map was devised and developed was discussed within the chapter. Conceptually the aim of Stakeholder Map was to aid in understanding that SPIRS is a complex space, with a web of interconnected relationships.

If different research strategies had been used, they would have created distinct types of results. This research used qualitative research strategies and methods which supported the epistemological position of interpretivism and the ontological stance of constructionism. Thus, the qualitative research strategy selected met the aim and objectives of the research. Principally because the thick data provided by the SPIRS participants allowed a greater understanding of 'their subjective meaning' (Lazar, 2004, p.14), and which is not afforded by quantitative statistical information (Lazar, 2004, p.14).

If an epistemological position of positivism had been chosen, a quantitative research strategy would have provided a methodology that would have addressed a set hypothesis by using structured questionnaires and statistical analysis. The barriers to participation have been discussed and accounted for in the case study protocol. Therefore, to obtain those stakeholder's viewpoints, who did not take part in the data collection process on the resilience of SPIRS to current and future security threats, publicly available reports, papers, and documents have been retrieved as part of the interconnected documental analysis.

The following chapter will examine the contextual boundaries of the SPIRS case study, with subsequent chapters discussing the research findings.

CHAPTER SIX: CONTEXTUAL STUDY OF ST PANCRAS INTERNATIONAL RAILWAY STATION (SPIRS)

6.0 Chapter Introduction

The previous chapters of the thesis have examined and discussed the theoretical and methodological perspectives and standpoints that together underpin this thesis. The justification of choosing SPIRS as the single unique case study railway station has also been referred to in the previous chapter. However, it is necessary to develop a background comprehension of the complexities of SPIRS, to attain an understanding in Chapters Seven and Eight of how security threats, prevention measures and resilience are recognised and discussed within the boundaries and context of the space and other Category A railway stations in England and Wales. Section 6.9 presents the findings of the Stakeholder Mapping during the data collection phase. Therefore, this chapter will offer a contextual appreciation of the temporal, social, and political dynamics of SPIRS in advance of the findings and discussions of thequalitativeresearchundertaken.

6.1 The History of the Railway Station, St Pancras (International) Railway Station (SPIRS) and the Rail Network

SPIRS is one of the major termini railway stations in London and England, its uniqueness is determined as it is an international and multimodal transport hub. Moreover, it is the location of an extravagant five-star hotel, prestigious apartments and it is a luxury retail and leisure destination. It is the importance, size, and international function of the station which determines that Network Rail classifies SPIRS as a Category A railway station, the category of railway stations is examined in Chapter Two. However, to understand how SPIRS functions and is operated currently, it is important to understand historically how and why our railway stations were constructed and operated.

Undoubtedly, the history of railway routes is very well documented, as with the railway infrastructure of today, the progress and expansion have been entrenched in a continuous 'series of technological, economic, and political changes' (Wolmar, 2003, p.2). However, the documentation of the development and evolution of the railway station has lacked any real recognition 'for its contribution...to culture and society in general' (Richards and MacKenzie, 1986, p.3). Yet, Biddle (1986) counters that the importance of the railway station was recognised by the Victorians, as it was seen by them as a significant institution, symbolic of the nation's wealth and it crucially epitomised 'the new age of power and speed' (Biddle, 1986, p.14). Additionally, it should be remembered the Victorian era saw the construction of numerous municipal buildings within British cities, but it can be argued these did not exert

the same influence as the location of the new railway stations in cities, which could have a

> direct influence on city centre development...it could become the core of a new commercial area of a city, yet equally it could...become surrounded by a seedy district of mean streets and small businesses.
>
> (Biddle, 1986, p.21)

Many of the first railway stations, apart from those on the Liverpool and Manchester routes, built in circa 1830, were little more than improvised sheds, without platforms and little in the way of keeping passengers safe from the dangers of rolling stock and locomotives (Biddle, 1986 and Wolmar, 2003). Latterly, it was recognised that the role of the railway station was to offer a space where passengers could be controlled; tickets would be purchased in the halls, waiting rooms kept passengers safe from track dangers, some city stations, such as SPIRS, had hotels attached to them which were also owned and operated by the railway companies. The railway station also provided office space for staff and a place of administration for the railway companies.

The early methods of purchasing tickets at the Liverpool and Manchester railway stations would rival some of the security measures currently in place in the aviation sector when purchasing tickets for travel. Hale (1980, cited in Wolmar, 2003, p.43) maintained 'it was more of a passport than a ticket', as passengers had to purchase tickets for rail travel a day in advance, and provide the following details; 'name, address, age, place of birth, occupation and reason for travelling' (Wolmar, 2003, p.43). However, as the number of passengers grew with the new routes this method was replaced by tickets only requiring the passenger's names for the issue (Wolmar, 2003). The railway station not only controlled the ingress and egress of passengers but also it was felt necessary by the train companies to regulate through statute to control the actions and behaviours of passengers to ensure their safety in the station (Wolmar, 2003). The first police officers on the railways were responsible for signalling, the tracks, and the safety of passengers within the station (Wolmar, 2003).

Figure 6.1 St Pancras Railway Station in the 1920s (Source: Carrier, 2012)

The station, as today, was a place where different classes, employees and vendors mingled; it was 'an agent of social mixing. Unquestionably, in the 'Victorian era, its position was at the center of cities and in most suburban...and rural communities' (Richards and MacKenzie, 1986, p.137). Furthermore, the British railway station influenced engineering and architecture, as engineers had to resolve difficult architectural features, again this is exemplified by SPIRS, with feature such as

> double-spanroofs...they boldly utilised the new materials, iron and glass to construct the naves and transepts of the cathedral stations.
>
> (Richards and MacKenzie, 1986, p.3)

It is easy to understand why the Victorians believed their stations were comparable to 'medieval abbeys' (Biddle, 1986, p.14). However, it would be inaccurate to think that all the stations built in the nineteenth century were built with redundancy and forethought in mind; rather some were built on a small scale, and their size and capacity only increased over time with numerous extensions (Biddle, 1986). Interestingly, the below quote from 1850 recognised the investment in, the size and dependencies of large terminal stations in cities and the impact on their operations.

> It is impossible to regard the vast buildings and their dependencies, which constitute a chief terminal station of a great railway line, without feelings of inexpressible astonishment at the magnitude of the capital and the boldness of the enterprise, which are manifested in the operations of which they are the stage. Nothing in the

history of the past affords any parallel to such a spectacle.

Source: Dionysius Lardner, Railway Economy (1850) cited in Simmons (1968)

William Barlow in 1863 designed St Pancras Railway Station and it was opened five years later in 1868. At the time, it 'was the largest enclosed space in the world' (St Pancras International, 2013a). Additionally, at that point in time, it was also, 'the largest iron structure in the world' (Lansley et al., 2008, p.12). Moreover, Sir George Gilbert Scott designed the Midland Grand Hotel within the 'gothic front facade' (Lansley et al., 2008, p.12) which was opened in1876.

Figure 6.2: Entrance to what was the Midland Grand Hotel, now the St Pancras Renaissance Hotel. Note the hostile vehicle mitigation bollards in front of the entrance, a heritage design to be in keeping with the exterior of the hotel. (Source: Gregson-Green, 2012)

St Pancras Railway Station played a significant role in the war effort, as a convening place for troops to be transported to war; it was also used as a departure railway station for the capitals evacuated children to the safer rural locations (St Pancras International, 2013a). During the First World War, five bombs were dropped on the station in 1918, with twenty people being killed and twenty-three sustaining injuries when one of these bombs dropped on glass roof near the booking office (Simmons, 1968, p.117). The railway station came under fire during the blitz of the Second World War and it was hit causing damage to the platforms; however, engineers repaired the damage quickly to ensure service continued.

The mid-1960s saw the most significant risk to the continuation of the station that was the proposal to merge St Pancras and its neighbouring station, Kings Cross. This was a cause for concern for those endeavouring to preserve St Pancras, given that nearby Euston station and its Doric arches had been demolished in the early 1960s, to be replaced by a modern station. St Pancras Railway Station was rescued by Sir John Betjeman who championed the safeguarding of the station and the hotel, with the buildings achieving Grade One listing in 1967 (St Pancras International, 2013a).

This listed status is critical in the acknowledgement of St Pancras both in terms of its 'historical and structural significance' (Lansley *et al*., 2008, p.12). However, this listed status impacts on the physical alterations to the building and this includes the siting of security measures such as CCTV and barriers. Up until the mid-1980s, British Rail used the St Pancras Chambers as office space, thereafter the building was unoccupied becoming almost derelict by the 1990s (St Pancras International, 2013a)

Figure 6.3: Statue of Sir John Betjeman located in SPIRS in recognition of his dedication in saving the station from demolition in the 1960s. (Source: Stone, 2010)

6.2 Privatisation to Nationalisation to Privatisation

Competition between railway companies is not a modern phenomenon, where TOCS are competing for their share of the railway passenger market. Approximately one hundred and twenty companies operated before the 1923 streamlining, the competition was intense and could be seen in larger cities and towns where more than one company operated routes and thus resulted in there being more than one station often in close proximity (Biddle, 1986).

Therefore, railway stations were not general stations like today, with multiple railway companies operating services out of them, rather they were route and operating railway company specific (Biddle, 1986, p.30). However, although rarely, at this junction in the construction and operation of railway stations, some railway companies operated joint stations (Biddle, 1986). This situation can be compared to the TOCS of today; however, the current twenty-four, (these are listed in Appendix 6.1) TOCs lease and manage the railway stations from Network Rail which are on their routes, rather than owning the physical buildings.

During the expansion of the railway, the Government saw it as a state asset that was for the benefit the public rather than as a means of making a profit for the railway companies. The subsequent rafts of operational and safety legislation steadily over time saw the Government take more control over the railways from the railway companies, as these operations were highly disjointed and disparate. This process of acquisition culminated after the First World War, when the Government took over through the Transport Act 1921 (Biddle, 1986) the assets of the one hundred and twenty railway companies, therefore creating a nationalised railway service (InfoBritain, 2010), with the justification of a more efficient service as there was now interoperability between the services and routes. However, between 1918 and the start of World War II, the Government relinquished control over the railway network and the one hundred and twenty-one railway companies which were operating on the railway network, had merged into the below four companies:

- Great Western (GWR)
- Southern Railways (SR)
- London Midland and Scottish (LMS)
- London and North Eastern (LNER)

  (InfoBritain, 2010)

In addition, during this period the railway companies closed three hundred and fifty rural stations due to lack of financial investment (InfoBritain, 2010).

Railway nationalisation was again seen at the outbreak of World War II, and the Government in1939 again take over complete control of the railway network, as petrol was rationed and the country heavily relied on steam power to transport freight and troops during the war years. Larger city railway stations during the war were frequently appropriated by the military as operational bases for military transport (Biddle, 1986, p.195). Thus, the concept of the railway station at risk from human malign security threats is not a modern one, historical

threats to the rail station were examined in greater detail in Chapter Four. Even those railway stations not used by the military were still targets for German bomber crews, with their aim being to destroy and damage the railway infrastructure. It was through the absolute determination and hard work of staff which saw many of the damaged railway stations operational within hours, or 'at most a day or two' (Biddle, 1986, p.195), a spirit which was echoed after the 7/7 bombings in London in 2005.

Lastly, the final four railway operating companies were amalgamated, and the railway network was nationalised in 1948 (Biddle, 1986 and Wolmar, 2007) and consequently created British Rail. The process of rationalising the four TOCs was a response by the Government to a lack of investment in the railway infrastructure and the competition created by lorries for haulage and coaches for passengers (Biddle, 1986).

The 1960s was a notable period of controversy for the railways and saw yet another restructuring of the railway network, which had a significant impact on railway stations across the country. Dr Beeching, the Chairman of the British Transport Commission from 1961 to 1965 rationalised the railway network, it is estimated that from the 1960s to the mid-1980s, that over four thousand stations were closed (Richards and MacKenzie, 1986, p.4). Through Dr Beeching's process of rationalisation, London was the only city to have multiple stations, with no cities having more than two railway stations (Biddle, 1986, p.19). Furthermore, the electrification of the West Coast mainline route from London to Glasgow from the mid-1950s to the mid-1970s saw the next period of major investment by British Rail into the railway network and the stations along the route (Biddle, 1986). Euston and Birmingham New Street stations were both redeveloped as part of the project (Biddle, 1986). Property development companies partially funded New Street station, leading to the now common relationship of larger city railway stations incorporating a shopping centre/leisure facility (Biddle, 1986, p.206) which can be seen today in SPIRS.

Under the Conservative Government's policy of revoking nationalised industries in the 1980s and 1990s, the railway network moved again from a nationalised to a privatised industry. The privatisation of British Rail commenced with the 1993 British Rail Privatisation Bill, in the same year Railtrack was floated on the London Stock Exchange as a Public Limited Company and its role to manage the signalling, tracks and stations. The operation of the routes was given to twenty-five TOCs through franchises and Railtrack granted them access to the lines for a fee. Hawkins (2008) notes the privatisation of nationalised railway networks and the routes being

operated by franchisees were successful in some European countries and Japan. Yet in Britain, the lack of competition on the routes once the franchises were awarded to the TOCs was considered one of the major critical failings of the privatised rail network. Furthermore, another contributing factor to the failings of Railtrack was the uncertainty of 'where the responsibility lay for the many operational shortcomings on the railway network' (Hawkins, 2008, p.6).

However, a proposed benefit of the privatisation of the railway network was the ageing rolling stock was heavily invested in (Hawkins, 2008), something which British Rail was criticised for not doing. Nevertheless, the seriousness of Railtrack's lack of success led to the company being placed into administration in 2001 and the responsibility of the railway network was handed over to the DfT, and Network Rail replaced Railtrack as the management company of the railway infrastructure (Hawkins, 2008).

6.3 Network Rail Company Structure

In 2002, Network Rail took over from Railtrack the management and operation of the rail infrastructure in Britain and is divided into nine routes. Network Rail is a private non-profit making company, limited by guarantee and answerable to its members for the management of the company. Network Rail's members are composed of two distinct types, public membership, and rail industrial company membership (Network Rail, 2011b). There is an additional membership which is taken up by the DfT, who has the right to select the Director of Network Rail if necessary, and offers financial assistance 'to the debt funding' (Network Rail, 2011b) of the company. Members do not receive any remuneration or financial benefits from their Network Rail membership. Furthermore, they operate under license enforced by the ORR. Network Rail has been described as a 'quasi-public sector company' (Green, 2010, p.33). Conversely, Butcher *et al.* (2010) state in their House of Commons research paper that the infrastructure of the railway, which is the stations, track and signalling as being 'publicly owned' (Butcher *et al.*, 2010, p.8). This discrepancy in understanding and the definition of the ownership of the railway infrastructure between one Government office and Network Rail highlights the complexities of the railway network in the UK and it presents a lack of distinction and ambiguity in terms of the accountability for its processes and procedures, and the legal framework that surrounds it (Hawkins, 2008).

Network Rail is operated to the same standards as a public limited company and the ORR is the regulatory board that Network Rail must operate under (Network Rail, 2011a). The ORR

was created through statute and it operates as an independent economic and safety rail regulator in the UK, with their objective to improve rail services for all users. Their jurisdiction covers the mainline network, underground railway, light rail, tramways, and minor heritage rail. The ORR is the enforcing authority of the Railways Act 2005 and the Health and Safety at Work etc. Act 1974.

6.4 Network Rail and Railway Stations

Network Rail owns all the railway stations in England, Scotland, and Wales. However, they only operate eighteen railway stations in the UK; seven of these are national stations, while the remaining eleven stations are located throughout London. The locality and scale of these Network Rail operated stations can be appreciated when over half of passengers either commence or terminate their travel at one of them (Network Rail, 2011d). Moreover, SPIRS is owned by HS1 and operated by Network Rail High-speed. The remaining two thousand five hundred railway stations in the UK are leased to and operated by the TOCs. A full listing of the current TOCs that operate in England and Wales is listed in the appendices. The Strategic Rail Authority controls the franchise agreements that permit the TOCs to operate on the railway network (Morgan and Cornish, 2006). The ATOC is the trade association to represent the interests of the TOCs (Morgan and Cornish, 2006, p.1). Despite this, Network Rail is currently responsible for the actual railway station buildings and their subsequent upgrading and refitting (Network Rail, 2011e). By 2015 Network Rail estimates it will have invested £3.25 billion, secured from the DfT, the Welsh Assembly, Transport for Scotland, their own funds plus those of third parties, to operate, maintain and improve railway stations in Britain, with over two thousand stations benefiting from the investment (Network Rail, 2011e).

It should be noted that Network Rail additionally operates and maintains the following components of British railway infrastructure:

- 40,000 bridges and tunnels
- 20,000 miles of track and associated infrastructure
- 8,200 commercial properties

However, the recommendations of the 2011 McNulty Report proposed some significant changes to the operation of railway stations. The focus of the report was how the railway network in Britain could increase its value for money, with Sir McNulty believing that it is possible from 2014 to save £1 billion per year. This has been estimated to represent savings

of twenty percent of the public subsidy that is put into the British railway each year (Railnews, 2011). Network Rail announced in May 2011 to meet some of the savings required in the report, the TOCs would be permitted to redevelop stations with 'financial incentives' (Gardiner, 2011) and they will be awarded longer leases, with one hundred years being given on railway stations. Network Rail also indicated they wish to operate, control, and redevelop further major city stations (Gardiner, 2011).

6.5 SPIRS Today

As examined in Chapter Three, the functions of railway stations in England and Wales today have moved on from the practical issues of the movement of passengers and they now play a crucial part in the passenger's travelling experience. The communities where railway stations are being redeveloped currently and in the future, will benefit from the substantial investments being made (Railstaff, 2013). Larger railway stations, with investment, are becoming significant structures in our cities. Since many of them like SPIRS have multi-functions, retail, and hospitality, and are therefore not just the entrance to the network (Railstaff, 2013). It is suggested that given these functions, the redeveloped railway station makes 'them ideal locations for office and residential developments, especially in city centres…by taking advantage of the inbuilt sustainable transport provision' (Railstaff, 2013).

As discussed in Chapter Five, as a unique single case study SPIRS is a magnifying glass to focus on the interdependencies of the political, legal and operational boundaries of the complex and multiple stakeholders in a Category A railway station and how these can impact on the current and future resilience of the space against human malign security threats. The findings of the research could be applicable to the resilience of 'Category B: Regional Hubs – stations generally serving important cities and towns' (Network Rail, 2011, p.15). However, there is little value to the research by comparing the security requirements of smaller stations, given their security requirements will be vastly different to larger nationally important stations.

6.5.1 Refurbishment and Regeneration of SPIRS

In recent years, SPIRS and the neighbouring station of Kings Cross have been at the centre of extremely high value regeneration projects. It was decided in the mid-1990s that St Pancras Railway Station would be redesigned and refurbished to become the terminus for the Eurostar. Platforms were extended to the north of Barlow's great glass roofed train shed, roads were rerouted, gasholders were demolished, along with most of the viaduct that brought trains into the station was replaced for the extension project (Thorne, 2003, p.174). The 2004 to 2007 refurbishment of SPIRS cost approximately £800m, the focus of the station has

changed from being a terminus and part of the London Underground network to a high-class retail and hospitality venue. It has become the focus of consumers and not just the travelling public, given 'twenty five percent of its visitors never going near a train' (Railstaff, 2013). The St Pancras Renaissance Hotel was opened in 2011, with two hundred and forty-four lavishly appointed bedrooms. The hotel has open public access to the SPIRS platform through The Booking Office Bar. The refurbishment of SPIRS and the opening of the hotel has reinforced it as an icon 'as one of the greatest Victorian Buildings in London' (St Pancras International, 2013a). Thorne (2003, p.176) states the redesign and refurbishment of SPIRS was

> conceived as a way of reusing what already exists rather than starting afresh. It knits together and extends the infrastructure that is already available.

Therefore, the refurbishment of SPIRS was not merely the case of renovating a grade one historically listed building 'but it had to include and seamlessly interface with a modern international travel hub' (Lansley *et al*., 2008, p.57).

Figure 6.4: One of the opulent staircases in the St Pancras Renaissance Hotel, which illustrates the refurbishment of the gothic grandeur of the hotel. (Source: St Pancras International, 2015).

Furthermore, 'architecture appears to have become the semiotic tool of choice for cities seeking to enhance their economic and cultural status' (Jenkins, 2006, p.195). This is a feature of 'new urbanism' (Jenkins, 2006, p.197) where communities are at the center of planning,

which should induce a sense of incorporation and the 'projects…fit in with existing urban contexts' (Jenkins, 2006, p.197). The regeneration of SPIRS incorporated the existing station buildings and meshed it with the newer station extension. The area around Kings Cross and SPIRS have been regenerated by integrating existing buildings and creating new public spaces for passengers and the local community.

As discussed in Chapter Four, railway stations in England and Wales have been viewed by the public and the media as dangerous spaces, which has created a fear of crime around them. The area around St Pancras and Kings Cross stations by 2000 were suffering from a lack of investment in regeneration; it was neglected and was associated with anti-social behaviours (Lansley *et al.,* 2008, p.28), such as street sex workers, drugs, and vagrancy. Therefore, one consideration of SPIRS' regeneration and redesign were 'to construct (and defend) [a safe] space' (Jewkes, 2008, p.36). Moreover, these defendable spaces were constructed with two interrelated practices being considered, that of 'state sponsored urban renewal and the…more market-driven processes of gentrification' (Jewkes, 2008, p.36). Raco (2003, p.1870) supports this stance and explains that many regeneration projects are additionally being based on 'consumption-based economic activity'.

When looking at the retail and hospitality stakeholders within the space (see Figure 6.9), SPIRS has been redeveloped to attract the wealthier sections of society, those who can be classed as 'legitimate patrons' (Atkinson, 2003, p.1829), with 'urban spaces are habitually imaged' to tempt and charm these users (Massey, 2011, p.191). The rebranding of SPIRS has been fundamental in the marketing of the space to specific groups of 'legitimate' users and subsequently making it attractive to investors and retailers alike.

6.6 Observational Analysis of the Current Functions of SPIRS

As discussed in Chapter Three, the role of SPIRS and other Category A railway stations in England and Wales can be defined through Zemp *et al.,* (2011) framework of five functions, which to recap are:

1. linking catchment area and transport network
2. supporting transfer between modes of transport
3. facilitating commercial use of real estate
4. providing public space
5. contributing to the identity of the surrounding area

(Zemp *et al.,* 2011, p.446)

Therefore, through the contextual observations and analysis of SPIRS around five elements

of function framework (Zemp *et al.,* 2011); it highlights the critical and multifaceted nature of the station and how this leads to greater operational and security complexities for the multiple stakeholders within the space to process and resolve.

1. *Linking catchment area and transport network*

SPIRS provides a space for passengers to transfer between different modes of the transport, below are the forms of transport which can be accessed via the station, hence making it a multimodal transport hub. The research has found that in SPIRS each of the TOC's has its own security policies that must work alongside and dovetail into Network Rail High- speed once the trains enter the station:

East Midland Trains, - SPIRS is a terminal station which offers a direct link to large cities in the Midlands and the North of the country. Located on the upper level of the station, platforms one to four serve East Midland Trains.

South Eastern Trains – SPIRS is a commuter station for passengers travelling on the UK's only domestic high-speed rail service, 'Hitachi bullet trains running at speeds of up to 300kmph to destinations in East London and Kent' (St Pancras International, 2015b). Located on the upper level of the station, platforms eleven to thirteen serve South Eastern Trains.

Thameslink, SPIRS is also a commuter station for passengers travelling from 'Bedford and Luton through London and down to Brighton' (St Pancras International, 2015b). Located on the lower level of the station, platforms A and B serve Thameslink.

Eurostar – SPIRS is the terminal station for the Eurostar, where high- speed trains depart for Paris, Lille, and Brussels (St Pancras International, 2015b). New routes have added in 2015 to include Lyon, Avignon, and Marseille. The Eurostar arrivals and departures are located on the lower level of the station, while platforms five to ten are located on the upper level.

London Underground - the Kings Cross St Pancras Station has 'more underground connections than any other station in London' (St Pancras International, 2015b).

London Transport (buses and taxis) – bus stops are situated on the Midland Road, St Pancras Road and the Euston Road. Taxis ranks are located on the St Pancras Road and outside of the Eurostar Arrivals (St Pancras International, 2015c).

2. *Facilitating commercial use of real estate*

Despite it being obvious that SPIRS provides a public space for passengers and members of the public looking to utilise its retail and leisure facilities, it should be reiterated that SPIRS is not a public space, as it and other railway stations in England and Wales are privately owned spaces which the public has seemingly free admittance to. Subsequently, they cannot be considered as public spaces; rather this research maintains that they are 'pseudo-public spaces' (Copper *et al.*, 2007, p.14), or a hybrid area (Raco, 2003 and Newburn, 2007). As already discussed, the retail facilities within SPIRS lend themselves to creating a higher end shopping experience, the brands which occupy units are critical in upholding the image of premium quality which is driven by HS1, with food chains such as MacDonald's and Burger King not being seen to promote a premium shopping and leisure experience. Retailers such as Fortnum and Masons, John Lewis and Cath Kidston capture classic English luxury shopping in the space. Thorne (2003, p.171) maintains during the planning stages of the redesign and refurbishment of the station and the hotel the 'designated shopping centre…was crucial to helping the financial restoration'.

3. *Contributing to the identity of the surrounding area*
4. *Providing public space*
5. *Contributing to the identity of the surrounding area*

The refurbishment of SPIRS and its role as an international travel hub has played an important stepping-stone in the regeneration project of the surrounding Kings Cross area. Lansley *et al.* (2008, p.178) proposed for the future that the regeneration of the areas would 'deliver a fundamental change to the economy and environment of this key part of central London…and producing substantial benefits for the community, locally and across London'. Below is a breakdown of the basics of the project and just what the impact has been in the locale:

- 50 new buildings
- 2,000 new homes
- 20 new streets
- 10 new public squares
- 67 acres
- 8 million square feet
- 3.4 million sq. ft. of workspace
- 500,000 sq. ft. of retail
- 26 acres of public space

(Kings Cross, 2013)

As well as considering the space of SPIRS in terms of the five functions described by Zemp *et al.* (2011), Network Rail designates the physical space of the station into three specific zones, each with its individual functions. Network Rail (2011, p.5 and p.34) defines the zones as follows and the photographs collected from SPIRS during the data collection phase of the research are used to illustrate these areas:

The AccessZone

This is the area of (and surrounding) SPIRS where departing passengers arrive at the railway station, or where people who have just arrived by train commence the next leg of their journey, and can include access to:

Public transport

- Domestic: TOCs, East Midland Trains, Thameslink, South Eastern Trains
- International TOC, Eurostar
- Check in and passport control facilities
- Transport for London, London Underground
- Transport for London, Taxis
- Transport for London, Buses

Figure 6.5: Upper Level platforms in SPIRS. Three Eurostar trains waiting in the terminus. (Source: Gregson-Green, 2012)

Pick-up/dropoff

- Outside the St Pancras Renaissance Hotel

- International departures on the east side of the station

Figure 6.6: Vehicle drop off zone and parking to the front of St Pancras Renaissance Hotel (Euston Road). (Source: Gregson-Green, 2012)

- *Carparks*
  - Underground NCP carpark on the lower level of the station to the north of the building

- *Walking routes*
  - Passengers and the public walk through SPIRS to access Kings Cross Railway Station, Kings Cross St Pancras London Underground Station, and to traverse through the station to access major routes.

- *Works of art*
  - Sculptures
  - Art installations

Figure 6.7: The Meeting Place sculpture on the upper level and the art installation of the Olympic Rings. (Source: Gregson-Green 2012).

The FacilitiesZone

This is the area of SPIRS where passengers and the public collect information, make purchases, or use the facilities on offer in the space. The Facilities Zone includes facilities such as:

- *Ticketsales*
- *Waitingareas*
- *Information areas*
    - Are located near the entrances to the platforms. The station reception is located on the lower level past the Circle area
- *Public conveniences*
    - These are located on the lower level of the station in the Arcade area and past the Circle area.
- *Left Luggage*
    - is located on the lower level of the station past the Circle area
- *Retailandeateryunits*
    - Are located on the upper level, and the lower level, Arcade and Circle areas.

Figure 6.8: The Upper Level of SPIRS – East Midlands Trains. The picture highlights the entry and exit barriers to platforms one to four; it shows the passenger information screens for train information and the information desk for East Midlands Trains. (Source: Gregson-Green,

2012).

The Platform Zone

In these areas of SPIRS, passengers leave domestic and international trains, they also wait for and to get on board trains, or interchange between trains, it includes facilities such as:

- *Seating facilities*
- *Information zones and facilities*
- *Access to and from the domestic and international platforms*

On the next page is a station map of SPIRS as at 04.04.15. This map was current at the date of the download, however, given the fluid nature of the retail units the station the map will be subject to change.

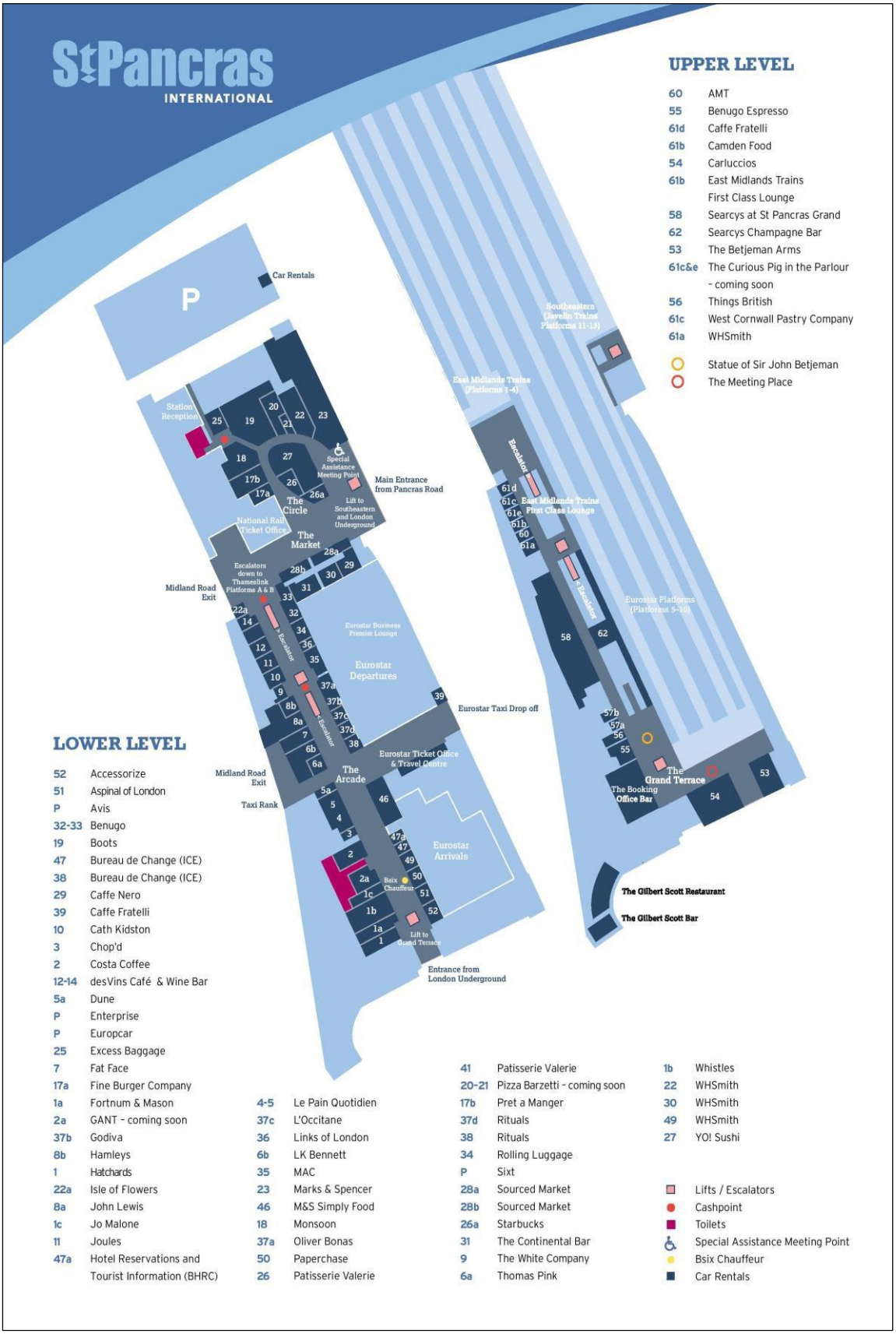


Figure 6.9 Map of SPIRS as at 04.04.15 (St Pancras International, 2015d)

6.7 Crime, Commodification of SPIRS

SPIRS is located within the London Borough of Camden, Somers Town. Historically, SPIRS and Kings Cross and their outlying marginal areas where infamous for criminal activities, street sex workers, vagrants, and drug users, and like many stations of the time, it was typified by neglect, and a poor opinion of the area (Raco, 2003). Therefore, it was crucial for investors, owners and the public that the redeveloped station and areas around SPIRS conquered these undesirable and harmful opinions. As examined in Chapter Four, railway stations in England and Wales are continuously under surveillance and governance, however, larger city based stations face another challenge as they are becoming 'commodified and newly regenerated areas are viewed as valuable, and thus individuals and corporations fight for a presence there' (Massey, 2011, p.191).

Therefore, from the observations made during the data collection phase, not all members of society are welcomed in these newly gentrified spaces, vagrants, and drug users are discouraged from spending time in or around the margins of the station. However, interestingly, at the point of data collection, the Boots store in SPIRS was the local registered pharmacy to dispense Methadone. These regenerated and gentrified spaces such as SPIRS are designed, developed, and operated for prosperous and frequently middle-class consumers and consequently do not cater for the surrounding local community, 'who are often culturally and even physically excluded' (Raco, 2003, p.1871).

Moreover, the regeneration and gentrification of SPIRS could lead to the space becoming contested. Jewkes (2008, p.37) states the process of gentrification of spaces can be viewed 'as a byword for middle class takeover, with local people being forced outbysocialand economic pressures'. Therefore, Atkinson (2003, p.1834) proposes 'the rights conferred by citizenship are increasingly predicated on being a consumer, consumers of private and government services'. Consequently, it is critical for HS1 and Network Rail High-speed to ensure their legitimate customers feel secure in the environment of the station and its surrounding margins, 'as flows of income are easily disrupted by changing perceptions of fear and the threat of crime' (Raco, 2003, p.1869). Hence, the policing, the securitisation, and resilience of the space are entangled with the perceptions of SPIRS and economic drivers of the management and owner companies.

6.8 Current Terrorist Threats Facing SPIRS

The 2005 terrorist attacks on London's transport infrastructure is just one example which

demonstrated how a critical infrastructure can be viewed as 'vulnerable and brittle' (Schulman and Roe, 2007, p.42) to disruption. Despite the death of fifty-two people in the July 2005 terrorist attack on London's transport system, the infrastructure was, in fact, resilient because the destruction and disruption were 'localised' (London Chamber of Commerce and Industry, 2005, p.5). The Royal Mail exemplifies this proposition since they could commence their operations in London by the afternoon of the attack (London Chamber of Commerce and Industry, 2005). This act of terrorism and similar events such as the 2007 terrorist attack at Glasgow airport have resulted in the resilience of Britain's CNI making headlines in the media. The Government stated, 'we are entering an age of uncertainty… our objectives are ensuring a secure and resilient United Kingdom' (The Guardian, 2010) and funding of £500 million will be deployed for the protection and prevention of the UK's CNI. Therefore, it is this era of insecurity concerning the resilience of the UK that is the fundamental principle behind the 2011 National Security Strategy.

The Government maintains the current and indeed the future threats faced by the country are not the traditional hazards of war and invasion, rather the threats of modernity, such as conventional terrorist attacks, cyber terrorism, terrorist actions using weapons which are chemical, nuclear or biological, and natural hazards and accidents (Home Office, 2011d). It is acknowledged these threats are due to the highly networked and open nature of the country and threats faced currently will be different in fifty years' time. The potential human malign security threats to the UK are defined as both state and 'non-state actors: terrorists, home-grown or overseas; insurgents; or criminals' (Home Office, 2011d, p.3). However, in 2015 the Government states

> the terrorist threats we face now are more diverse than before, dispersed across a wider geographical area, and often in countries without effective governance. We therefore face an unpredictable situation, with potentially more frequent, less sophisticated terrorist attacks.
> (GOV.UK, 2015a)

The threat level in the UK at the start of 2015 was at the highest level it had been in seven years (Sky News, 2015). Terrorism threat levels indicate the risk to the UK of attack, against an international led attack; the current level is severe (Gov. UK, 2015b). Below is the categorisation of the threat levels to the UK as 'set by the Joint Terrorism Analysis Centre and

the Security Service (MI5)' (Gov.UK, 2015b).

There are five levels of threat:

- *low* - an attack is unlikely
- *moderate* - an attack is possible but not likely
- *substantial* - an attack is a strong possibility
- *severe* - an attack is highly likely
- *critical* - an attack is expected imminently

(Gov. UK, 2015)

As examined in Chapter Three there are multiple methods of terrorist attacks that could be launched against SPIRS, which is an iconic building and a significant Category A railway station in London. The concept of the resilience of CNI and SPIRS being a part of the wider transport CNI is acknowledged as being not just the responsibility of the Government, but additionally that of the public and the private sector. The Government maintains that resilience will be achieved through reinforcing defences, preparation for the worst-case scenarios and the ability to recover quickly to 'keep Britain moving' (Home Office, 2011d, p.5).

6.9 The Key Stakeholders Involved in the Operation of SPIRS

Since the privatisation of the railway network in the 1990s, the complexity of the railway network can be seen in the numerous key institutions, stakeholders, and forums that are involved in deciding on policy, strategies, the operational capacity, and future of the railway network. A critical contribution to the knowledge surrounding how the complex and multiple stakeholders affect the current and future resilience to security threats in SPIRS is the completion of the Stakeholder Map. The creation of a Stakeholder Map is an important contextual analysis of information that maps the relationships and power of the stakeholders within SPIRS.

As demonstrated in this chapter and Chapter Three, SPIRS' operational complexities are exacerbated by its size, location, and importance (Zemp *et al.*, 2011). Thus, it has numerous stakeholders who affect or are currently impacted on by resilience and security policies, strategies, at both a local and national level. Stakeholders in SPIRS are 'any group or individual who can affect or is affected by the achievement of the institution's objectives' (Freeman, 1984, p.46). The unique and innovate SPIRS Stakeholder Map aids and increases

this understanding of the complex and interconnected of both compulsory and voluntary relationships and the diverse forms of relationships which exemplify the space. Furthermore, Appendix 6.2 provides extensive details regarding the role and responsibilities stakeholders of SPIRS and other Category A railway stations in England and Wales.

The map demonstrates a complex and disparate group of stakeholders who are involved or affected by the operational and legal processes and operations of SPIRS. Moreover, it distinguishes the relevant 'stakeholders and maps out their relative power, influence, and interests' (Aligica, 2006, p80). Therefore, the stakeholders within SPIRS can be categorised as organisations (Blue-primary, yellow-secondary, and green-external stakeholders on the map) with an interest in the space, but can be seen also in a wider context of the public and passengers (Blue-primary stakeholders on the map). Thus, reinforcing that 'any group of people, organized or unorganized, who share a common interest or stake in a particular issue or system' (Grimble and Wellard, 1997, p.75). Moreover, when analysing and mapping the stakeholders of SPIRS, the research has used a holistic standpoint of Stakeholder Theory which have widen the established view of the stakeholders beyond their relationships based on conventional contractual and monetary associations. Therefore, the stakeholders of SPIRS have analysed and mapped as seen in the below table, whichever process of mapping is used; stakeholders are fluid and dynamic, and temporal and spatial and therefore must be considered as social constructs.

Colour Key	**Role**	**Stakeholder**
Blue	Primary stakeholders who are directly affected positively or negatively, by a project or operations	BTP, MET, TOCS, Passengers, Public, Network Rail, Retailers, ORR, RSSB, HS1
Yellow	Secondary stakeholders have a transitional function and can have a key impact on the project or operations	DfT, ATOC, Trade Unions, NACTSO, CPNI, SO15/S020, FOCs, Freight-Operating Association, Local Authority Emergency
Green	External stakeholders do not directly participate, yet can be impacted on by a project or operations	Home Office, The Treasury, Local Communities, Passenger Watchdogs, BTPA, ACPO

Table 6.1 SPIRS Stakeholder Categories and Roles for Mapping (Adapted from Freeman 1984 and Jepson and Eskerod, 2008).

The stakeholders listed in the above table and on the map, can add value to resilience and security strategies, operational processes, and their opinions should be valued and used to inform these. However, in terms of a practical application, active participation from all levels of stakeholders within SPIRS when dealing with issues of resilience to security threats would be extremely difficult to get all the stakeholders to agree 'what legitimates…participation' (Clarke 1997, p.211, cited in Anderson and Nielson, 2009, p.309) and how this could be managed. As discussed in Chapter Four, the legitimacy of stakeholders is highly subjective and extremely dependent on the agendas and values of the individual stakeholders undertaking the consideration. The SPIRS stakeholders categorised on the map are legitimate as they all have a form of power and influence 'to affect the direction' of the institution...regardless of the appropriateness of their demands' (Freeman, 1984, p.45), in terms of resilience to security threats within the space.

Therefore, the research proposes that stakeholders within SPIRS must consider criminals and terrorists as legitimate stakeholders when considering resilience and security policies and strategies as they can influence the institution. Those SPIRS stakeholders such as the DfT and Network Rail High-Speed establish and operationalise resilience and security policies and strategies must account for all the stakeholders affected and to assess their backing or opposition and to highlight their interconnected relationships (Aligica, 2006, p.79).

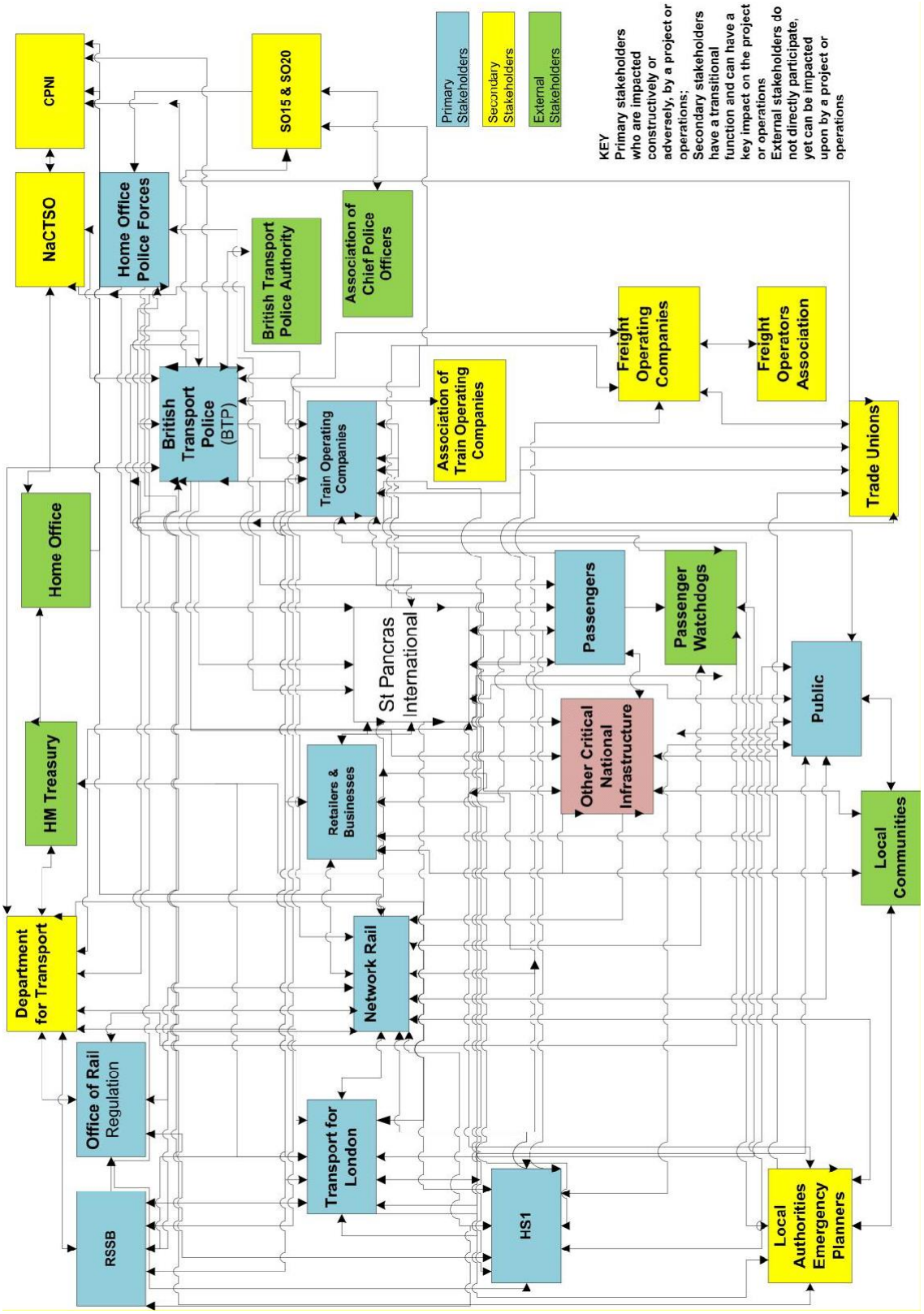


Figure 6.10 Stakeholder Map of SPIRS (Gregson-Green, *et al.,* 2013)

Importantly, the research participants validated the map during their interviews, alterations, and additions. The map portrays the critical stakeholders within SPIRS who can influence the resilience of the space to security threats and their complex interdependencies (Aliciga, 2006). Therefore, this a comprehensive and precise listing of the stakeholders and the category to which they belong to when considering resilience to security threats in terms of policy, strategy, and operational procedures. Moreover, this form Stakeholder Analysis is relevant to other Category A railway stations in England and Wales, and to other pseudo-public spaces who operate with multiple stakeholders, such as shopping centres and who need to be aware of the sizeable and complex range of stakeholders, policies, strategies and individual organisational agendas that influence the resilience of the space to human malign security threats.

The purpose of the map is to capture 'the essential elements of the strategic space: the actors, the rules of the game, the processes set into motion within those rules' (Aliciga, 2006, p.82-83). However, it should be noted there is no one correct method of 'mapping a social space or phenomenon' (Aligica, 2006, p.81). As with all forms of analysis, Stakeholder Mapping can be subjected to the creator's biases and knowledge. Therefore, it can be considered as subjective, dependent on who is devising the map and the policy, strategy, or operation being considered.

However, as a direct comparison to the Stakeholder Analysis and mapping carried out for this research, Network Rail has a stakeholder engagement strategy, which the stakeholder relations code of practice advocates a transparent process to encourage confidence and fairness (Network Rail, 2013a) when dealing with stakeholders. Moreover, this code additionally facilities the fulfilment of condition eight of Network Rail's network license, which obliges them to disseminate how stakeholders will be treated. Thus, Network Rail describes stakeholders who are connected to the railway network

- Any person providing services relating to railways
- Any person providing a railway facility or a network, including one which is proposed for, or in the course of, construction
- Any funder
- Any other person who's expressed, in writing to the licence holder, a credible:
- Interest in providing or intention to provide; or

- Interest in providing or intention to provide finance for, or in connection with either or both of: (i) services relating to railways; and (ii) a railway facility or a network, including one which is proposed to be constructed or is in the course of, construction
- The Mayor of London and Transport for London, in respect of their functions relating to railway services (this includes, but is not limited to, services for which the Mayor of London and Transport for London have responsibility)
- The Rail Passengers' Council and the London Transport Users' Committee, in respect of their statutory functions.

(Network Rail, 2013a, p.3)

Interestingly, in this document, there is an absence of passengers and the public being defined as stakeholders, they are depicted as 'rail users and…customers' (Network Rail, 2013a, p.3) and being the beneficiaries of the service provided by Network Rail and the aforementioned defined stakeholders. Network Rail extends a feedback system for stakeholders, who in the code of practice are encouraged to strengthen their working relationship with Network Rail by responding to their engagements with the Network Rail working practice (Network Rail, 2013a).

Network Rail (2011, p.5) defines other members of the public and groups/stakeholders as

- those meeting people off trains
- those bidding farewell to passengers
- those seeking information about rail services
- railway staff
- other public transport staff
- taxi-drivers
- employees of retail or catering outlets
- customers of retail or catering outlets
- contractors providing goods or services to the station
- emergency services
- railway enthusiasts
- criminals (illegitimate stakeholders)

Therefore, for the purpose of this research, the creation of the Stakeholder Map of SPIRS was critical in this conceptualisation and visualisation as this is not provided by Network Rail. The map represents a snapshot of the stakeholders within SPIRS, who can or are impacted on

by the resilience to security threats. Consequently, it must be acknowledged that the relationships and interactions between the stakeholders are fluid and dynamic and will change over time. Moreover, the map provides a framework for understanding that SPIRS as a space is dynamic and as such, it must be considered so in its governance and operations. Initially, the map was created to aid the researcher analysis and understand the complex interconnected stakeholder relationships within the space of SPIRS. However, as the data collection phase progressed and following the systematic abduction process, the map was altered as participants viewed it as part of the semi-structured interviews. Therefore, there have been numerous versions of the Stakeholder Map.

6.10 Chapter Summary

This chapter has provided a contextual study of the temporal, social, and political dynamics of SPIRS, in advance of Chapters Seven and Eight, which present the findings, and discussions of the qualitative research undertaken. Moreover, it has demonstrated that SPIRS is currently one of the most significant termini railway stations in London and the UK, given its exceptionality is defined its importance as an international and multimodal transport hub. Additionally, it is the setting of a luxurious and historic five-star hotel, with notable apartments located above it and additionally SPIRS is a space for prestigious leisure and retail facilities. Thus, this makes SPIRS a highly complex and interconnected space which consists of a mix of both public and private stakeholders which demand considerable degrees of organisation to 'legislate, regulate, implement, and police' (Loukaitou-Sideris *et al.,* 2006, p.737) to successfully safeguard resilience against current and prospective human malign security threats. The following two chapters bring together the research findings and examine them in terms of current and future security threats and the resilience of SPIRS and its complex and multiple stakeholders to withstand these.

CHAPTER SEVEN: SPIRS AND THE RESILIENCE TO CURRENT HUMAN MALIGN SECURITY THREATS. FINDINGS AND DISCUSSION.

7.0 Chapter Introduction

This and the subsequent chapter examine and present the extensive and substantial analysis of the data collected from the research phase of the thesis. These chapters will address the research question presented in Chapter One of the thesis.

> *How do the interdependencies and governance of the complex operational, and policy boundaries of SPIRS' stakeholders influence and impact the space's current and future resilience to human malign security threats?*

To answer this question, the unique and single case study of SPIRS was undertaken with thirty-four semi-structured interviews, see Table 5.3 for a full list of participants, conducted between 2012 and 2013 with the following research participant's data being analysed:

British Transport Police (8)	Three Senior Level Policy Officers Counter-terrorism Security Advisor Four Operational Officers, PCs, Sargent, and Inspector
Camden Borough Council	Emergency Planner
International Police Officer	Counter-terrorism Expert – Crowded Place/Mega Events (data not used in analysis)
Academic Professor (2)	Professors of Criminology and Crime Prevention (data from one not used in analysis)
Transport for London (2)	Community and Crime Prevention Manager Infrastructure Manager
Network Rail (5)	Three Operational Managers Emergency Planner Senior Policy Maker
Retailers (SPIRS) (2)	Store Managers
High-Speed One	Security Manager
Private Practice Security Consultants/Advisors	Three different consultancy firms

CrossRail	Security Consultant
Passenger Focus (Now Transport Focus)	Passenger Safety Officer
Eurostar	Head of Security
London Fire Brigade	Emergency Planner
RSSB	Senior Manager
Serco	Crime Prevention Manager
Security Services (2)	Counter-terrorism Service Advisors

Table 7.1 Research Participants (2012-2013)

These interviews approximated sixty-five hours' worth of recorded data, which the researcher transcribed verbatim. The subsequent transcripts were analysed using NVivo software and then coded into the below overarching parental themes;

- Barriers for resilience
- Built environment
- Communication
- Design stage
- Emergency
- Financial implications
- Futures
- Infrastructure
- Operational complexities
- Policy & guidance
- Railway station
- Resilience
- Security threats
- Stakeholders

Subsequently, as the analysis drilled down into these, deeper sub child themes emerged as per the thematic analysis framework (see Appendix 5.7). This thematic process has been examined in greater detail in Chapter Five (section 5.10.3) of the thesis. Therefore, the researcher coded data as it accumulated (Bell, 2010) and through constantly comparing the data, and could visualise emerging categories. The emerging themes and the subsequent discussions in the next two Chapters of the thesis are interconnected and overlap each other and cannot be considered or written about as isolated themes.

This Chapter and the next support the research's epistemological position of interpretivism and the ontological stance of constructionism. To recap from Chapter Five, this has been achieved using verbatim quotations from the participants, thus producing the narratives of the participant's own experiences and to highlight to the reader how they 'make sense of their social world and act within it' (May, 1997, p.129). Hence, the data which emerged must be considered that at the time of interview it was the participant's version of reality (Bryman, 2004). Consequently, the discourse and language of the participants will have been affected and prompted by their experiences and even organisational bias regarding the resilience of SPIRS to human malign security threats. The following discussions of the findings have been framed by current and innovative debates around Resilience, Governmentality and Stakeholder Theory that are relevant to the context of SPIRS and other Category A railway stations. The research findings have been used to inform this chapter, which examines the current resilience of SPIRS to human malign security threats, and Chapter Eight, which also considers the future resilience of the space in terms of the discussion and the lessons learnt from the research.

The concepts of Resilience, Governmentality, and Stakeholder Theory within the space of SPIRS direct the discussions around the obligations and 'responsibilisation' (Garland,1996) for resilience, crime and terrorism (security) prevention strategies for multiple stakeholders who are positioned at a local and national level. Stakeholder Theory specifically analyses how SPIRS' complex and multiple stakeholders operationalise and communicate strategy and policies to maximise the resilience of the space to human malign security threats. As discussed in Chapters Four and Six, the previous literature has highlighted that there are a number of significant elements which can affect and compel the security measures undertaken in SPIRS which safeguard the resilience of the space to current human malign security threats, these are;

- CPMs (Crime Prevention Measures)
- CTMs (Counter-terrorism Measures)
- Operational and functional complexities
- The Design of Railway Stations
- Stakeholders
- Resilience and Security Strategies
- Future Policies and Requirements

These elements have been investigated through the literature review and consequently integrated into the research design for the thesis (see Table 5.5 and Appendix 5.5 for the areas of questioning and semi-structured interview schedule). Moreover, given the abductive nature of the research, it allowed for the new and emerging topics and elements to be further researched and incorporated into the semi-structured interview schedule.

A number of findings have emerged, and which revealed the complexities of the operational concepts of resilience, responsibilisation and governance of the multiple stakeholders initiating measures against human malign security threats within the space of SPIRS. Furthermore, the analysis of the data has illustrated there are many influences that affect both positively and negatively on the resilience of SPIRS to security threats. This includes the disconnections and tensions between resilience policy and governance from a national level to the stakeholders at a local level charged with implementing resilience within the space of SPIRS. The research has also investigated the two forms of human malign security threats, crime, and terrorism, facing SPIRS' current resilience. To recap from Chapter Three and the subsequent research findings define security threats to SPIRS 'as any human malign action from terrorist activity to low level crime such as anti-social behaviour' (Gregson-Green *et al*., 2013, p.35). However, it is important to acknowledge from the research findings is they do not stand in, nor can be viewed in isolation from each other; they are entangled and interconnected, linked through their complexity.

PART ONE - RESILIENCE

7.1 Contested Definitions and Understanding of Resilience in SPIRS

The concept of resilience, in terms of its definition and use, which is open to a wide field of

interpretation by academics, rail industry professionals and the Government, was examined at length in Chapters Two and Four of the thesis. Moreover, a substantive area and theme of discussion which arose from the participant's semi-structured interviews were around resilience and how it was applicable, governed, 'responsibilised' and operationalised within SPIRS. The sub-resilience themes which emerged from the thematically analysed data are detailed in Table 7.2. The participants discussed the resilience of SPIRS to security threats in two temporal spaces, the present day which is analysed in this Chapter, and the future threats examined in Chapter Eight.

As discussed in Chapters Two and Three, the concept of resilience is frequently used in different forms and arenas of discourse, yet there is considerable agreement (Chandler and Coaffee, 2017, Joseph, 2017, Rogers, 2017 and Coaffee and Fussey, 2017) that it lacks clarity as it is interpreted by different schools of academic thought, rail industry professionals, and the Government. To examine if these differences in the definitions of resilience existed within the space of SPIRS the researcher deemed it was an essential question to ask the participants. Therefore, they were asked during the beginning stages of the interview to define what they thought was meant by the concept of resilience, *"what does resilience mean to you?"*.

As already mentioned in Chapter Three, the Government does outline an overarching definition of resilience for CNI, yet through the analysis of the participant's data, it was apparent that the overall space of SPIRS does not have or operationalise a cohesive definition of resilience. Moreover, the researcher found the multiple stakeholders all had their own organisational definition of resilience, which reflected and influenced the wider SPIRS overall resilience strategies at a local level and how it should be operationalised in terms of their organisation's agenda and the wider space of the station. Thus, the reality of the 'responsibilisation' (Garland, 1996) of a cohesive resilience agenda at the local level within the space of SPIRS is disputed as in reality it does not correspond with the Government's resilience rhetoric. It is contended within the space of SPIRS that conflicts, or tensions occur when the complex and multiple stakeholders are 'responsibilised' by the Government to keep the space resilient to existing human malign security threats. Therefore, it is the participant's definitions of resilience that are used as the starting point to explore the connections and tensions between the theoretical and practical standpoints of resilience within SPIRS, which in turn provides an original contribution to knowledge.

The below table (7.2) illustrates the emerging (child nodes) themes of resilience from analysing the interview data and how the participants defined the overarching concept of resilience in the context of SPIRS. The full coding matrix (Parent, child, subthemes) for the analysis of the data collected can be viewed in Appendix 5.7.

Name
RESILIENCE
BUSINESS CONTINUITY
CONTINGENCY PLANS
RESILIENCE CHALLENGES
RESILIENCE FORMS OF
RESILIENCE DEFINITION
RESILIENCE OF RAIL

Table 7.2 Resilience (parent and child) themes that emerged from the research data collection.

Thus, the below chart (Figure 7.1) highlights the number of (coded child) references made in the transcribed interview data to the resilience themes as noted in Table 7.2.

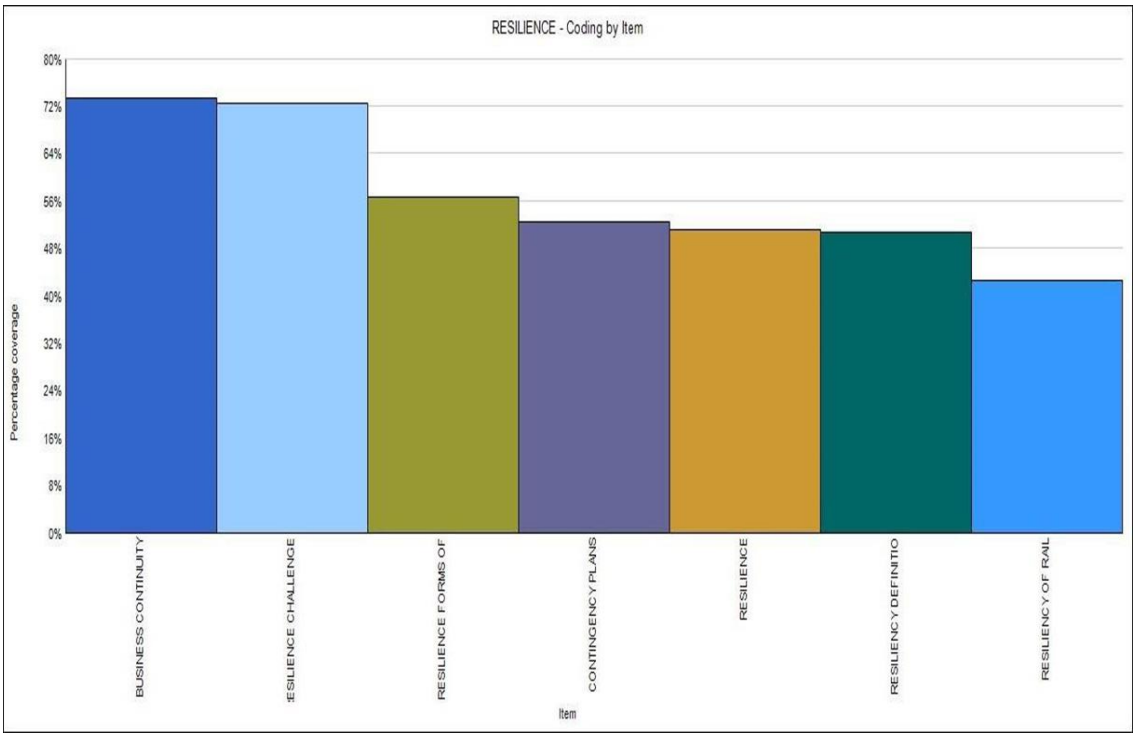


Figure 7.1 Percentage of coded references for resilience themes.

The below extracts empirically establish how the research participants defined the concept resilience in their own terms, whether that was from a theoretical position, organisational

and or their own general definition, and what it meant in relation to the wider space of SPIRS. However, not all the stakeholders interviewed had the same perception or concern, scale of risk about security threats or the resilience against them. Whilst the literature highlighted that the ambiguity of the term and definition of resilience has a part to play and 'facilitates communication across various disciplines and it often creates a perception of a shared vocabulary' (Chmutina *et al.,* 2016, p.78). Yet, the research findings have revealed the complex and multiple stakeholders in SPIRS do not necessarily share this collective vocabulary. Within the space of SPIRS, the research has exposed there are numerous and often fragmented competing policies surrounding resilience and how to secure this has created 'multiple competing 'logics of resilience' (Coaffee and Fussey, 2015, p.87). For instance, for the retailers within SPIRS who were interviewed, perceived the greatest risk to the resilience to their daily businesses was shoplifting rather than from the threat of a terrorist attack. Whereas, the BTP Officers interviewed acknowledged from their perspective that the greatest risk to the security of SPIRS was a terrorist attack.

The literature (Coaffee and Fussey, 2017) and the research findings has shown within the space of SPIRS there is little chance of finding a consistent explanation for resilience, with many of the below examples being principally centered around adaptability and redundancy. Given the complexity and number of stakeholders within SPIRS who form resilience is operationalised in diverse 'organisational and spatial settings' (Coaffee and Fussey, 2017, p.294), the concept should be considered 'normative…a goal rather than a final state if being…measured as a comparative or relative quality' (Chandler, 2012, p.217). It was ascertained from the operational participants that their overarching understanding of the concept of resilience was focused on the practical and functioning considerations of resilience, rather than from a theoretical or rhetorical perspective advocated by the Government. Thus, the analysis of the data has revealed that within SPIRS there are currently three classifications of practical and operational resilience, which is argued are interlinked to each other. The below table highlights how the stakeholder's opinions of resilience correspond to these three categories:

Category of resilience	**Academic reference**	**Research participants agreeing**

Resistance/robustness/absorption	Errington,1953; Godschalk, 2003; Holling, 1973; Salagnac, 2013	BTP, Network Rail, UK Government Police and Security Advisor
Recovery/ 'bouncing back'	Lindell and Perry, 1992; Rose, 2004; Wildavsky, 1988	BTP, Security Design Consultant, Security Advisor, Network Rail Government Emergency Planner
Planning/preparing/protecting	Bosher, 2008; Manyena, 2006; Wildavsky, 1988	BTP, Security Design Consultant andSecurity Advisor, Home Office Police Advisor, Network Rail

Table 7.3 Categories of resilience in SPIRS. Adapted from Bosher (2014, p.242).

7.1.1 Resilience: Resistance/robustness/absorption

As to be expected the findings exposed from a UK Government policing security perspective, the concept of resilience, which naturally mirrored the Government's stance, was about being as robust as possible at the time of the incident to ensure the best chance of the space and people surviving. This means

> *"relying on the best possible business continuity measures, to allow the space to recover and to be up and running as soon as possible, preferably the next day"*
> (Government Policing and Security Advisor).

There is little surprise that this definition is very close in mirroring the Cabinet Office's stance on how resilience should be able to predict, endure, modify, and quickly return to business as usual after a serious, human or natural, interruption to normal service conditions.

> Resilience is the ability of assets, networks and systems to anticipate, absorb, adapt to and/or rapidly recover from a disruptive event
> (Cabinet Office, 2011, p.15).

The resilience of SPIRS was also considered by participants in terms of a cascading impact of security situations, and how events and impacts have a knock-on effect on the overall resilience of the space to security threats. However, building in spare resilience capacity for contingencies, was very much subjective to the specific stakeholders being interviewed, as reflected in the above quote, and it can lead to conflict between the various stakeholders if others perceive such measures an inappropriate to the space of SPIRS.

> *"Whenever things wrong in a spectacular way, there is a number of dominoes that fall over and they just happen to fall over in a certain sequence. So, the whole thing falls over. What we try to do is separate the distance between those dominoes. If one falls over, the other one remains standing…Just a bit of a wobble! But it should remain standing. So, we try and building those extra spaces, sometimes that causes conflict because of others thinking there is such a low possibility."*
>
> (Emergency Planner, Emergency Service)

7.1.2 Resilience: Recovery/ 'bouncing back'

An overarching opinion of resilience in SPIRS was the capability of surviving a terrorist act or another form of disaster, to bounce back, and to be ready to continue working as soon as possible, thus having processes and strategies to deal with the incident and to recover. SPIRS and its stakeholders would need

> *"the ability to operate and function under duress and rebound from an adverse event. The ability for systems to function… fall over, fall back into place."*
> (Security Design Consultant)

> *"It's the ability of a system or set of systems to withstand some sort of external impact to resist it and if it doesn't resist it to bounce back as quickly as possible…I think it is resisting and then the bounce back which is the important thing."*
>
> (BTP Officer)

Moreover, from the perspective of a stakeholder who is responsible for local Government emergency planning, resilience in a space such as SPIRS should not only consider the bounce backability of the physical space and individual organisations which are located there, but the community and the public who use the space should also be considered

when thinking about the wider resilience of railway station.

> *"the community's kind of ability to bounce back and to get over what has happened. And they come out the other side without crumbling completely. And how they keepgoing."*
>
> (Emergency Planner)

The practical application of the concept of resilience was additionally seen in terms of SPIRS' ability to deal with a security incident and to be up and working in some form of capacity the next day. One participant stated that this capacity could be broken down into segments such as people, products, businesses, and assets, all of which needed investing in to ensure the resilience of SPIRS to human malign security threats.

Network Rail High-speed operational management considered that regardless of the emergency whether it was a fire, or a major human malign security threat causes the loss of all or part of SPIRS, the immediate consideration is to get it functional and operational as quickly as possible. Operational management staff would be immediate responders and would take decisions if the whole station would need to be evacuated or just a section for instance; they are well versed in the emergency plans for SPIRS.

> *"Resilience is being able to identify exactly what's the problem is, can it be solved quickly, and if yes-do it right! And as soon as possible. We have to get things back to normal and make sure there are no delays. Because if there is a delay due to a station issue then, of course, we have to pay a penalty to the train operating companies because they can't operate."*
>
> (Operational Manager,Network Rail)

Other participants felt that the resilience of SPIRS could be seen in terms of how quickly the station could be up and operational, even if at a reduced capacity. However, business as usual relies on not only physical measures but also the mentality of passengers and the public.

> *"It boils down to the fact, just how quickly can we get the wooden hoardings up and say we're still open. But that this is mentally not just physically. That to me is this business as usual piece, which is very important. Accepting we're brittle but as long as*

everyone understands we are fairly brittle and doesn't whine and whinge."

(Security Design Consultant)

7.1.3 Resilience: Planning/preparing/protecting

So, for example, the participants discussed resilience in terms of a prevention plan; this was considered crucial in terms of resilience and the operational function of SPIRS. Participants further maintained that resilience against human malign security threats in relation to SPIRS could be seen in terms of planning processes, planned for security threats and being able to "*sustain as much as possible for what you've planned for*" (BTP Officer). An Emergency Planner for one of the Emergency Services reinforced this standpoint and included that having the right people and enough of them with the right training and with the right equipment being able to respond rapidly to incidents was paramount to increasing resilience which therefore "*facilitates the restoration of normality in a speedy and professional way*" (Emergency Planner, Emergency Service).

Moreover, a retired BTP officer, who had previously worked as a high-level operating officer within the force, proposed from a practical perspective within the space of SPIRS resilience needed to be graded. This is because they perceived resilience as a fluid and moveable criterion and not static. Thus, it is proposed the resilience plans of the multiple and complex stakeholders within SPIRS could be dynamic and alter in accordance with the security threat levels. This could be a temporarily increased threat of perceived lower lever crimes within the space of SPIRS, such as a gang who are stealing mobile phones to the national terrorism threat levels. Hence, resilience is within SPIRS must be recognised as 'not a set of predetermined qualities…but as a temporally and contextually informed process' (Bourbeau, 2013, p.7). This research contends that SPIRS and the other Category A railway stations in London will always be at a greater risk of a terrorist attack in comparison to other Category A railway stations located in other English and Welsh cities.

"Resilience can get better if contingency is improved. Rail as an infrastructure is good at dealing with moveable objectives and challenges. Threat levels of terrorism in the UK are moveable and are dependable on intelligence."

(BTP Officer retired)

However, the BTP has historically played a role in keeping London's railway stations moving in the threat of terrorism; which was particularly highlighted during the IRA's campaign of

bomb threats to the capitals stations. The BTP devised and relied on their HOT protocol, which is based on dealing with threats quickly and to keep the railway network moving. The HOT protocol is discussed in detail later in this chapter.

Interestingly, one retail participant within SPIRS did not have a clear understanding of the concept of resilience and articulated his understanding more around the terms of day-to-day operations. They felt that given their High Street branding and placement combined with their positioning within SPIRS that the unit was as much a target as any other within the space,

> *"we are as open as everyone else. And in fact, we are probably more of a target [because of who we are]. And the site is open…when somebody comes into one of the quiet units on the station, the staff are aware of them straight away. You know 30,000 customers, come into this site every week alone. Any percentage of them can drop a bag and hide a bag...bang... And the place is gone. So, we are as open as anybody, do we have a process in place to try and limit issues which could arise."*
>
> (Retail Manager)

7.1.4 Resilience: Adaptive Capacity

Whilst the literature was clear in stating the concept of resilience should not just be capacity to ''bounce' back but as a process of learning and adaption' (Joseph, 2013, p.39). However, as it can be seen from the above extracts none of the stakeholders within SPIRS discussed resilience in terms of an adaptive capacity. As discussed in Chapters Two and Three the contemporary processes of governmentality and 'responsibilisation' of resilience and security are concerned with the governance of accountable behaviour (Joseph, 2013). However, emergent findings challenge commentators such as Joseph (2013) and Garland (1996) as on a day to day basis and operational stakeholder level (local), the concept of resilience is not affected by 'adaptability…reflexive understanding…[or] responsible decision making' (Joseph, 2013, p.40). Nonetheless, the researcher maintains that the process of the semi-structured interview permitted operational stakeholders within SPIRS the freedom to reflexively consider how the concept of resilience could be adaptable if the Government/policymakers actually permitted the 'responsibilisation' of resilience to occur within the space.

7.2 Resilience and Design

SPIRS and the vast majority of other Category A Railway stations were designed and constructed in the mid to late nineteenth century; these spaces are exemplars of resilience. These railway stations have endured successions of unavoidable disturbances, such as the World Wars and the modifications of their usage throughout their existence; yet the builders of these spaces could have never foreseen the nature and scope of these changes (Hassler and Kohler, 2014). Moreover, the analysis of the research data highlights that the resilience within SPIRS to current human malign security threats has been constructed by the multiple stakeholders, through 'social ontology' (Joseph, 2013, p.40), as an evolving concept, particularly with changes to UK terrorism threat levels, and practice which has been decentralised by the Government, making them responsible for security of the space (a local level) but still enacting 'state level control' (Coaffee and Fussey, 2015, p. 87).

Thus, resilience is a process of governmentality through 'responsibilisation' with it being espoused by policymakers and commentators as the basis of the devolution of the Government's crime prevention strategies, with discourses of "'partnership', 'inter-agency co-operation', 'the multiagency approach', (Garland, 1996, p.452) between the planners, security advisors, owners, operators and the BTP being at the forefront of designing, retrofitting or building a new station with prevention measures. Therefore, the findings have exposed in respect to the design and planning of security measures within SPIRS and other Category A railway stations, the concept of resilience is as a neoliberal vehicle for governmentality, with stakeholders such as designers and planners, Network Rail and retailers within spaces such as SPIRS responsibilised to make their own choices regarding CPTED and SCP and they are 'expected to follow competitive rules of conduct' (Joseph, 2017, p.162). Revealing that responsibility for resilience and security measure has shifted to 'agencies, organizations and individuals which are quite outside the state and to persuade them to act appropriately' (Garland, 1996, p.452).

Yet, as the research findings have revealed and commentators such as Chandler and Coaffee (2017, p.7) recognise that resilience is not a fix all or one size fits concept. Policymakers should make it clear to the multiple stakeholders within SPIRS and other Category A railway stations that resilience strategies cannot prevent human malign security threats or be 'cured in traditional ways' (Chandler and Coaffee, 2017, p.7). Rather, the

debate around how resilience is operationalised in complex spaces need to be reconsidered in terms of alterations at a national, organisational and social level of 'policy development, [stakeholder] engagement, feedback…and interactive relationships' (Chandler and Coaffee, 2017, p.7).

Moreover, in terms of designing and planning in resilience when retrofitting or carrying out a new build project for a railway station, the designers and advisors interviewed preferred not be pigeonholed by a one size fits all definition of resilience given there is no clear definition of the concept. Additionally, their clients often had very different ideas of what security features were required for a project and that security and prevention measures must be considered as just one part of the resilience of a business. Thus, contributing to an element of resilience.

> *"It is very subjective and can mean different things to different clients. In terms of business continuity that offers resilience, given it covers everything from HR., to supply chain, financial and operational strategies."*
>
> (Security Advisor)

Yet, one of the security design consultants who was interviewed stated in terms of resilient designs, they considered that their firm was being predominately asked by their clients to

> "*arrive at standalone security systems which is not located as part of a wider resilience framework. There is value in standalone security measures; physical buildings are robust, with CT design. Cost effective and risk-based – well that's debatable.*"
>
> (Security Design Consultant)

Coaffee *et al., (*2008, p.107) contend there has been 'a shift towards more integrated approaches to managing risk, one that requires more inclusive conversations with different stakeholders to develop a sense of collective responsibility'. Yet, the reality of the political rhetoric and for the participants of SPIRS there is not just 'one security resilience' (Randalls and Simon, 2017, p.39) but there are numerous types of operational resilience which have various impacts for the multiple and complex stakeholders and with diverse 'political implications' (Randalls and Simon, 2017, p.39). However, this research has discovered that this is considered an unresolved issue when considering resilience and the security measures

in the redevelopment and retrofit of SPIRS and other Category A railway stations as they are extremely complex, and the stakeholders involved in the project may not all know or be aware of the whole security risk or understand how these evolve over time.

Moreover, the research has revealed that the security designs and specifications can be lost in reams of complexities of the project documentation and as members of staff move on to new roles during the project, their goodwill and knowledge can be lost. Thus, the 'responsibilisation' of resilience in such cases can be impacted on the nuance of such intangible elements of stakeholder relationships. Therefore, this reality in respect to SPIRS differs from the political and Garland's (1996) 'responsibilisation' rhetoric as managing such intangible factors which can impact of the resilience and security of SPIRS to human malign threats is challenging and problematic. Tensions can occur at a local level as the governance for resilience implies a 'top down' approach for this shared 'responsibilisation' (Garland, 1996) yet the reality is the Government retaining a lot of control over this agenda with little practical consideration for the operational complexities of managing such a responsibility.

A Security Advisor stated this is a common occurrence on such projects and some of the earlier decisions concerning the requirements for security measures are not discovered until the Home Office Police visit the site and ask to see the prevention measures which they have requested be installed. If this happens it can impact on the initial resilience of the space to security threats and can be very expensive to the owner if prevention measures such as a Hostile Vehicle Mitigation (HVM) ramps needs to be installed when the roads have been laid,

> *"that of course then entails digging up the road, throwing all of the services, messing the traffic around, losing access to your understory logistics area. Plus, it is not very sustainable and early resilience is compromised!"*
>
> (Security Advisor)

The Security Consultants and Advisors, and the BTP participants maintained that when looking at designing in security measures to ensure the resilience of railway stations to security threats, these needed to be considered on a project by project basis, thus *"there isn't a one size fits all, security plan for prevention measures"*.

Moreover, the research has exposed the reality of resilience and security policies strategies are informed by retrospective security incidents. In terms of threats to SPIRS and other Category A railways stations, a terrorist incident is a threat which has problematic prevention (Chandler and Coaffee, 2017). The Government seek measures to responsibilise stakeholders to ensure spaces such as SPIRS will '[bounce] back to normal functioning should major infrastructural facilities be damaged' (Chandler and Coaffee, 2017, p. 5). Moreover, terrorist incidents such as 7/7 have seen the rhetoric and governance of resilience challenge security practices and measures and move rapidly forward to become a complex 'central organising metaphor within the expanding multiscalar institutional framework of national security' (Coaffee, *et al*., 2008, cited in Coaffee and Fussey, 2017, p. 294)

The research has revealed that 7/7 has driven security and resilience measures relevant to the railway station (Coaffee and Fussey, 2017), thus creating a space where policies and strategies present resilience as 'responding within the boundaries of the current…and/or social structure' (Bourbeau, 2017, p.29). To meet the demands of public expectations regarding their security and safety, institutional and organisational policymakers have responded by making alterations which policies, meaning some measures, which are now embedded and considered crucial to the security and resilience of a space were once considered 'marginal' (Bourbeau, 2017 and Clarke, 2017).

One Security Advisor spoke in detail about the resilience measures that are required for new build and retrofit projects like SPIRS and the neighbouring Category A railway station, Kings Cross and that in terms of their work the terrorist incidents on 7/7 have defined and subsequently impacted on 'security-driven resilience' (Coaffee and Fussey, 2017, p. 293).

> *"It will have a set of standards of every aspect of the safety and security of the passenger, staff, and the continuity of the actual system. So, it goes through the whole resilience spectrum. And those standards will be developed by the likes of ourselves to match the risk space. We try to look to see where there is already good standard practice and analyse whether it would work for the specific project…7/7 is a critical watershed…projects after that started with an inception plan and tend to take security fairly seriously. There were projects which spanned before and after 7/7 like HS1/SPIRS. Then suddenly they have to accommodate these new risks and have to deal with it. There is a lot of retro planning; you're suddenly trying to imagine what you*

would have planned for had 7/7 occurred back then! So, in other words, you're having to accommodate and deal with planning constraints in a fairly mature project, which is a challenge!"

(Security Advisor)

However, what was interesting was this statement did not discuss the connection between security and resilience agendas. It is contrary to commentators such as Coaffee and Fussey (2017) and Bosher and Chtmutina (2017) who propose that security and resilience agendas are interwoven. Yet, many of the designers, operational BTP and Network Rail High Speed staff failed to discuss or allude to this connection, and security measures were understood and directed at a local and middle level of governance. While resilience strategies were directed and 'responsibilised' at a national level. However, Bosher and Chtmutina (2017) and Coaffee and Fussey (2017) acknowledge this interconnection yet argue both agendas are 'responsibilised' by different levels of actors. The threats of terrorism and events such as 7/7, which are acknowledged to be 'difficult to prevent' (Chandler and Coaffee, 2017, p. 5) and see the resilience agenda pushed from a top level down, with the state being 'a 'facilitator' instead of a 'builder' of resilience' (Bosher and Chtmutina, 2017, p. 268). While, local level stakeholders within SPIRS, are responsible for enacted 'the security agenda [which is] centralised' (Bosher and Chtmutina, 2017). Thus, the 'responsibilisation' (Garland, 1996) of resilience and security are enacted through neoliberal governance.

7.2.1 Resilience and the Secure Station Scheme (SSS)

As well as the fortification of designs to maximise the resilience of a space to security threats, it is possible to design in measures which can prompt a social resilience from passengers and other users of SPIRS. How people feel and react in spaces should be understood, how they are designed and configured should offer the users a sense of understanding of how the space works, for instance, exits, emergency exits which should utilise good clear way finding in an emergency situation. The space can also be designed to maximise

"the space light and airy to simple stuff like provisioning of good information services. So that social, that softer resilience."

(Security Design Consultant)

This softer and centralised form of social resilience can be used at a local level alongside CPMs and CTMS which 'target harden' to prevent crime and terrorism 'through real and

symbolic features' (Coaffee *et al*., 2009, p.8). The design and fortification of SPIRS comprises of both this softer resilience and the obviously executed measures such as HMV's and some overt CCTV cameras, and which endeavour to reassure passengers and public fears over their personal safety and that terrorist activities are 'likely to be in vain or at least will require a significant degree of effort' (Coaffee *et al.,* 2009, p.8).

Moreover, this research proposes that a current and practical application of this 'softer' form of resilience is the Secure Station Scheme (SSS), which has been in operation for seventeen years and is implemented at a local level by the BTP; governed at the state level by the DfT. Thus, this scheme to enhance resilience to human malign security threats is being directed by processes of neoliberal Governmentality, a top down approach promoting and advocating the responsibility to the multiple stakeholders to create a resilient space. At first glance, the resilience to human malign security threats have been decentralised by the Government to the multiple stakeholders, and yet concurrently they retain control of the overarching security policies. Hence, the SSS is an example where resilience has been incorporated from a national level to the encouragement and enforcement of individual stakeholder, in this case, TOCs or Network Rail, responsibility for crime prevention measures. It is a national incentivised and accredited security scheme for all railway stations in England and Wales. The scheme aims to offer passenger reassurance of safety and to tackle the fear of crime while using the railway and underground stations, by the TOC's and Network Rail enhancing and developing their railway station security measures. The SSS is a further indication of good practice within the specific railway station. Accreditation is received when singular railway stations have worked in conjunction with agencies such as the BTP to put into operation improved security measures (Morgan and Cornish, 2006, p.22). For railway stations to achieve the SSS accreditation they must conform to four criteria;

1. **Station design** must be consistent with the standards deemed by the BTP to prevent and reduce crime and improve passenger perceptions;

2. **Station Management** must facilitate the processes to prevent crimes, react to incidents, and the effective interconnection and communication with passengers;

3. **Management of Crime**, during the previous twelve months before inspection, the recorded crimes statistics must indicate the issue is being adequately managed.

4. **Passengers feel secure** within and utilising the station, this is information should be gathered in the format of a survey.

(Source: adapted from the DfT no date and Morgan and Cornish, 2006, p.22).

The duality of the CPMs used within the SSS is examined later in this chapter. One research participant suggested that any successes from the SSS are more about the actual management of the station rather the physical assets in place as CPMs.

> *"The greatest achievement of the scheme is to reduce the fear of crime that is greater than the actual figure of reductions in crime"*
>
> (BTP Officer, Retired)

Furthermore, in terms of security design, the resilience of a space such as SPIRS is not a single consideration; rather it should be seen as a collection of issues, which all must be addressed and considered to ensure the 'whole' space is resilient to security threats. Moreover, CPMs and CTMs were seen to have an integral part in this prevention plan.

> *"Not having the incident in the first place. Key to preventing disruption is a plan. Have deterrents such as patrols and greater manpower."*
>
> (Network Rail Operational Manager)

The enhanced visible presence of staff in SPIRS, whether they were actual security staff and police officers, or uniformed members of station staff is a strategy for the prevention of crime and terrorism. This works on the principles of RAT in terms of prevention measures in the form of a visible presence of staff. This can be seen to have a cost saving benefits when members of staff to carry out a different role and become a form of (un)intentional prevention measures. The intangible and tangible aspects of resilience (Bosher, 2014, p.240) can be enhanced in spaces such as SPIRS and other Category A railway stations if both 'structural and non-structural approaches' if they are built in from the conceptual stages of a project (Bosher *et al.*, 2007 and Bosher and Dainty, 2011).

However, the political rhetoric of the underlying 'responsibilisation' (Garland, 1996) resilience strategy of the SSS, provides an important opportunity to engage with stakeholders of the railway station. However, one apprehension surrounding

Governmentality, through 'responsibilisation', is it uses the resilience to security threats as a mechanism to control the behaviour of both stakeholders, the public and potential criminals (Rogers, 2017). The SSS is based on the principles of CPTED designs out the potential of human malign threats, at all ends of the crime continuum.

7. 3 Issues of Resilience

As the views of the participants and academics have been examined thus far in this chapter, the research findings clearly demonstrate that the concept of resilience within the space of SPIRS is extremely complex and frequently lacking clarity by those who choose to use it. It is proposed the obscure nature of the term could be simplified if those in industry, academia and in politics could create a cohesive and combined series of expectancies (Vale, 2014) for the understanding and operationalisation of resilience within a Category A railway station. Therefore, the research has brought to light the lack of clarification regarding resilience policies and its implementation in SPIRS is highlighted by the findings and as such, it can conceal

> internal tensions and contradictions, as it [moves] from a narrative of national protection to one of localised prevention and self- organizing responses.
> (Coaffee and Fussey, 2015, p.95)

This research argues that both resilience and the specific railway station (SPIRS) and how it manages security threats, depends both 'on the scale and on whether the focus is on physical spaces or social communities' (Vale, 2014, p.191). Therefore, the larger and more complex railway station, such as SPIRS, is undeniably in terms of both its space and the stakeholder communities is multifaceted in how resilience against security threats are dealt with. As the significance and size of railway stations in England and Wales reduce so too does the complexity of managing the space, the stakeholders, and the subsequence resilience to security threats. This research has shown that the concept of resilience is interpreted and understood differently by the multiple stakeholders who are involved in securing SPIRS from human malign security threats. There is an increased expectation by the Government that both the public and private sectors are obliged and expected to be responsible for the resilience of the built environment, and in this case specifically SPIRS against human malign security threats. Yet, within the complex space of SPIRS, the rhetoric of 'responsibilisation' (Garland, 1996) of resilience is handed to the multiple and disparate stakeholders to operationalise and the findings have shown there are tensions because of divisions and

blurred boundaries. This is examined in more detail in sections 7.9 and 7.12 of this Chapter.

Moreover, it is contended that stakeholders in both the public and private sphere of SPIRS experience frequent complications and hindrances when endeavouring to enhance resilience in the space (Bosher, 2014). The findings of this research call for the resilience towards security threats to be improved and utilised by multiple stakeholders, in a space such as SPIRS, in a consistently cohesive manner (Bosher, 2014 and Bosher and Coaffee, 2008), which at the time of undertaking the research, the strategies were competing and disparate. It was expressed by one participant that the greatest threat to the resilience of SPIRS was that private companies frequently owned CNI.

> *"There is an awful lot of brittleness in our processes, it's the fact that the majority of our infrastructure is owned by private companies and not by the Government, there is an awful lot of stuff that we just don't seem to have any real control of anymore. I think they are part of the issues around resilience."*

The research indicates that resilience does not just challenge the physical structure of SPIRS, it also presents challenges to the multiple stakeholder's operational policies, and individual and corporate perceptions and comprehension of the concept and the actual responsibility of the specific railway station. This research suggests this could be achieved through a logical, primary strategy, however, how this is achieved in practice is open to deliberation. The operational concept of resilience in SPIRS needs to be transformed from the tenuous and vague definitions as discussed in Chapter Two to a consistent and clearly defined understanding of what 'resilience essentially denotes and how it can be accurately applied or measured' (Bosher, 2014, p.241). The participants suggested that an overarching concept of resilience could be customised specifically for SPIRS and other Category A railway stations in England and Wales. Conversely, this could be one of the greatest challenges to the resilience of SPIRS is the stakeholders do not become ensnared in endeavouring to create one overriding definition of resilience (Rogers, 2017) which is operationalised by the multiple stakeholders. Furthermore, the resilience of the space must be able to adjust to current and future nascent security threats, thus the conceptual and operational resilience of SPIRS to security threats should be fluid and temporal. In 'an age of uncertainty' (Rogers, 2017, p.22) developing space to establish new ways to consider and undertake resilience and security is an ever-evolving consideration.

Therefore, to endeavour to achieve this, the research validates that involving the multiple

and complex stakeholders of SPIRS and other Category A railway stations in England and Wales in discussions around the issues of resilience to security threats will enhance and develop a mutual understanding of the concept (Sicar *et al*., 2013). Moreover, it is proposed there are potentially several options to tackle the current and future resilience to human malign security threats of spaces such as SPIRS (Bosher *et al*., 2007). Firstly, there could be a change of cultural practice where stakeholders at all levels completely support and adopt a unified resilience agenda for the space in question. Resilience measures (prevention or recovery) whether built-in or at the retrofit stage could be devised to handle numerous threats. However, this research has revealed that although resilience can be included in the design stage of building or refurbishment projects, there is uncertainty and tension from local level stakeholders concerning how this holistic stance translates into the reality of practice and are actually contained within in the final project (Bosher *et al*., 2007, p. 245).

PART TWO: COMPLEXITIES AND RESILIENCE

7. 4 Operational Complexities and resilience in SPIRS

Rather than focusing on theoretical definitions of resilience, a strong emergent theme from the participant stakeholders was that resilience must be practical and be able to be operationalised within the space of SPIRS. The primary constituent of any railway station, not just SPIRS or other Category A railway stations in England and Wales, is the necessity to keep the trains running through them and passengers being able to embark and disembark. Network Rail High-speed as the management company of SPIRS will do everything possible during an incident to keep the station running or to get it up as quickly as possible. Network Rail High-Speed has an incident strategy that mirrors that of CCA (2004), Gold, Silver, and Bronze levels of responders within the space of the railway station. The overarching operational resilience is managed by a Network Rail control centre, which in the case of a security incident the staff will strategically overview and control the situation with the desired outcome is to keep the trains running in and out of SPIRS.

As discussed in the previous sections of this Chapter, the findings of the research have also identified a further complication in the operationalisation of resilience to current security within the space of SPIRS, which is the multiple stakeholders who operationalise these strategies have their own lexicons when considering the concept of resilience.

> *"Step outside of this room and speak to one of my colleagues, they will have a different take on it. So, you can see that the lexicon in of itself is very much, were your own background will force you towards it and interpret in your own way. Now what I'm*

not in the game is being able to necessarily shackle myself to quasi-numeric ways of quantifying that, I have real difficulties with quantifying resilience."

(Security Design Consultant)

Moreover, within the space of SPIRS and other Category A railway stations in England and Wales it is contended that resilience to security threats as a concept and more importantly as an operational practice cannot be considered in isolation (Bosher, 2014 and Bosher and Dainty 2007). Theoretically, there should be a pre-emptive, combined and united concern by the multiple stakeholders who are accountable for the operation of the space. The research has highlighted those common operational activities surrounding the resilience of SPIRS, which is a relatively small area, overlap and yet there is a lack of a cohesive resilience strategy which sees the multiple stakeholders operationalising their strategies in their individual silos. Thus, within these silos, there is replication in prevention measures and resilience strategies. That is not to say that some roles such as the policing of the space are not to be carried out by the BTP, or the overall management of SPIRS should not be managed by Network Rail High-speed. To improve the resilience of a space to human malign security threats such as SPIRS, the complex and multiple stakeholders must be prepared to understand the importance and scope of each other's roles (Cole and Marzell, 2010, p.7).

The research findings indicate that resilience does not just challenge the physical structure of SPIRS, rather it also presents challenges to the multiple stakeholder's operational policies, and individual and corporate perceptions and comprehension of the concept and the actual responsibility of the specific railway station. Thus, this research recommends that this can be achieved through an overarching cohesive resilience and security strategy which is directed at the national level but informed and operationalised at a local level. Consequently, utilising the rhetoric of Garland's (1996) 'responsibilisation' to actually empower the multiple stakeholders operationalising resilience in SPIRS. In addition, the researcher proposes that in the current operational and legal boundaries of SPIRS that the concept and agendas surrounding resilience could be shifting, with it being enacted in the space through a process of governance and 'responsibilisation', progressing from a national level to a local level of adaptable understanding and operationalisation of security and resilience practices. Thus, 'security-driven resilience' (Coaffee and Fussey, 2017, p.294)

could be considered an ideal vehicle to engage in 'a range of policy discussions' (Chandler and Coaffee, 2017, p.7).

Therefore, the research presents a stance that within the space of SPIRS the concept of resilience is a vehicle to operationalise governmentality and 'responsibilisation' and it is not an absolute 'state… it, therefore, can only be measured or calculated as a comparative or relative quality' (Chandler, 2013, p.217). Thus, the researcher contends that the resilience of SPIRS to human malign security threats must move away from resilience definitions which are static and unchanging and to think of them as means to reconsider the established policy discourses which address security and resilience.

7.4.1 The Built Environment

Many of the participants, when interviewed, referred to the resilience of the built environment and the planning and design stages that create it. The term 'built environment' has been prominent since the 1970s and can be defined as 'the man-made landscapes that provide the setting for human activity, ranging from the large-scale urban entities to personal dwelling places' (Hassler and Kohler, 2014, p.158). Therefore, SPIRS and other railway stations in England and Wales can be considered as a constructed setting for the purpose transport and as a retail and leisure destination. The built environment of SPIRS, given the number of complex stakeholders involved, must thus be considered as a 'social construction' (Hassler and Kohler, 2014, p.158).

When considering the security systems and prevention measures when planning new build railway stations or the retrofitting of historic stations such as the case study station of SPIRS there must be an understanding of 'how the design choices impact on the objectives of multiple stakeholders' (Borrion *et al*., 2014, p.175). Gregson-Green *et al.* (2013) highlight the number of complex stakeholders in a Category A railway station in England and Wales which could be impacted on by operational and design challenges are approximately twenty-seven. However, depending on the Category of the railway station this number can increase or decrease. One Security Advisor felt, on the whole, they were endeavouring to work with stakeholders to address security measures and systems which are innovative, creative and acceptable to all those within the space and the public realm.

This research has found that the processes when retrofit projects or new railway stations are

constructed are highly complex, due to the disjointed nature of the processes. This is because there can be numerous parties involved from the conception to the completion of the project, from consultants, architects, through to contractors. The disjointed nature of the sector does nothing to enhance relationships with Governmental agencies and departments, which has the potential to lead to conflict and misunderstanding on issues such as resilience and implementing security measures. The importance of the construction sector is highlighted in terms of the impact both positive and negative it can have on 'the nation's economy...quality of people's lives and the ability of government to achieve many of its policy aims' (Bosher *et al.,* 2007, p.238).

7.4.2 Functions of the Space

The functions of the space of the railway station must be planned and controlled in terms of their 'poly-functionality' (Foucault, 1978, p.19) as discussed in Chapter Two and Six. SPIRS and other Category A railway stations in England and Wales have multiple functions which increase in complexities in relation to the size and location of the railway station. Therefore, when considering a new build railway station or a retrofit project, questions need to be raised about what makes a 'good' railway station. What functions does the space need to fulfil?

- Passenger movements
- Retailers will need access to the front and rear parts of the space
- Mass movements of passengers and the public and retail outlets will also encourage thieves

Thus, the positive and negative impacts the railway stations functions must be taken into consideration when they are being planned. It is argued that future considerations need to be accounted for when the purpose of the space is formulated (Foucault, 1978, p.20). Therefore, the 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) plans for the space should allow for future occurrences and needs, approximating the possibilities, 'is pretty much the essential characteristic of the mechanisms of security' (Foucault, 1978, p.20). Thus, the security of SPIRS is fluid and dynamic, and spatial, with its functions having to account for these improbabilities.

PART THREE: PREVENTION MEASURES

7.5. Security and Prevention Measures

As examined in Chapter Three, advocates of CPMs and CTMs state they are founded on effecting behaviour through the modification of the social and built environment. The political rhetoric behind the 'responsibilisation' of these measures maintains the Government withdraws to allow public and private stakeholders to develop and put in place measures to tackle human malign security threats. These processes strengthen the concept of 'governmentality from a distance' (Joseph, 2013, p.43). through Governmentality that the concept of resilience has become a vehicle to address security issues and as such develop 'the growth of security-driven resilience' (Coaffee and Fussey, 2017, p.294).

Thus, to minimise the opportunities for security threats to take place in a space such as SPIRS, a variety of procedures and practices need to be in position and activated. The control of public spaces has been greatly influenced by Wilson and Kelling's (1982) theory of 'broken windows', where a space must foster feelings of security and safety, with users not neglected and good maintenance is upheld. It was found that many of the security and prevention measures within SPIRS and other Category A railway stations in England and Wales are not only concerned with managing the physical environment of the specific space but also the behaviours of those who use these spaces also. Policymakers advocate such measures maintain resilience against security threats and create a normalised social order resonating down from the Government, enacted by public and private stakeholders at a local level.

Two operational BTP participants discussed the merits of applying Broken Windows theory to managing the physical appearance of railway stations, and that it is a founding principal of the SSS. Moreover, SCP is based on this principle which locates 'physical barriers between the opportunistic criminal and the object of the crime' (Cochrane and Talbot, 2008, p.16). The refurbishment of existing station buildings or new railway stations, which aim from the planning stage to design out crime is demonstrated in the SIDOS guidance, and is discussed in greater detail in section 7.12.

7.6 Prevention Measures, Policy and Guidance, and the Design Relationship

The research data has exposed that designing in CTMs, within spaces such as SPIRS can be frequently fraught with issues due to a lack of Governmental support and guidance. RIBA

and guidance such as SIDOS merely recommend and do not legislate that security advisors and consultants must work in tandem with the owners and architects to ensure that CTMs are included into the design of the new build railway station or as in the case of SPIRS the retrofitting of measures. One Security Consultant felt that as a profession, the architects and designers often treated them negatively because of the often limited or 'tight' budget needed to include CTMs.

> *"We are essentially saying to them, 'you know that fancy atrium you were planning, you might want to have to rethink the finishes, less marble because actually, you may need some more slate because outside you've just burnt all of your fee on that and having to put in a bollard line. So, in other words, the cost consultants and architects can get fairly tense when they see us, because they know oh dear it's the Security Consultants! "*
>
> (Security Consultant)

Security Consultants can be recommended and endorsed to the owners of properties, Network Rail and architects through the Counter-terrorism Security Advisors (CTSAs) from the BTP and the Home Office Police Forces. A number of the research participants felt that the CTSAs were very professional but extremely overworked and very difficult to reach. However, when they did work with the Security Consultants, the owners of the railway station and architects did appear to take on board their recommendations for CTMs. CTMs in SPIRS and other railway stations in England and Wales are necessary because they are

> *"a privately owned space but publicly accessible. You have a duty of care. You also have a duty of care to the building occupants, users, passengers, public."*
>
> (Security Consultant)

Therefore, it would appear from the research participants interviewed that CTMs are viewed by the owner and architects as a necessary cost for the project. However, at an operational level, one BTP officer felt that their voice of experience and understanding the nature of policing a space such as SPIRS could be overlooked and ignored both by designers and at a later operational date by Network Rail (High-speed One). The example discussed below was concerning another Category A railway station in London,

> *"there are lots of examples where CPO [Crime Prevention Officer] recommendations on retrofit measures or new builds have been ignored. Like for areas of repeat*

victimisation, CCTV was recommended, the TOC did not agree to spending any money. Very often the CPO will have to become friendly with station maintenance staff – informal networking again. This helps get figures to justify to the TOCS to spend money on prevention measures."

(BTP Sargent)

Moreover, in terms of planning and design, the Security Consultants and Advisors who were interviewed felt that designing in CPMs was far more difficult than designing in CTMs. This was because the Secure by Design guidance for CPMs is very patchy and highly dependent on the type of development it is being applied to. The Secure by Design guidance was criticised by the research participants as they felt it needed to be much more robust and demanding in terms of the CPMs that need to be implemented for railway stations retrofit projects. In addition, it was suggested that the guidance could present more specific indicators for performance for the measures. Participants maintained there needs to be a greater emphasis on endeavouring to see how specific measures improve or have no impact on reported crimes. This would be an aid for the design of future CPMs.

"We would like to see for instance the numbers of reported contact crime. So, are they stabilised or do they tail off 8 years after the station has been commissioned?"

(Security Consultant)

This form of metric could add value to owners and designers of future new build or railway station refurbishment projects who are looking for demonstrable evidence that the CPMs they are being advised to design has value and impact.

"We need evidence that what you are doing will achieve the right effect, I think there is still this sense of 'well we're doing this, a bit of a grudge purchase, we're not quite sure why we're doing it!"

(Security Consultant)

The role of the Security Advisor/Consultant is to get the owner/client of the project to think about the security risks that could be viable by the completion of the project. Thus, it is essentially trying to get the client to understand prevention measures and the practical application of them and what the completed project would like in terms of good security risk management. The client

"will freely admit from the outset that 'you're going to have to tell us that, you're going to have to almost create an image of what good likes and then give us the roadmap of how we get there."

(Security Advisor)

Furthermore, there are the financial impacts and implications on the security measures that are designed into a new build or retrofit of a railway station. This has been particularly noticeable since the global recession of 2007; one Security Advisor stated that the resilience of a railway station to security threats could be impacted on by financial agendas of both owners and architects.

"I've noticed my first projects when I was appointed had very reasonably well furnished fee bases. We were given plenty of time to sit down, think and to produce good reports, to review designs thoroughly. So, in other words, to provide a good and reasonable service. Now people just want more for less which means something has got to go, and that could be the fact you're skating too quickly through architect's drawings and not necessarily picking up on absolute design details."

(Security Advisor)

7.7 The Duality of Prevention Measures

It was found much of the literature reviewed which surrounds prevention measures, deals with issues of crime and terrorism in isolation. However, it is widely accepted by both academics and practitioners that CTMs are principally based on traditional methods of CPMs. Within the UK, prevention measures are 'responsibilised' by developing and deploying it through multiple levels of stakeholders, at national, local, institutional, and international levels. However, the disputed nature of the debate, which surrounds terrorism, will affect how the complex and multiple stakeholders in SPIRS and other Category A railway stations in England and Wales 'tackle something that these agencies cannot define' (Fussey, 2007, p.184). Hence, it is maintained that CPMs and CTMs are located in political, economic, and cultural discourses and are not neutral concepts. It is contended that CPMs and vice versa CTMs are not automatically suitable to deter and prevent the 'other form of transgression' and as such 'do not necessarily and easily translate to the other' (Fussey, 2007, p.180). Moreover, both criminological theories of situational (rationality - crime) and dispositional (emotionality - terrorism) should be merged in prevention measures as neither theory wholly accounts 'for

the decision-making process' (Hoch and Lowenstein, 1991, p.504, cited in Hayward, 2007, p.241) in transgressive activities.

One emergent theme from the interview data collected was the concept of the duality of prevention measures. As mentioned above, much of the literature on CPMs and CTMs are distinct and separate, occasionally within some research such as that of Clarke and Newman (2006), the association between the two forms of measures is recognised. As previously discussed in Chapter Three, the research has revealed that the crime prevention strategy of target hardening is being rapidly utilised for the prevention of terrorism. However, the basis of using CPMs to combat terrorism is restricted as they fail to account for the factors (emotional, religious, fiscal, political) lying behind decisions made by terrorists (Fussey, 2011). Moreover, this research contends that within the space of SPIRS and other Category A railway stations, CPMs and CTMs should be individually considered in terms of their potential impact, conflict, and benefits because duality does not necessarily indicate they are suitable to for both purposes (Kappia, *et al.,* 2009).

> *"We're trying to look and work with industry to come up with innovative but also creative and the planners' systems and schemes that will be accepted in the public realm. Do the job for us from a security perspective but again, not impact onto the eyes and concerns of the public because the last thing we want to live in is a fortified city when there's no need to."*
>
> (Security Advisor)

Furthermore, the research has revealed that there are distinct and separate agendas and funding for CPMs and CTMs. Since 9/11, there has been a direct political shift from 'security to resilience', with primary security worries being dealt with by expansion of 'security-driven resilience' policies predominantly those around measures to prevent terrorism (Coaffee and Fussey, 2017, p. 294). However, participants felt that if policy and decision makers both at a national and local level did not appreciate the bigger picture, and they needed to understand there is also a duality of benefits for both types of prevention measures.

> *"If you look at what deters terrorists, it's actually pretty much what deters criminals. So, CCTV, "people say you won't deter a suicide bomber" but actually you will because you will deter the hostile reconnaissance. It won't stop them, but CCTV won't stop...it will just record them, what's happened and make it less likely. So, if you look at the issue of staff presence and role of patrolling stations, if you look at the use*

of better lighting, clear lines of sight, CCTV, that kind of thing. If you're building that in, if you wanted to you could flag that as a CT measure or an ordinary crime prevention measure."

(BTP Senior Officer)

"There are some things which are CT specific, which are improvements to glazing, to stop fragmentation. The litter bins issue is CT specific, but actually, an awful lot of the other stuff is just sensible, you make the space easier to manage. And take away the dark dingy bits where druggies shoot up or where people get mugged, do away with that and you are reducing the likelihood of a terrorist attack."

(BTP Senior Officer)

Conversely, when considering the CPMs and strategies implemented in SPIRS, one senior operational BTP Officer stated that there was a definite positive impact on CTMs,

"I look at measures and assess them in terms of well we're killing two birds with one stone here...because I look at terrorism as being a crime…So everything has got a knock on effect, so if you make it harder for the person who is intent on stealing a Mars bar then that is also going to make it difficult for who is loitering in the station or is looking at carrying out a terrorist attack".

(BTP Operational Senior Officer)

Moreover, at a local level within, participants expressed resentment and tensions over the disconnection between the two different security agendas, crime and counter-terrorism prevention. The research highlighted that some BTP participants believed there is a significant lack of recognition from many of their colleagues over the benefits of the duality of prevention measures that come from the understanding of both crime and terrorism. The Government's concept of operationalising 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) through the processes of Governmentality implies a 'top down' approach for the shared 'responsibilisation' (Garland, 1996) for resilience and security within SPIRS and other Category A Railway Stations. However, tensions occurred in SPIRS when these stakeholders had to balance the national level security and resilience primacies originating from the Government and those security and resilience priorities of local stakeholders within the space. Thus, strains arose at a local level given that at a national level the Government controlled spending and budgets, which meant that the multiple stakeholders had limited

powers to contest the priorities of national security and resilience which took precedence over local crime prevention issues.

> *"There are only so many tactics to deal with both of them and these generally lead back or heavily influence by prevention, intelligence and operations. Money is invested into these strands of policing but not enough is invested into prevention. There is a clear imbalance as much more is invested into intelligence and operations."*
>
> (Retired Senior BTP Officer)

Hence, the research has highlighted contradictions between the rhetoric of 'responsibilisation' of resilience and its actual operationalisation by the multiple stakeholders within the space of SPIRS. The evidence has shown that although all the stakeholders should have a role in the resilience of the space against human malign threats, this, is played out with differing levels of importance. Some stakeholders had a greater level of responsibility placed on them, the BTP and Network Rail High Speed, and had to cascade this responsibility down via operational levels to their own grassroots staff. Moreover, the research revealed that despite the top down approach for the 'responsibilisation' of CPMs and CTMs, there was a level of grassroots apprehension that the costs of CTMs would impact and divert fiscal and manpower resources, which could potentially be utilised for CPMs for 'non-terrorist crimes' (ATOC, 2010, p.1).

Yet, the research has also shown that some participants maintained there is frequently a duality between CPMs and CTMs. Arguably, these methods can be interconnected and do not need to be exclusively used for the prevention of specific transgressions (Fussey, 2007). Since 9/11 and 7/7 acts of terrorism, the protection and control of public spaces through technical and human surveillance are now considered legitimate, acceptable and standardised forms of dealing with 'both crime and terrorism in the public domain' (Fussey, 2007, p.174).

Furthermore, some of the research participants, specifically those working at an operational level in SPIRS for either the BTP or Network Rail, proposed that stations such as SPIRS and other Category A railway stations in England and Wales being patrolled by the BTP offers both a deterrence and prevention in both terms of criminal and terrorist activities, equating to duality of usage. However, other participants felt that regardless of the duality of some

measures each form of measure should be considered in terms of its potential impact, conflict, and benefits to SPIRS and to other Category A railway stations in England and Wales.

> *"Think criminal, and this isn't good for terrorism, but it's complimentary to counter-terrorism, but it's not a substitute! People think 'if I get enough CPTED stuff in, surely that must help me with CT?' No, it doesn't because certain types of terrorism are simply not going to be put off by these layers of psychological cues, physical measures which are stopping crime from occurring because frankly they aren't motivated in the same way. And they may not be interested in their own personal safety, or survival or what happens to them after an attack because they want to be in kit form! Pull the button and away they go!"*
>
> (Security Consultant)

7.7.1 CCTV as a Dual Prevention Measure

Moreover, CCTV is a form of 'security-driven resilience logic largely controlled by the state and implemented by the police and national security agencies' (Coaffee and Fussey, 2015, p.91). Prevention measures such as CCTV have acceptable and normalised features of the daily routine in cities and urban areas. Moreover, it is proposed 'being observed is a ubiquitous part of everyday life' (Massey, 2011, p.189) and as such, it is intrinsically linked to controlling crime and policing. Surveillance systems "creep" into society and pseudo-public spaces such as SPIRS, and "surge" during and after critical incidents such as the 7/7 London bombing on the transport system "when public resistance is reduced" (Fussey, 2007, p.173). The utilisation of surveillance systems has become 'an integral feature of practical, target-hardening, situational antiterrorist measures' (Fussey, 2007, p.174). Furthermore, surveillance systems are multifunctional, providing a form of 'deterrence, raising alarms and assisting in postevent investigation' (MI5, 2005, cited in Fussey, 2007, p.174). CCTV footage was used as part of the postevent investigation after the 7/7 suicide bomber terrorist attacks on the London Transport system. However, the highly visible surveillance system did not deter nor prevent the suicide bombers plan and accomplish their attacks (Fussey, 2007).

Therefore, the claims, which state surveillance systems, are successful methods of preventing and countering attacks of terrorism must be viewed with prudence (Fussey, 2007). Moreover, a Retail Manager within SPIRS felt that their business predominately used CCTV to monitor shoplifting rather than prevent terrorism,

> *"it's about stock security rather than national security, if you know what I mean*

because theft is going to happen a lot more than terrorism! …We also have lost prevention teams in the business. But again, that's more about the company and stock security, not national security-not the terrorism side of things."

A now retired Senior BTP Officer stated that using post 7/7 CCTV in and around the railway stations and underground stations was very difficult to actually track with accuracy the bombers with the technology which existed at the time of the attack. However, he maintained that today the technology is far more advanced and capable than the BTP need it for. An example of how the BTP have used CCTV successfully to track a target was in the case of Tia Sharp – a child who went missing in London during the Olympic period, and was subsequently found murdered. Images of her step-grandfather where circulated and the BTP traced him through the London Transport CCTV system.

The research found through the emerging research themes and the observations of SPIRS that methods of surveillance can be divided into two forms, technical surveillance, such as CCTV and 'human surveillance (police officers, PCSOs)' (Massey, 2011, p.189) and this also includes the passengers and the public. However, despite CCTV being considered to be technical surveillance, it currently still requires human operators to direct and use it make decisions over the behaviours of the public. Therefore, CCTV 'involves a process of selective and discriminatory decisionmakingfrom...operators' (Hughes, 1998, p.69), thus it cannot be considered as a 'neutral technology' (Hughes, 1998, p.69) given individuals biases and believes.

A Network Rail Manager discussed that in their experience of working and talking to passengers in SPIRS, they would expect CCTV to be in operation in SPIRS and all railway stations as a CPM. They believed this expectation of having CCTV in place was more so than in any other public or private space. They described CCTV and surveillance as having become an acceptable and expected part of the experience of travelling by rail. However, it can be contended CCTV systems/measures are not a long-term fix to lessen the public's fear of security threats and a reduction is possible through the revival 'of informal networks are likely to...be the most effective way of tackling the public fear of' (Furedi, 2006, p.7) security threats.

Thus, being under continuous surveillance and the governing of behaviours has become

normalised and is expected in both public and private spaces, especially since the fear of terrorist attacks in such spaces has reinforced and justified their control via surveillance. 'The main element of social control is self-regulation and refers to a set of practices that ensures people conform and contribute to social order' (Massey, 2011, p.189). However, the research has illuminated that such 'responsibilisation' when decentralised to the local level stakeholders, raised issues of tensions as responsibility can be open to interpretation and exploitation. Contrary to Garland's stance on 'responsibilisation' the research has exposed this 'responsibilisation' for the resilience against security threats within the space of SPIRS was frequently implied and is inadequately documented, with a lack of, understanding, participation and enthusiasm from many of the stakeholders within the space. Tensions can be exacerbated when stakeholders at a local, non-governmental have been tasked through 'security-driven resilience' (Coaffee and Fussey, 2017, p.296) strategies for the everyday operation of spaces such as SPIRS, with the governance of resilience being enacted from afar.

One senior operational BTP Officer discussed that measures such as CCTV are listed as being needed for the security of stations, for the SSS standards, but conversely, nothing was stated in the guidance about the quality, features of the actual CCTV system. He believed that this ambiguity is frequently capitalised on by the TOCs, given that profit drives their agendas. Moreover, another BTP participant expressed their opinions that the decision in the choice of the CCTV system installed in stations such as SPIRS was down to the operating company or the TOCs,

> *"how, you know, rail companies want to store their barriers and fences and CCTV and pass systems on doors and things is very much a matter for them. We're happy to guide them, particularly in terms of CCTV where there's a really close counter-terrorism crossover."*
>
> (Senior BTP member of staff)

Hence, the SPIRS empirical research has highlighted that the competing discourses concern resilience, the nuances of the reality of operational 'security-driven resilience' (Coaffee and Fussey, 2017, p.236) are complex and changeable. The 'internal tensions and contradictions' are observed within the space as the multiple stakeholders must mobilise and reconcile internal business agendas 'localised prevention…responses' against a 'narrative of national protection' (Coaffee and Fussey, 2017, p.299).

7.8 Fear of Crime and Terrorism – Security Measures

As discussed in Chapter Three, the threat of insecurity and the search for security (Cochrane and Talbot, 2008, p.2) are interwoven concepts along with the 'responsibilisation' of resilience and security measures in terms of perceptions of the multiple stakeholders when responding to the public's fear of such incidents. The research has found that this endeavour is a response to global and national issues of security threats, and these are interpreted temporally into national and local level 'responsibilisation 'policy schemes. The findings highlight this stance, a Network Rail Senior Operational Manager states that he must be able to respond quickly to changes in the national security threat level,

> *"I just make sure I'm conversant with what would happen if we were to go up a security level. The moment, it's substantial, if it goes up to severe than I am closing left luggage and I am then closing down delivery yards and things like that. So that's how different it can be the moment, I can be told."*
>
> (Senior Manager)

A further example of how prevention measures within SPIRS have been altered when looking at historic threats from the IRA to the new types of threats faced by the terrorist groups. The researcher discovered that the BTP investigate past and current threats to UK railway stations, as well as global railway targets, and terrorist methods.

> *"When something dreadful happens in some far flung region of the world which has a railway, I generally try and go and have a look, either to try and establish is there anything we can learn from it or to dispense what we've learnt but within our context. So, people understand not what just what we're telling them but why we are telling them this. And how it works for us but how it may not work for them."*
>
> (Senior BTP Officer)

The research has shown that some stakeholders and members of the public see the issue of being a victim of criminal activity a more personal and localised issue, thus 'personal security (feeling safe from threats of violence or incivility)' (Cochrane and Talbot, 2008, p.3). Therefore, policies are expected to deal with the issue at a local level, such as CPMs in SPIRS to keep the public safe from crime. Yet the threat of being the victim of an act of terrorism is frequently viewed by the public at a distant level of uncertainty and insecurity. A Senior BTP Officer reiterated this stance as they felt the public were aware of potentially being the victim of a crime, yet the possibility of being a victim of a terrorist attack was distanced by

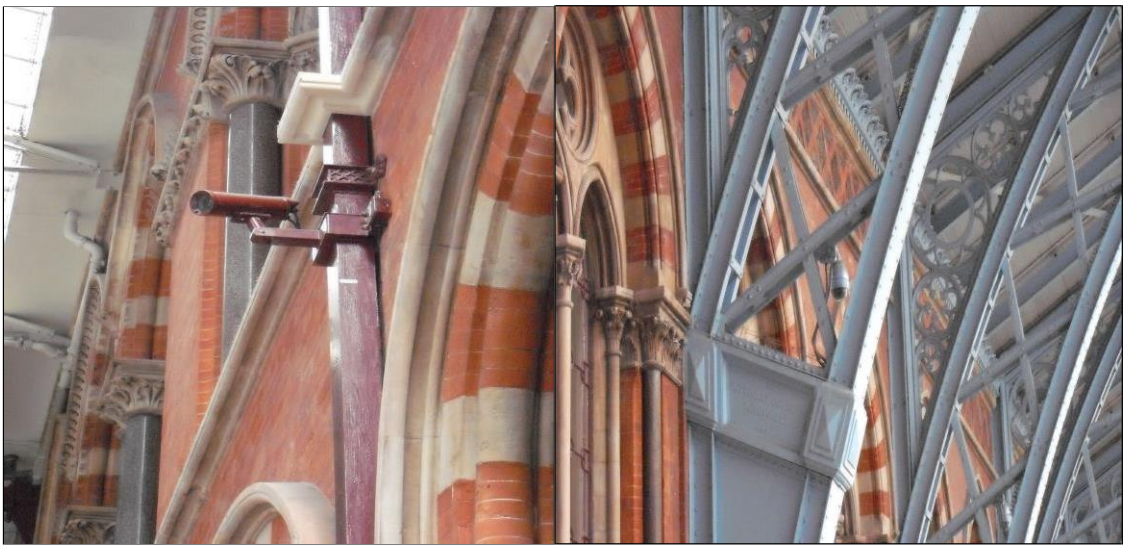
the fear of acknowledging the risk.

> *"People will happily talk about what we do to deter criminals but what we do specifically to deter terrorist, that's considered far more sensitive information. So, you will find people far less willing to talk about it. And therefore, having a sort of publicised scheme on those measures, I'm not sure it would serve a purpose to publicise it. I think the public like to know basically it is being managed so they don't get mugged or pickpocketed. But when you start talking about terrorism you hit the arousal disassurance paradox. Because they question and worry why we need these CT measures in place? "are we at risk?" My view is quite critical on that sort of thing; I probably wouldn't tell them anything about terrorism."*
>
> (Senior BTP Officer)

Nonetheless, the research participants have shown that the concepts of 'security-driven resilience' (Coaffee and Fussey, 2017, p.299) and insecurity are intrinsically interconnected in the everyday and specifically when considering the resilience of SPIRS. However, the inescapable implementation and operation of overt prevention and surveillance measures in a railway station could well proliferate 'public anxieties and contribute to the image of public spaces as dangerous places' (Jewkes, 2008, p.51). Yet regardless of this, the resolution in many pseudo-public spaces such as the refurbishment of SPIRS and other Category A railway stations is to enhance the existing and add more surveillance measures.

> *"I'm trying to design out against the fear of crime as well; because of course if you don't have places which don't feel safe people won't use them. So, if you're talking about mass transit interchanges, that's bad news! Because they could end up using cars or not wishing to use parts of the city at certain parts of the night because they feel under threat. So those sorts of pieces are now starting to appeal to a lot of architects yet it's not new concepts."*
>
> (Security Consultant)

Figure 7.2 Source Gregson-Green (2012) Examples of covert CCTV in SPIRS.



Moreover,it is 'important that all travellers should feel safe and confident in the railway station, rather than just passing through' (Lansley *et al*., 2008, p.57). This viewpoint is reinforced by the BTP,

> *"you want the public to be comfortable yet have the confidence when they're not to tell somebody. But you want, it's their judgement. I mean, I get, every time I go with their judgement with what is suspicious."*
>
> (Senior BTPOfficer)

7.9 Prevention Measures and Resilience Responsibilisation

This research has revealed that the responsibility for the resilience of SPIRS to human malign security threats falls under the remit of the many complex and multiple stakeholders who have a stake in the space. Through the process of Governmentality and subsequent 'responsibilisation' and decentralisation of 'security-driven resilience' (Coaffee and Fussey, 2017, p.296) the Government through various departments, such as the DfT through TRANSEC, set directives and legalisation via the National Railway Security Programme (NRSP), which set the levels of security within the space of the railway station. These levels of security are dependent on the category of the station in question and the national threat level for terrorist threats. A Senior Strategic BTP member of staff stated they felt this 'responsibilisation' of setting the security standards in SPIRS is primarily the role of TRANSEC, at a sub-national level, and not that of the BTP, at a strategic national level. This is a prime example of a decentralised strategy, which at first suggests 'responsibilisation' through a top down approach to 'security-driven resilience' (Coaffee and Fussey, 2017, p.296).

However, through TRANSEC controlling and disseminating the NRSP, the Government preserves its 'trump card' status, potentially overriding local concerns, liberties and rights in areas it defines as the higher national interest (Coaffee and Fussey, 2017, p.297).

> *"In terms of the ordinary securing the railway…, we do not see that as a primary role for the Police Force. We'll give guidance, but it's really for TRANSEC to determine what the railway standards are and then, if there are blips, to work out what should happen."*
> (Senior BTP Officer)

Garland's (1996) concept of 'responsibilisation' is one of the cornerstone principles which underpins crime and terrorism prevention measures (Coaffee and Fussey, 2015). However, the SPIRS empirical unique case study has revealed there are blurred boundaries and tension within the space of SPIRS as the control of prevention measures is seen in terms of 'devolv[ing] responsibility for crime prevention onto agencies, institutions, and individuals which are quite outside the state and to persuade them to act appropriately' (Garland 1996, p.452). An example in SPIRS of this devolution of responsibility, control of behaviours and the subsequent persuasion to ensure prevention and security measures are carried by stakeholders, such as the retailers, is the HOT protocol and the wider security plan for the space. The HOT (Hidden, Obvious, Typical) protocol is based on the principles of human surveillance and capable guardians. Moreover, the HOT protocol is an operational example of a holistic 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) strategy driven by the BTP to compel stakeholders with SPIRS to 'take ownership of, and act upon, feelings of suspicion' (Coaffee and Fussey, 2017, p.298).

One BTP research participant claimed it relies on a common-sense approach and allowed the railway network and stations during the IRA mainland bombing campaigns during the 1970s, 1980s, and 1990s to keep moving despite bomb threats. Under the NRSP Network Rail must ensure that hourly security checks are carried out in each of the retail units and other areas in SPIRS. A senior Network Rail Operational Manager stated he ensured that the retailers understood the importance of carrying out the hourly security checks and where this directive was being driven from (DfT, via TRANSEC). The NRSP is discussed in more detail in the subsequent section of the Chapter.

Moreover, the Category of the railway station governs the standards of the security checks required, thus SPIRS being a Category A railway station means that it has the highest level of

security checks. However, the research has found that SPIRS has too many retail units for the Network Rail security team to be able to carry out the hourly security checks and hence the responsibility of these checks being devolved to the individual retailers and their staff. Within SPIRS Network Rail High-speed are very forthright when dealing with the retailers and that they have to adhere to the HOT protocol and wider station plan. This is because if one retail unit does not adhere or consistently refuses to, the DfT can close the whole station. Consequently, Network Rail High Speed will not risk the whole station being shut down, so they are tough on retailers regarding security matters.

Therefore, the Network Rail operational and security managers will shut down retailers if they believe they are not sticking to the HOT protocol and the wider SPIRS security plan. This is the case until the team has proven they can operate safely and securely and they believe that this makes their security regime robust enough to aid the resilience against security threats. Thus, the concept and operationalisation of resilience measures in SPIRS are clearly interconnected with security policies, thus creating 'security-driven resilience' (Coaffee and Fussey, 2017, p.294). The research has highlighted that within spaces such as SPIRS, the resilience and security symbiotic relationship is enacted at the local policy level, driven by national strategies, with resilience 'fully embedded as a policy metaphor' (Coaffee and Fussey, 2015, p.101).

PART FOUR: SECURITY AND RESILIENCE POLICIES

7.10 Policies Surrounding SPIRS and Other Category A Railway Stations in England and Wales

As discussed throughout the thesis, it is the very nature of the railway station, their open nature and thus their architecture which appeals both to passengers and the public and to a wide spectrum of offenders from pickpockets, sexual offenders, through to terrorists (Borrion *et al*, 2014, p.174). Over recent years' terrorists have attacked different facets of global railway infrastructure, for instance, trains (Madrid 2004), an underground network (London 2005), a main railway station (Mumbai 2008) and a metro (Moscow 2010). Therefore, a traditional and significant railway station environment such as the case study station, SPIRS is a potential terrorist target with the objective of causing 'mass panic, disrupt daily life of a city, adversely affect transport infrastructure for several days and cause a significant symbolic impact' (Borrion *et al*., 2014, p.174). It is important to remember that security and resilience policies are interconnected with each helping the other to achieve their goal.

This research contends that the pursuit of security and the perceived continued threat of insecurity is a preoccupation and prerequisite of our current society (Cochrane and Talbot,

2008). This is highly evident from the research findings gathered from the case study station, SPIRS, as security and resilience policies which are enacted by the multiple stakeholders within the space, are translated from both the local and the national agendas. SPIRS is a Category A railway station and as such has the highest and most stringent security policies in place, directed by the DfT, via TRANSEC through National Railway Security Programme (NRSP), which is a secured document and is not available to view by the general public. It is important to note that it was not possible for the researcher to access this document during the data collection period. A Network Rail Senior Operational Manager explained how the NRSP is a key national policy, which influences the local security plans for SPIRS.

> *"The National Railway Security Program, which is what we have to abide by. So that's built within our security plan and has to be conversant with it and is, therefore, that's what we use against people. If we have to give them a non-conformance is, you're not complying with the station security plan and the NRSP."*
>
> (Senior Manager)

The NRSP determines the mandatory daily security standards for Network Rail and the TOCs to abide by. In the case of SPIRS, which is owned by High-speed One but managed by Network Rail High-speed, Network Rail uses the DfT's edicts and communicates these to their employees, who subsequently cascade these obligations down to retailers in the station, this procedure is similar for all Category A railway stations in England and Wales. Hence, National security and resilience strategies such as the NRSP take priority over those at a local station level, with the National Threat Levels impacting on the category of prevention measures being operationalised within the space of SPIRS. Thus, through Governmentality, the 'responsibilisation' (Garland, 1996) of resilience and security strategies the Government has augmented its sovereign power.

Therefore, security and resilience of SPIRS is an ideal platform to appreciate some elements of Garland's (1996, p.452) 'responsibilisation strategy' where 'active action' by non-Governmental stakeholders is crucial to deal with human malign security threats by convincing and motivating them 'to act appropriately'. Yet, despite this simplistic and holistic rhetoric provided by Garland (1996). Those research participants who were employed at an operational level within SPIRS appeared to have far more knowledge of local, railway station- specific Category A regulations and policies, than the national level policies which overarch the local level regulations. The participants who are employed at

a higher strategic level gave the impression that national security policies greatly influenced organisational policies and thus subsequently the security policies which were implemented at a local level within SPIRS.

> *"So, you've got the DfT specifying the policing act on the railway, you've Network Rail who finesse that message and push it out to the bits of the railway which Network Rail are responsible. But then you've got the TOCs and retailers on the station who then have to enact these messages at the local level and try and integrate their own corporate security policies. So, it can get diluted and muddled at times!"*
>
> (BTP Senior Officer)

One part of the NRSP outlines the mandatory and enforceable requirement for retailers and TOCS within SPIRS to carry out hourly checks for hidden or suspicious items.

> *"The Station Manager will make sure that their staff, will be going around to Sock Shop, Tie Rack for instance and saying show me your hourly check, for your search regime…its good practice to make sure things aren't being left behind, so there's a bit of deterrent activity there. There's a bit of reassurance activity and if there is a bomb threat, for example, to know that the whole station has been searched in its entirety within the last hour is a very useful piece of information to use when you are trying to decide whether to stop trains and evacuate people."*
>
> (BTP Senior Officer)

Moreover, a Senior Manager from Network Rail High-speed, the management company which operates SPIRS for HS1, reinforced the critical nature of the hourly search national and local security strategy for the station. Yet, the resilience of SPIRS to human malign security threats is could be comprised by a lack of financial investment in human resources.

> *"We don't have enough staff to do all of the retailers, so the retailers as part of their tenancy agreement must do hourly searches, or for every hour that they are open. If they don't then I work on the three-strike system, one missed or one not logged- that's a first warning. Second time they get a written warning and the third time I close them. If, however, I think it's warranted that they've not been good enough, I just close them straight away temporarily, while they sort themselves out-we are very strict with them."*
>
> (Senior Manager)

However, it should be noted that the number of security obligations to be adhered by the managers of railway stations decrease as the significance and size of the station decreases. The categories of railway stations in England can be found in Appendix 2. SPIRS is a Category A railway station which denotes its important location, role, and capacity, thus meaning the security standards that Network Rail High-speed and the retailers operate are located in the uppermost tier of measures within the NRSP. Furthermore, a fundamental and imperative part of the tenancy agreement to be located within SPIRS is that the retail unit tenants will have in place a security plan, which corresponds to the prerequisites of the NRSP.

However, the research findings highlighted more security and resilience operational complexities. Network Rail participants have described how tensions and disagreements can develop when these obligations must be dovetailed into the tenant's corporate strategies and procedures and are cascaded to their employees in SPIRS. Operational security participants concurred that Network Rail High-speed One should take in hand the security meetings with the tenant's employees; since they have found that the retail unit managers can dilute the interpretation of security plans. It was unknown whether this was a deliberate act on the part of the retailers. Furthermore, they agreed any corporate primacies of the tenants could have a bearing on the realisation of Network Rail High Speed's security measures and the hierarchical NRSP. Hence, the research findings have highlighted within the space of SPIRS that there is a disconnection between Garland's (1996) 'responsibilisation' rhetoric and the reality of operational practice. This is because 'responsibilisation' (Garland, 1996) for 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) in SPIRS is frequently implied and is inadequately documented, with a lack of, understanding, participation and enthusiasm from many of the stakeholders within the space.

Additionally, operational BTP officers located in SPIRS regularly worked together with the retail unit tenants, Network Rail High-speed One, and the DfT Land Security to assist and endorse security and awareness strategies. However, it was found that a lot of the communication and meetings, which were conducted in SPIRS, were non-compulsory and were initiated by individuals who were trying to understand the complex and multiple stakeholder relationships and to enhance and further the communication of security plans. One example, given by a senior operational Network Rail High- speed One Manager, was a discretionary meeting between the multiple stakeholders is the Police and Communities

Together (PACT) briefings. These are held regularly in SPIRS, with the BTP, Network Rail High-speed One, TOCs, tenants and the public to increase knowledge and to discuss the problems relating to the security of SPIRS and to come to an agreement on any measures that need to be taken. A drawback of these briefings is the turnout by some of the stakeholder organisations in SPIRS can frequently be scant. One participant rationalised this lack of attendance by suggesting the themes of the briefings and information communicated could be repetitive and tedious. It was felt that their time would be better spent handling security issues relating to their own tenanted unit.

In addition, it was implied these briefings are regularly exploited to express differences in relation to other stakeholder's corporate and operational agendas. On the other hand, participants agreed if there were a serious mutual concern, corporate agendas would be set aside for the greater good of SPIRS. The BTP and Network Rail perceive these briefings as crucial to uphold and sustain beneficial stakeholder interfaces and communication; nevertheless, it is up to the specific employees of the multiple stakeholders involved in SPIRS security to keep up the associations, rapport, and communications.

This research has highlighted contradictions between the rhetoric of resilience and its actual operationalisation by the multiple stakeholders within the space of SPIRS, hence creating a key contribution to knowledge. The evidence has shown that although all the stakeholders should have a role in the resilience of the space against human malign threats, is played out with differing levels of importance. Some stakeholders had a greater level of responsibility placed on them, the BTP and Network Rail High Speed, and had to cascade this responsibility down via operational levels to their own grassroots staff and retail and TOC stakeholders within SPIRS. Thus, this indicates that Garland's (1996) 'responsibilisation' occurs at a national level which is dispersed and disseminated down a hierarchical structure to higher level stakeholders within Transec, which in turn is distributed to senior level teams within the BTP and Network Rail High Speed One, who in turn expect their operational teams to operationalise these strategies with the other stakeholders within SPIRS. This indicates a lack of equality between the stakeholders in operationalising resilience and security strategies, thus 'responsibilisation' happens at a rhetorical level rather than at an operational level.

This, in turn, reveals the issues of multiple agency/stakeholder working at an operational level within SPIRS are compounded by the paradoxical roles enacted by the Government. In relation to SPIRS the Government devolves responsibility for security and resilience to the local

level, yet, they retained a vast amount of power and control over this agenda.

7.11 National Security Strategies

Upon first consideration, Garland's (1996) 'responsibilisation' is appropriate at a theoretical and rhetorical position to consider resilience and security within SPIRS. However, interestingly while conducting the semi-structured interviews little was discussed by the research participants about the CONTEST strategy or other national security strategies. However, in reality, the 'responsibilisation' (Garland, 1996) of 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) operates at the local level within SPIRS in a diluted and piecemeal fashion. Furthermore, senior level Network Rail security policymakers did discuss CONTEST but in terms of how it informs the NRSP. The Government proposes that the alignment of the CONTEST strategy and the Critical Resilience Program endeavours wherever it is able to 'provide a coherent and consistent approach to building resilience across sectors to all risks and threats' (Cabinet Office, 2010b, p.11). However, to date, within England, there is not a collective or multi-hazard approach to reducing the vulnerability against these risks. Little is written which discusses the future adaptation and mitigation of the railway network to both natural and security threats, currently, these issues are dealt with separately within current policies and strategies. Moreover, the administration of the CONTEST Strategy is generally uncontended, as under the Protect strand, it is clear crowded places, such as Category A railway stations require protection against terrorist attacks (Gregory, 2009, p.1). However, the participants did express that conflict arises between local and national level stakeholders when the financing of such protective measures is questioned, whether these costs are wholly met by the operator or partially subsidised by the Government (Gregory, 2009, p.1).

7.12 Security and Resilience Policy Disconnects in the Design Stage

The research findings have uniquely exposed how 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) is conceptualised and operationalised and how this can impact on resilience to human malign security threats at the planning and design stage of building or refurbishing SPIRS and other Category A railway stations in England and Wales. The BTP participants, both at a strategic and operational level, have revealed that there are significant policy disconnects around Section 17 of the Crime and Disorder Act 1998, which surrounds the participation and contribution of police CPOs at the planning stages of building and refurbishment projects, including railway station developments. Presently, the Home Office Police Forces are required at the outset of building projects, to contribute and to work with an array of accountable stakeholders to guarantee CPMs are deemed as

critical as other legislative duties in the addressing of their design.

Conversely, when railway stations are designed or refurbished, the BTP is not included in Section 17 of the Crime and Disorder Act 1998, nor do they have any other supporting legislation that gives them the authority to be consulted in the planning or any other stage of such projects. The participants stated that BTP CTSA and Principal Architectural Liaison officers (ALO) must be dependent on an unofficial network of industry associates to advise and update them on impending developments or they have to wait for the designers seek to their advice. However, if the BTP CTSA's/ALO's 'are asked for involvement once the first brick has been laid, then they have been involved too late on the project' (Gregson-Green *et al.*, 2013, p.36). This voluntary association between the BTP and designers and the paucity of regulation is perceived to be extremely challenging to deal with and even tougher to sustain, as security measures are frequently considered as a second thought or resented purchase. A Security Advisor articulated the following concerning regulations and security measures.

> *"If you speak to architects, planners etc. they like a level playing field. They'd like to see a change in Building Regs that says we want this to happen so they all understand what the guidelines are. But at the moment, there's no appetite within Government to include any additional legislation and all they're referring back to is Section 17 of the Crime and Disorder Act which basically says if you build something, you must consider crime. And Lord West's view when he was in that position was, "Terrorism's a crime."*
>
> (Security Advisor)

Such policy disconnects surrounding the security measures installed in refurbished railway stations or new build will have a knock-on effect on fiscal pressures. Given the economic demands that determine the fiscal costs of new build and refurbishment projects of railway stations, there was a sense of the inevitability by the BTP participants and Security Consultants that there will be unavoidable compromises with the installation and specification of security measures. The operationalisation of 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) through the processes of Governmentality implies a 'top down' holistic and collegiate approach for the shared 'responsibilisation' for resilience and security within SPIRS and other Category A Railway Stations in England and Wales. However, the research has exposed strains and pressures occurring at a local level given that at a

national level the Government control spending and budgets, meaning stakeholders such as the BTP have limited powers to contest the priorities of national security and resilience strategies which without doubt take a precedence over localised crime prevention issues with SPIRS.

However, if unsuitable security measures are built-in during the construction, the view of the participants is that these will have to be retrofitted at a future point in time, consequently having future monetary and commercial repercussions for Network Rail and or the TOCs if they are managing the railway station in question. One Security Consultant discussed the lack of regulations for security practitioners to be involved in railway station refurbishment or new build.

> *"There is no mandatory/obligation for a developer to call in a security practitioner at a set time and be of a sufficient quality! Theoretically, they could go out to the market and come back with an individual that is reasonably credible but may not have the back up in terms of expertise and understanding history. And this is where we are getting back to the idea of grudge purchases and may have simply been appointed merely on price! A case of buyer beware!"*
>
> (SecurityConsultant)

Moreover, the research has exceptionally found that there are definite policy disconnects between the building or refurbishment of railway stations and other pseudo-public spaces, such as shopping centres, as there are no Secure by Design standards for Railway stations. These disconnections do have the potential to impact on the 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) of SPIRS. Network Rail managed stations do have standards of security measures that have to be built into the refurbishment or new build plans. However, there are different standards for the TOC operated stations in terms of measures and strategies that are operationalised within the space, one senior operational BTP officer claimed that these were very much influenced by different types of funding streams.

> *"TOCs take advantage of the ambiguity of guidance documents, measures are only enacted if they have to and then at a minimum cost."*
>
> (Senior Operational BTP Officer)

Hence, the research has clearly exposed contradictions between the rhetoric of 'responsibilisation' (Garland, 1996) of resilience and its actual operationalisation by the multiple stakeholders within the spaces such as SPIRS. The research evidence has shown that although all the stakeholders need to have a role in the resilience of the space against human malign threats. Yet is played out with differing levels of importance and authority of the complex stakeholders. Some stakeholders had a greater level of responsibility placed on them, and despite a top down approach for the 'responsibilisation' of CPMs and CTMs, there was a level of stakeholder apprehension that the costs of CTMs would impact and without clear mandating from the state, local level stakeholders can divert resources and manipulate the ambiguity in the guidance to suit their own financial and security agendas.

Network Rail does offer some form of guidance on the Secure by Design for railway stations. The Security Consultants and Advisors who were interviewed felt that designing in CPMs was more difficult than designing in CTMs. This was because the Secure by Design guidance for CPMs is very patchy and highly dependent on the type of development it is being applied to. BTP participants at a strategic and operational level stated that more regulation and powers are needed to be granted to the BTP and for them to be involved at the very start of the design process, rather than the ad hoc/haphazard approaches which are in place currently.

However, to address the legislative disconnection between the involvement of the BTP in planning stages of new build or refurbishment projects, the DfT in 2012 released the SIDOS guidance, which endeavours to ensure security measures are designed in and the BTP are involved from the earliest stages of projects. The DfT, BTP, and the CPNI have written the guidance. The aim of the guidance is it provides 'generic security recommendations' (UK. GOV, 2015) that it is used by planners, designers and architects 'on how to design effective and proportionate physical security for new and major redevelopment railway stations' (UK.GOV, 2015).

> *"The SIDOS document has had BTP input, which is a major step forward. However, the SIDOS is just guidance and not advice on how to design secure stations."*
>
> (Retired Senior BTP Officer)

SIDOS is attempting to safeguard the railway station from future costly retrofitting of inadequate security measures. Although the SIDOS guidance does make suggestions to

tackle the concerns raised above; nevertheless, Security Consultants and BTP participants have conveyed their apprehensions that even though the document advises that CTSA/ALOs are included at the primary stages of projects, "it is not a statutory requirement and therefore does not guarantee their involvement" (Gregson-Green *et al*., 2013, p.36-37). One Security Consultant discussed the lack of mandatory regulation for designers of railway stations to consult with the BTP,

> *"It's not mandatory, and it should be. I think actually that will cost most projects dear, in terms of if then someone else comes in and scrutinises what has been done. However, if the measures aren't being scrutinised you never know… well nothing happens! They got away with it! Security is a complete negative process, 364 days a year everything and everyone was perfectly safe, then one day it didn't work!"*
>
> (Security Consultant)

This is devolved 'responsibilisation' (Garland, 1996) from the state by trying to make Network Rail, the BTP and planners responsible at a local level for CPMs and CTMs. This an issue of security becoming the primary worry 'of resilience practice while national security [becomes] played out in the local realm under the aegis of resilience' (Coaffee and Fussey, 2015, p.92). However, participants felt that it becomes very complicated for guidance such as SIDOS to be given on the security measures needed for refurbishments or new builds, as the entire complex and multiple stakeholders must be considered. They also stated that the implementation of security measures in projects is always impacted on by the implications of budgets. At the time of the research and writing up of the thesis it was too early to know whether SIDOS will be adequate to ensure the multiple stakeholders are included at the primary stages of projects, 'thereby providing a strategically planned, defined and co-ordinated approach at the design stages of new build and refurbishment projects' (Gregson- Green *et al*., 2013, p.38).

A further security strategy that can be operationalised by Network Rail and devolved responsibility given to the TOCs and BTP is the SSS, which was discussed in greater detail in section 7.2.1. However, as with the SIDOS guidance, the SSS is not a mandatory obligation for TOC's and Network Rail to comply with; it is a voluntary accreditation for railway stations to achieve. Interestingly, in 2006 the Labour Government proposed that it would be too expensive to make the SSS a compulsory requirement for the TOC's and Network Rail and suggested to make the "accreditation of more stations a franchise requirement" (House of

Commons, 2006). Thus, this shifts the responsibility of financing security and subsequent resilience to security threats from the state to the local level.

7.13 Chapter Summary

Without a doubt, the open and crowded nature, and functions of SPIRS creates an attractive target to those wishing to carry out malicious actions within the space and the boundaries. The literature review undertaken at the start of the research project and the subsequent qualitative data collection for the thesis has established there is a clear need to increase the understanding of the complexities of the multiple stakeholders who are charged with upholding the current and future resilience of the Category A railway stations in England and Wales to security threats. Therefore, the findings in this chapter have recognised that this thesis has been the starting part of research which has sought to address the significant lack of current research into the potentially conflicting agendas of the complex and multiple stakeholders, operating within the space, which has shown to create operational difficulties and the unintentional consequences from trade-offs in terms of the 'responsibilisation' of prevention measures against security threats devolved to a local level from the state. It is argued the planners, designers, and operators of SPIRS and other Category A railway stations in England Wales need to fully understand and account for current and future security measures in either retrofitting or new build projects. Consequently, this research has examined which stakeholders benefit from and are empowered by resilience and security strategies in SPIRS, and in turn how this can impact on the types of 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) measures, 'co-ordination and…affect the variation of resilience being mobilised' (Rogers, 2017, p.21).

This research has highlighted that within the space of SPIRS and other Category A railway stations in England and Wales that the resilience to human malign security threats is not a linear process, that the elements analysed above are interconnected and entangled with each other. Thus, each element has a critical part in the process of operational resilience and if one element is removed or not considered fully when designing new or retrofitting railway stations, or indeed in their day-to-day operations, the resilience of the space to security threats is compromised and weakened. The findings have demonstrated that to maximise the resilience of SPIRS to human malign security the state has devolved this responsibility to the complex and multiple stakeholders, 'institutions, professions, communities and individuals' (Coaffee and Fussey, 2015, p.95). The first part of Chapter

Eight continues to look at the current resilience of SPIRS to human malign security threats and examines the how the stakeholders and their communications can affect this. The second part of Chapter Eight brings together the findings and looks at what the research participants perceived to be the future threats SPIRS and its resilience to these.

CHAPTER EIGHT: SPIRS AND THE RESILIENCE TO CURRENT AND FUTURE SECURITY THREATS

8.0 Chapter Introduction

This chapter will continue to build on the findings and discussion of the research and those in the previous chapter. To recap, the participants focused on the current and future resilience of SPIRS to human malign security threats, this was discussed in two temporal spaces, present-day threats and those that could occur in the future. The first part of this chapter will examine the how the complex and multiple stakeholders of SPIRS and their communication strategies can impact on the current resilience of the space to human malign security threats. The second part of this chapter looks at what the research participants perceived to be the future threats SPIRS and its potential resilience to these.

PART ONE - STAKEHOLDERS

8.1 Stakeholder Analysis and Mapping in Terms of Resilience

The Stakeholder Map produced during the research was topological, meaning that the actors in SPIRS were mapped including critical decision makers who are involved in operational policies and strategies, or impacted on by security threats. This is different to the topographic mapping which focuses on the relationship between a variable such as age or gender and a social issue (Aligica, 2006, p.82). By asking the participants as stakeholders within SPIRS to discuss and review the map, it uses a cognitive technique to provide a map constructed on 'meta theories' (Aligica, 2006, p.79). The research maintains this Stakeholder Analysis and mapping could be readily used at a national/state and local level for policy and operational reviews of the stakeholders and their interconnections and their subsequent responsibility for the resilience of SPIRS against current and future security threats. Therefore, when undertaking policy reviews or the planning of refurbishment or new build railway station projects this research argues it is critical for strategic purposes to undertake the process of Stakeholder Analysis to catalogue and determine those who will be involved or could impact on the project, policy, or strategy. Thus, when the Government is devolving responsibility to the local level stakeholders in SPIRS and other Category A railway stations in England and Wales, their points of view should be sought and accounted for in the policies and strategies which affect them (Freeman, 1984). Moreover, the participants used the Stakeholder Map to create new empirical knowledge through the confirmation of the ambiguous and variable boundaries within the space of SPIRS. Thus, the research findings support those of Anderson *et al*. (2009, p.307) that as a space, SPIRS is 'centric…within geographical boundaries'. Yet also the space of SPIRS can be perceived as fluid and dynamic, which is socially constructed with complex interconnected relationships and

multiple understandings of these.

The Stakeholder Map highlighted primary, secondary, and external stakeholders within SPIRS, allowing for the interdependencies and importance of relationships to be highlighted to the reader. It is at this point the behaviours of stakeholders historical and future should be examined in how these could impact positively or negatively on specific goals of the institution – railway station (Freeman, 1984) and the external influences, pressures and susceptibilities of the complex stakeholders can be recognised (Freidman and Miles, 2006, p.85). Therefore, these relationships have been analysed 'according to economic, technological, social, political, and managerial effects' (Freidman and Miles, 2006, p.85). Consequently, these factors have a significant impact on the stakeholder's agendas and strategies when considering prevention measures and resilience to human malign security threats.

With any operational or security policy or strategy changes, it is critical for the 'non-state agencies and organisations' (Garland, 1996. p.452) stakeholders, such as Network Rail High-speed One, and the BTP, within SPIRS to propose the alterations and subsequently to account for all the stakeholders concerned to appraise their probable co-operation or resistance and to consider their interconnected and entwined organisational connections and relationships (Aligica, 2006). Consequently, this research proposes Stakeholder Analysis can be used for the many specific and complex 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) projects or strategies within SPIRS and other Category A railway stations in England and Wales, given that it distinguishes the relevant stakeholders and visibly highlights their relationships and 'their relative power, influence and interests' (Aligica, 2006, p.80). Moreover, Stakeholder Analysis can be utilised in such projects and strategies to denote the significance of the complex and multiple stakeholder's interests and how can influence the completion of the project. Hence, it is a method which can be utilised to recognise the stakeholders concerned in a specific policy or strategy and 'for identifying potential coalitions for support…and for assessing the relative risks entailed' (Aligica, 2006, p.80). As discussed in Chapter Six and Chapter Nine the research proposes this form of enquiry and mapping is very appropriate to other types of pseudo-public spaces who operate with complex and multiple stakeholders, for example large, shopping centres and which need to be conscious of the considerable and complex range of stakeholders, policies, strategies and organisational agendas that intersect and influence the resilience

of the space to security threats.

The participants stated that involving the complex and multiple stakeholders in SPIRS is an important process in project management and the operational day-to-day management of the space. The research contends that if Stakeholder Analysis is undertaken within SPIRS to maximise the resilience of the space to human malign security threats it will be an invaluable tool in maximising decision making in projects and operational activities. This will ensure the entire cohort of complex and multiple stakeholders are accounted for when considering the resilience of the space to current and future security threats (Jepson and Eskerod, 2008). Therefore, Stakeholder Analysis needs to be carried out at the start of a 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) strategy or project, so issues and opportunities can be identified. This is a critical element in the planning stage of either building new railway stations or refurbishing existing ones, and the research has highlighted that it is currently not fully considered in all such projects. Thus, this would mean that all of SPIRS' complex and multiple stakeholders who can affect the resilience of space to human malign security threats are consulted from the outset of a project. As already discussed in Chapter Seven, the BTP and Security Consultants/Advisors frequently felt they were not always consulted and excluded at the start of design projects.

8.2 Stakeholder Relationships and Resilience

Therefore, the findings of this research maintain that within SPIRS and other Category A railway stations, and the utilisation of prevention measures, these should be operated on the principle of 'stakeholder fairness' through Stakeholder Analysis and Mapping helps to clarify the responsibilities and roles of the complex and multiple stakeholders. Thus, individual stakeholders or groups of individual stakeholders will be able to have a clear understanding of the advantages of a reciprocal arrangement of collaboration and assistance, which necessitates input and potential costs to other stakeholders (Phillips, 1997, p.57).

Additionally, Stakeholder Mapping by consulting and encouraging the complex and multiple stakeholders to be part of projects within SPIRS can contribute to 'building legitimacy and policy ownership' (Aligica, 2006, p.80) of such projects. Furthermore, it was felt that by building and maintaining strong relationships with other stakeholders within SPIRS this went some way to ensuring the resilience of the space in terms of security threats,

"we have good relationships with all the key stakeholders that would help with the

business continuity. The resilience and the bounce backability. We could bounce back quicker because we actually have good strong relationships with people."

(Senior Operational BTP Officer)

A Retail Manager in SPIRS described the positive relationship they had with the BTP,

"they come in. Often, there is a lot of interaction between the retailers and the BTP, the PCSO's on the station, which makes for a healthy relationship and ease of calling."

The participants maintained in theory that the process of constructing and operating a space such as SPIRS requires an understanding of the multiple stakeholders involved and an efficient good practice in terms of communication. This is consistent with the viewpoint of Hassler and Kohler (2014) who argue that for effective communication to be achieved the stakeholders must endeavour to achieve a proficient framework. However, in reality, the research participants have stated that the processes for communication between the stakeholders can be very ad hoc and is heavily reliant on the goodwill of individuals, which can be easily lost when they change roles or leave the organisation. These findings impact on the notion of governmentality and 'responsibilisation' (Garland, 1996) at a national 'top down' approach to resilience fails to account for such intangible factors which can impact of the resilience and security of SPIRS to human malign threats and it can be problematic at an operational grassroots level. Yet again the research findings have revealed that tensions can occur at a local level in SPIRS as the governance and the 'responsibilisation' (Garland, 1996) for security and resilience implies a shared approach. However, the reality is the Government is holding on to control of these agendas and yet demonstrates it lacks the practical consideration for the operational complexities of managing such a responsibility.

The following section leads to the research to contend that despite Garland's (1996, p.453) rhetoric of national and local stakeholders have a responsibility for 'preventing and controlling crime', the actual day to day approach is less than holistic with blurred operational boundaries and real confusion over what 'a state function is and what is not'. Thus, it is recommended that there needs to be a greater sense of regulation and obligation driven by the Government, the DfT, which can be filtered down through the levels of stakeholders within SPIRS.

One emergent and critical finding from the research data is that to get to grips and control the multifarious and complicated difficulties that are inherent in tackling and delivering a railway station's conceptual plan, operational and legal obligations, it is crucial that the multiple stakeholders involved in these processes accept they must improve and enhance their understanding of such issues. Therefore, to achieve this in theory within the space of SPIRS and other Category A railway stations in England and Wales there is a requirement for the complex and multiple stakeholders to gain "an appreciation of the necessity for a collaborative and integrated resilience strategy against security threats" (Gregson-Green*et al.,* 2013, p.38). Yet as discussed in Chapters Two, Three, Four and Seven, this is not as straightforward in practice as it would at first seem because as

> beyond simplistic building-specific guidance, 'resilience' remains an intangible aspiration and, significantly, there is no distinction between equilibrist and evolutionary understandings. Resilience, therefore, is commonly viewed as a vague, *singular* whole.
>
> White and O'Hare, 2014, p.5-6

One criticism, which arose from the research findings, was how SPIRS manages the resilience of the space to current security threats, as some participants felt it was frequently delivered through a silo mentality and approach, with the complex and multiple stakeholders only aware of their own security and resilience policies. They had little or no understanding of the UK national security guidance, strategies or policies.

The research has highlighted contradictions between the rhetoric of resilience and its actual operationalisation by the multiple stakeholders within the space of SPIRS. Garland's (1996) 'responsibilisation' rhetoric claims of the stakeholders in SPIRS should have a role in the 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) The reality is it is played out in SPIRS and other Category A railways stations in England and Wale with differing levels of importance. The research has exposed there is inequality between the stakeholders within SPIRS, as some had a greater level of responsibility placed on them, TRANSEC direct the NRSP through the BTP and Network Rail High Speed, and who in turn had to cascade this responsibility down via operational levels to their own grassroots staff and retail and TOC stakeholders within the space. Thus, indicating that Garland's (1996) 'responsibilisation' occurs at a national level which is dispersed and disseminated down a hierarchical structure to local level in SPIRS.

Furthermore, one Security Consultant for HS1 also felt that the resilience of the space to security threats was undermined by the lack of consistency in qualifications and requirements of experience for the TOC's and Network Rail High-speed operational security managers. They felt this was compounded further because there is no industry standard or professional body or awards for railway station security. Thus, they maintained any strategies and co-operation from the complex and multiple stakeholders across the space was very ad-hoc and dependent on the individuals. Again, this was a clear example of a lack of communication and understanding about the complex resilience requirements at a Governmental level needed to ensure the security of SPIRS against human malign threats.

An example of the devolved local and multiagency 'responsibilisation' (Garland, 1996) from the Government to the multiple stakeholders for the resilience of SPIRS to human malign security threats are the stakeholder meetings to discuss security strategies and prevention measures. These stakeholder meetings can be seen as a form 'social crime prevention' (Cochrane and Talbot, 2008, p.16). Therefore, demonstrating that 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) can be 'a valuable political strategy facilitating…shifts in the responsibilities for… governance from the state toward the private sector' (White and O'Hare, 2014, p.7). Moreover, the concept and operationalisation of resilience in a space such as SPIRS should encourage national and local level stakeholders to focus on the actual problem space, rather than focus on theoretical propositions of security and resilience. Thus, the multiple stakeholders should when operationalising resilience within the space must consider

> subjectivity…adaptability…reflexive understanding…risk assessments…knowledge acquisition and, above all else…responsible decision making
> (Jones, 2013, p.40).

The research has found that many of the security meetings and communications that are held in SPIRS by the multiple stakeholders are instigated by individuals, and are not a direct organisational strategy, and therefore they are not mandatory to attend. The stakeholders from the BTP, Network Rail and the retailers who did take part in these meetings believed that they were 'trying to improve the complexities of stakeholder interfaces and to improve the communication of security strategies.' (Gregson-Green *et al*., 2013, p.38). An example of such a voluntary meeting held in SPIRS is the PACT meetings, with attendance from the BTP, Network Rail, the public, the TOCs and the station's retailers. The overarching aim of these meetings is to increase awareness, co-operation and agree on strategies concerning

security issues and threats to SPIRS. However, the research found that attendance by the TOCs and the retailers was often poor. One Site Retail Manager felt it was more important to send their junior supervisors to these meetings because

> *"they talk a lot about security, so you know. No disrespect to the police but if you've been to one, you've been to them all, you know? Because they are from a script and they are very much- you know, standardised? But it is probably key that my guys go, I'm not always front of house. So, I'm not always the guy who is on the shop floor, I'm just one who is reviewing my manager's performance and targets around shoplifting."*

Another participant claimed those attending to vent about other disagreements and their own agendas frequently used the PACT meetings. However, they did feel that if there was a serious problem that would affect all of the stakeholders, 'commercial agendas would be put to one side for the greater good of the station' (Gregson-Green *et al.*, 2013, p.38).

A number of the BTP and Network Rail research participants saw these PACT meetings as a fundamental part of creating and sustaining communications and relationships between the complex and multiple stakeholders within SPIRS. However, maintaining and encouraging attendance at these meetings was frequently up to the individual operational officers and managers. This indicates that positive and collaborative stakeholder relationships are essential for operational resilience and strategies are imperative as in theory they make for effective approaches and outcomes (Jepson and Eskerod, 2008). Moreover, the research found that Network Rail High-speed One delivered fortnightly security briefings to the management of the retail units within SPIRS, and there was a dedicated section that named and shamed retail units, which have breached security protocol during the period. Yet moving forward the Network Rail High-speed One Operational Security Management team stated that they wanted to do fortnightly security the briefings to the actual retail staff themselves. This was because they strongly felt that by delivering these briefings to the retail managers, the Network Rail High-speed One security message could be diluted or misunderstood by individual retailer's corporate agendas when the briefing was cascaded down to their shop floor staff.

Moreover, the research has exposed the contradictions between the rhetoric of the 'responsibilisation' (Garland, 1996) resilience and its actual operationalisation by the

multiple stakeholders within the space of SPIRS. Some tensions were alluded to by one Local Authority stakeholder, who felt there was a lack of clear communication strategy and inclusion for those stakeholders who have a stake in SPIRS but were located outside of the space of the station. Therefore, this could lead to a feeling of social exclusion from the community of stakeholders within SPIRS, where they do not feel valued or are actively encouraged to participate (Anderson and Nielson, 2009, p.309) in discussions, or strategies around 'security-driven resilience' (Coaffee and Fussey, 2017, p.294).

> *"It does feel like actually the station almost need their own opportunity for us to all get-together and understand what everyone does. And we need to repeat it regularly; so that newbies can understand and there are new people who come and change the sort of situation."*
>
> (Local Authority Emergency Planner)

Furthermore, there appears to be a disparity between Network Rail and Network Rail High-speed One's policies around stakeholder meetings in SPIRS, given the Local Authority Emergency Planner had only been involved in actual emergencies in SPIRS and not in any scheduled meetings. A Senior Security Manager for Network Rail stated it was the national policy for the company to hold regular security meetings, several times a year, where the following stakeholders are invited to attend:

- *TOCs*
- *Retailers*
- *BTP*
- *Local communities*
- ***Local authorities***"

Furthermore, a Senior BTP Officer described how fragmented and disparate the communication strands could be in SPIRS and other Category A railway stations, especially when considering and comparing how communications were handled historically when the railway network was a nationalised industry.

> *"Having lived through privatisation of the railway, where you were dealing with BR [British Rail], which for all of its faults it was actually a very good organisation to deal*

with as it was so well structured. You wanted a message to go from BR to every station in the country, click gone done! You want to get a message to every station in the country now; well you know it doesn't quite fit the corporate plan. Lots of different agendas and stakeholders (TOCs), you know all doing something very slightly different. So, it's harder to co-ordinate, there are groups to hold it together, but they haven't got that natural grouping, you know under BR it was natural for the railway companies, you know to stick together, because they were the same company. Now, the natural inclination is for them to…do their own thing, but they need to pull together."

The RSSB is another stakeholder who facilitates meetings and lines of communication between railway station stakeholders, such as the TOCs, Network Rail and the BTP. However, it does not necessarily arrange meetings specifically around issues in SPIRS; it deals with wider security problems across the English and Welsh railway network. A Senior Manager described his role and the wider safety and security role of the RSSB,

"we don't design railways; we don't do anything of that kind of nature. And all I do from my point of view is arrange meetings, facilitate. I aim to get people together to sit down. I aim to get people together who can these things out and talk about them… the RSSB has nothing to do with looking at terrorism. It's crimes on the station and to station personnel."

Interestingly, the participant from the RSSB felt that when security/crime prevention security meetings were held that there was a lot of positive uptake from the TOCs, but they felt that Network Rail did not contribute fully to these meetings.

"The Network Rail uptake is, they come along to the meetings, but they don't properly engage…We do wish that they take more of an active role or give a more positive contribution both in what they tell us and how they react and what they are told. I think it's a cultural thing, they may be seeing the meetings as more of a train operating company thing because Network Rail only has a few of the larger stations to manage. So, they definitely should be involved because they do manage those bigger stations, but perhaps they just send the wrong person to the meeting. But we do wish they would engage more."

Furthermore, the participant indicated similar opinions about the lack of participation from the

DfT in attending meetings. They found that once a contact at the DfT had left or changed to a different department it was a struggle to find a relevant replacement to attend the meetings.

> *"We wish they would say and try and find the right person in the organisation! But given the size and importance of them and the role they play within the railway network we don't have anyone come from the DfT. We did use to have somebody come from the Home Office to the meetings, but he retired and has never been replaced. No, nobody from the DfT no not now."*

8.3 Stakeholders in SPIRS and Responsibilisation for Resilience

The research findings examined in Chapter Seven and this chapter demonstrates that within the space of SPIRS, both the formal and informal stakeholders introduce crime and security measures and thus subsequently social control measures into the everyday. These regulations operate in a way, which are mirrored and enhance 'the social controls of ordinary life' (Garland, 2001, p.6). Thus, the space of SPIRS and wider society and its issues do not stand still, and consequently, the different practices that are the informal and formal methods of control cannot either. It is critical when looking at crime control in SPIRS that the informal processes of control are not overlooked. A Senior Manager from the RSSB shared their opinion about the issues of how the informal and formal 'responsibilisation' (Garland, 1996) of the public who will use SPIRS in the future could be addressed by the railway industry as a whole.

> *"It's all about how people behave, as individuals or groups. And we have to think about how much responsibility do we take on about how to educate people how to educate people how to behave? If somebody is misbehaving, why is he misbehaving? Is it because of a family situation? Or unemployment or education? We cannot as an industry, address society's ills. We can lobby the Government etc., or carry out our own research, but we can only try and address the issues on the railway. We can't say go and get a job, or education-whatever. So, we do have to draw the line somewhere. So how do we address these things, how do you move forward? We just have to look at the assets and the people who travel on the railways and work on the railways as best we can."*
>
> (RSSB Senior Manager)

Through 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) strategies such as CONTEST, which feeds into the security requirements of the NRSP, the Government expects that the complex and multiple stakeholders within SPIRS take responsibility at a local level to

operationalise security measures to ensure the resilience against human malign security threats. Therefore, through the process of Governmentality, the Government infers that the multiple stakeholders within the space of SPIRS must

> take responsibility for their own [security measures], and in policy terms is associated with a series of economic and social incentives and disincentives aimed at reinforcing appropriate behaviour.
>
> (Cochrane and Talbot, 2008, p.12)

Moreover, this research has highlighted that the responsibility of security prevention measures within the space of SPIRS and other Category A railway stations in England and Wales has been decentralised and 'made a key contribution' (Fergusson and Muncie, 2008, p.118) of the multiple stakeholders who operate within the boundaries of the space. Through 'governance-at-a-distance' (Garland, 1996, p.454) 'responsibilisation' (Garland, 1996) see the Government 'creating active citizens' who have had some form of devolved responsibility for prevention measures passed down to them 'by agencies, organisations and individuals which are quite outside the state and to persuade them to act appropriately' (Garland, 1996, p. 452). An example of this in SPIRS and other Category A railway stations are mass media campaigns which aim to raise consciousness, create a sense of duty, and thus change practices' (Garland, 1996, p.452). Moreover, the analysis of the findings found that frequently, passengers and the public using SPIRS are exposed to subtle security measures from the stakeholders in the space, such as Network Rail High Speed and the BTP, which aim to instill in them a sense of responsibility for their own safety. One example of this actual 'responsibilisation' (Garland, 1996) given by a Senior BTP officer was a poster used in 2012 to make passengers and the public think about the impact of leaving their bags unattended in railway stations; he stated that the overarching message of the poster was

> *"there are 6,300 unattended bags at this station in the last month, delaying trains by 8 million minutes. If you want to get to your journey on time don't leave your bag unattended. If you do see a bag unattended then report it to staff."*
> (Senior BTP Officer)

However, the BTP officer maintained that the public's perception of this action would result in them thinking that unattended bags as an inconvenience to their journey rather than thinking of it in terms of potentially preventing an act of terrorism. Yet they also maintained

that some passengers would be frightened into thinking every left item of luggage was a bomb and this then increased their fear of being a victim of a terrorist act. Political messages and spin often depend 'on imagery and mythology with a strong emotional resonance' (Dean, 2010, p.25). Thus, the examples of the poster campaigns inSPIRS around CP and CT can be drawn on to support an underlying political discourse around security threats posed to the space. It was felt that a challenge to the resilience of SPIRS to human malign security threats both currently and in the future, was the increasing pressures and expectations of the commuters and those using the space. One Senior Network Rail Policy Manager believed that commuters are often oblivious to the area and their own safety and maintained that public education and 'responsibilisation' (Garland, 1996) was important.

> *"People should be prepared to live with a small level of risk. We live in a risk adverse culture. How the rail culture operates the system will never be totally secure against terrorism."*
>
> (Senior Network Rail Policy Officer)

Furthermore, the RSSB propose that the 'responsibilisation' (Garland, 1996) of stakeholders in terms of looking at the resilience of SPIRS through CTMs and CPMs could be encouraged and supported through a programme of the three E's, education, engineering and enforcement.

> *"We talk about the three E's. Which are education, engineering, and enforcement. So, you tell people how you want them to behave, you educate them how you want them to behave, so then you have the engineering, so we have infrastructure, then we expect you to behave now, but the important thing is the enforcement! But you can't do it all by education, you can't do it all by engineering because would still jump over the barriers, and you can't do it all by enforcement. So, for it to be a sustainable campaign, you need a bit of all of them."*
> (RSSB Senior Manager)

The three E's described by the Senior Manager from the RSSB is comparable to a crime prevention strategy based on the four 'E's' principles (Morgan and Cornish, 2006, p.12)

1. Engineering
2. Enforcement
3. Education

4. Enabling

These principles can be a response and an implementation of processes, 'with the need to develop avenues of co-operation and partnerships with the community and its agencies' (Morgan and Cornish, 2006, p. 12-13). These elements of co-operation and partnership were apparent between some of the stakeholders within SPIRS, as a Retail Manager who was responsible their stores security stated,

> *"the retailers do what they can but then it's also making sure passengers and customers take some responsibility themselves- awareness of potential crimes, keeping themselves and their property safe and secure. But if there was an umbrella for the role, it's with regard to helping Network Rail, it's training staff about is the HOT protocol and the general criminality aspects of the business, it's ensuring daily everyone has their ID badge and have got their passes, and that comes under checks and obviously under reviews etc. I support the station initiatives, whether it be a forum, whether it be as the British Transport Police briefing that they hold regularly."*

PART TWO – FUTURE CHALLENGES TO RESILIENCE

Burnard and Bhamra (2011, p.5583) maintain that 'within organisations, resilience resides in both the individual and organisational responses to turbulence and discontinuities'. Therefore, to examine how the complex and multiple stakeholders of SPIRS perceive the future resilience to human malign security threats, the participants were asked to explain in their opinion what they believed to be the greatest threats.

8.4 Future challenges of policing SPIRS

The railways of England, Wales, and Scotland are policed by the BTP with approximately four thousand members of staff. A senior BTP member of staff stated that this should be seen in perspective when the Metropolitan Police force, police the Greater London area with about forty thousand members of staff. As the capacity of the railway network increases in the future, more people will use SPIRS in one of its many functions and there will a greater opportunity for crimes to be committed within the space. Thus, this research argues that as issues surrounding human malign security threats are raised in the future there will be a greater need for more BTP officers. One such future issue that was identified by four BTP participants was that of how currently the policing of the railway and for the foreseeable future was funded differently to how the Home Office Police Forces are funded. At present, the financing of the BTP is sourced from the TOCs, via DfT. If the TOCs declined to pay the DfT and as such

could organise alternative methods of securing and policing the railway, for example through private security firms or Home Office Policing, this could affect directly on the future policing of spaces such as SPIRS and other Category A railway stations in England and Wales. The BTP are highly specialised in the policing function they provide the railway network. It is this expertise, which during a security incident allows them to play a pivotal role in getting the railway network or specific station up and running. Moreover, they have a dual role in preventing crime and terrorism. However, one senior BTP Counter-terrorism Specialist stated that given the numbers of BTP officers, it is extremely difficult to prevent acts of terrorism, but they have a significant amount of knowledge and past expertise in helping to bounce back from such incidents.

> *"I don't think that policing the railway prevents much terrorism because, you're talking about seven million journeys a day and we've got 4,000 people and anyone day of those 4,000, probably 2,000 of them aren't available anyway…So, you know, you're probably trying to police…our railways…with 1,000 people. We're not going to stop terrorism, what we can do though, and we can do very, very effectively, is when the wheel does come off, we can get the wheel back on far more quickly than people who aren't knowledgeable about the environment…we can deal with those far more quickly because we understand the environment in exactly the same way…One of the things that is abundantly clear from other parts of the world is as soon as you do away with your Railway Police, you do away with railway policing, because [the] Police are more concerned with Mrs Wiggins being mugged, I'm not saying that's a bad thing, but it's just…what will direct them?."*
>
> (Senior Strategic BTP Staff Member)

The BTP participants described how their limited financial and manpower resources, and the strains on their time would need to be considered now by the DfT in terms of being able to cope with future demands on SPIRS and other Category A railway stations in England and Wales to be resilient spaces to human malign security threats.

> *"I think one of the things in your future worlds; you need to almost consider just what is the security structures are going to look like in that time? Are we going to be talking about what sort of policing? Or will be talking about a far more private security company?"*
>
> (Operational BTP Officer)

The RSSB has conducted research into the future of complementary policing, and are looking at resources further than the BTP to secure the future railway station. They have investigated how the TOCs look after their passengers and staff from a security perspective. The Senior Manager interviewed stated that they felt in the future the BTP would not be able to offer enough of a presence in stations such as SPIRS and they

> *"are just one answer obviously. A lot of the train operating companies employ private security staff or have their own employees dealing with security and I think this is good practice now and for the future in having extra people going back to visibility and presence onstations."*
>
> (RSSB Senior Manager)

A further factor in the future resilience of SPIRS and other Category A railway stations in England and Wales, which could influence and impact on the policing of these spaces, is the changes in technologies and the use of social media, which arguably can be used by members of the public in both positive and negative ways. It can be a quick tool for the public to reporting suspicious behaviours in a railway station or the wider network to the BTP. Moreover, the BTP can use it keep the public up to date with incidents or issues within the space. However, one BTP participant felt that social media could additionally have a possible negative impact on the policing of SPIRS as it can be used to organise deviant social movements, such as directing protestors or rioters to specific areas.

One Security Consultant believed that one of the greatest future challenges to the resilience of SPIRS to human malign security threats was the policing and surveillance of the margins of the station. In their opinion at present, there is a blurring of boundaries in terms of securing the margins of SPIRS; passengers are unaware of the boundaries of the BTP, the Metropolitan Police, Network Rail High-speed, and private security.

> *"I think this will remain a constant unless someone comes up with a wonderfully unifying plan in 50 years' times and says the whole blob around a station is owned by this entity. But I really don't see that happening…the margins need to be considered and not just the box of the station. But actually, the dependency on the adjacent is quite important. Everything from security, through to traffic, HMV measures and how these affect pedestrian permeability and traffic calming measures."*

This research has found that policing and the security of SPIRS is entrenched in national

policing and security legalisation and guidance. However, the actual operation and enactment of these can be and are altered by the current multiple stakeholders responsible for the securitisation of the station. Therefore, such operations 'can only be understood in and through the local contexts in which they are developed' (Raco, 2003, p.870). Hence, the security strategies, which were in place in SPIRS during the data collection phase of the research, may now not be relevant or applicable to other Category A railway stations in England and Wales. However, the research has shown that the stakeholders believe the good practice achieved in SPIRS can and should be shared with other railway stations to ensure greater future resilience to security threats. One Senior Operational BTP described the positive stakeholder engagement surrounding counter-terrorism scenarios prior to the Olympics.

> *"A lot of good work was done in the pre-Olympic period and the Network Rail Operational Security Manager at SPIRS pulled together a number of tabletop exercises, which he and his team ran, and I think for several months leading up to the Olympics."*
>
> (Senior BTP Officer)

However, another BTP participant felt the role of the Olympics was an excellent but challenging situation for their colleagues to reinforce their role within SPIRS and would influence the future of policing of such a complex space.

> *"If you give a cop a job…to do football duties, then they will focus on football and forget about the drug dealers and anything not connected with the football. We're going to have the same for the Olympics; one role is to prevent terrorism. Another one isto smile and make people feel welcome…. Another one is to prevent crime. Another one is to ensure long-term stakeholder relationships; there are a million functions, not just the function of policing."*
>
> (BTP Officer)

In SPIRS, the operational BTP senior officers advocated a 'problem solving process' style of policing. According to Morgan and Cornish (2006, p.29) this type of approach is based on a clear identification of the source of a persistent recurring problem and the targeting of resources to provide a long-term, sustainable solution to the problem, rather than a short-term 'quick fix'. The model, which the BTP use is called SARA, Scanning, Analysis, Response and Assessment and is an uncomplicated tool that is used to problem solve crime issues

(Morgan and Cornish, 2006, p.29). One BTP officer described how this form of problem solving policing highlights a number of benefits to the multiple and complex stakeholders within SPIRS and could be applicable to similar operations within other Category A railway stations in England and Wales. Tilley (2009) supports these findings and Morgan and Cornish (2006). The research proposes there could be future benefits of utilising this form of policing and which would be further reinforced by using the Stakeholder Map and analysis for SPIRS. Therefore, this would ensure that all the relevant stakeholders within the space were consulted and communicated and would benefit from;

- Knowledgeable, committed, engaging and encompassed policing leadership
- Practical problem-solving resources
- Data analysis, providing statistics for metric results
- Good practice to be shared and cascaded throughout the railway station and other sites
- Improvements and developments in problem solving practices and structures
- Specific operations to be operationalised in the station

However, another Senior BTP Officer discussed how new recruits are briefly taught about CP but the overall emphasis of their training is on the catching of criminals on the railway network and within the railway stations, thus which could have a long-term impact on the future of policing spaces such as SPIRS. Therefore, regardless of problem based policing, there needs to be a change in the culture of BTP policing, with trainers being retrained to place a greater emphasis on CP from the beginning.

8.5. Ageing Infrastructure

The thematic analysis of the research data has found that many of the participants considered there were numerous challenges to the future resilience of SPIRS to human malign security threats. One such threat, which was a repeated theme from the data, is the age of the railway infrastructure and the pressures on operating these spaces. Moreover, a senior blue light responder also felt the issues of the ageing infrastructure was compounded the economic situation of the country at the time of interview.

> *"The pressures brought to bear-the ageing infrastructure, the amount of money required to bring it to, keep it running, the pressures on managers to operate and*

keep it running as effectively as possible… that's no bad thing, but there is a balance there, I think those are interesting issues. It's also again a personal view, is that lots of standards have been developed over recent years because there was so much money invested in safety, and now we're left with the legacy of very high levels of safety, which now have to be implemented in more challenging times and how is that managed through."

(Senior Blue Light Responder)

Therefore, the security measures and policies that are implemented today in SPIRS will have a legacy in the future. The complex and multiple stakeholders considering the use of security measures and policies in SPIRS must be mindful of how these systems work in tandem with other emergency procedures. The senior blue light responder was concerned with the stakeholders within SPIRS relatively high turnover of staff; they felt that knowledge and awareness of procedures need to dovetail with those of others within the space.

"Maintaining a high standard of management and understanding of how safety systems work within railway stations, for example, ventilation control, emergency procedures, you know, so looking at the turnover of staff-the pressures on training and the pressures on, there's a whole range of pressures, that still means it's serviceable, appropriate and safe for the demands of delivering a serviceforthecustomer."
(Senior Blue Light Responder)

One Senior BTP participant felt that because of the age of the railway network in England and Wales there would always be significant limitations in terms of being able to implement more rigorous security measures such as airport security-style scanners in SPIRS and other Category A Railway Stations in England and Wales.

"A lot of the stations are over 100 years old, look at Paddington or Waterloo-you've got to look at that we trying to run a 21st-century railway with very much 19th century assets-infrastructure. The stations, you are stuck with the building that you've got. Even if you knock it all down it. You've got to do something in the meantime-how can you totally rebuild or refurbish a station? I mean they have done remarkably well with St Pancras and Manchester Victoria a few years ago, so it can be done, but…stations can be expanded but there are huge problems there."
(Senior BTP Member of Staff)

One Security Consultant discussed how far into the future security strategies concentrated on when new railway stations are designed. They stated that such buildings are designed to have a sixty to seventy-year lifespan. Therefore, it is exceptionally difficult to predict societal issues over the life of a building, without even trying to consider the developments in future technologies. Thus, in terms of future security threats to buildings, designers and security consultantattemptto look at terrorist capabilities rather than intent.

> *"Working with the client it is decided which major terrorism capabilities they want to protect against. They will look at measures which offer some form of bomb resilience, blast proofing, which have to be built and considered for the life of the building (with an occasional facade upgrade). Whereas electronic systems are more flexible and generally are upgraded everyfiveyearsduringthelifeofthebuilding."*
>
> (Security Consultant)

8.6 FutureCapacity

A further theme that reoccurred from the data surrounded the future resilience of SPIRS to the demands created by the increased numbers of passengers who will be passing through the station. More people use the railway now than ever, even during the peak the peak of railway journeys in the 1920s. The participants felt that it key will be to try to manage the future expectations of the public of travelling and using the railway network.

> *"I think this is a critical time in terms of the railways, nationalandas well as London Transport. In the last few years, the number of passengers has gone up and up and it just can't continue. Because, although trying to increase capacity, you can only run somanytrainsalongthesamebitoftrack."*
>
> (Senior BTP Officer)

The increase in capacity and as such the footfall through SPIRS will only increase in the future, and several participants believed that this would also bring with it an increase in security problems from anti-social low-level crimes to more assaults and thefts occurring. Furthermore, it was felt that the projects like CrossRail will have an impact on how London's railway network operates and its capacity. The extra stations will permit more journeys and subsequently passengers using SPIRS and other stations in their crisscrossing across London. One Security Consultant, who has been involved in the CrossRail project, believed that approximately ten to twelve percent of the total project budget has been spent on the implantation of security measures. Moreover, they mentioned that CrossRail is being

developed with a lifespan of one hundred and twenty years and it is critical for the designers and consultants to get it right now. This opinion on the lifespan of the building contradicts those of another security consultant interviewed during the research. Many of the security measures, which have been utilised for CrossRail, are covert and part of the fabric of the buildings, thus they are not add-ons, and as such, costs will have been reduced.

8.7 Future Policy and Resilience

One Senior Network Rail member of staff stated that they felt the future resilience of SPIRS to security threats could be improved now through the greater co-ordination between the multiple stakeholders through mandatory station security meetings. Regulation to attend such meetings would embed the process into acceptable station procedures, attendance should be compulsory by the retail unit managers. As discussed in Chapter Seven, the DfT through the NRSP could extend their powers through Network Rail High-speed to ensure compulsory attendance at security meetings and to temporarily shut retailers down if they did not attend and failed to comply with the provisions of the NRSP. A Security Manager from High-Speed One stated that these changes in future institutional practice need to be instigated and championed at a higher level, Network Rail's CEO for instance and ATOC must support these initiatives to

> *"change the hearts and minds from a top down approach, the DfT should drive these changes through Network Rail as leverage for getting the TOCs and retailers on board."*
>
> (High-speed One Security Manager)

However, One Senior Network Rail member of staff shared their opinion of how far into the future that the overall Network Rail resilience and security strategies looked.

> *"as far as a crystal ball allows us to do so' – two years' max, anything beyond that is not realistic as changes in methods, groups, threats will be considerable."*
>
> (Senior Network Rai Member of Staff)

A senior BTP senior officer who discussed the BTP's security policies that they worked with and developed in terms of how far into the future they looked echoed a similar position.

> *"In terms of policy, I would and being able to look back to 1993, I would suggest that typically we are looking five years into the future."*
>
> (BTP Senior Officer)

However, it was also felt that in terms of more specific future prevention strategies and measures for the railway station that they did not really look too far into the future and that if they did they were not communicated down to operational level stakeholders.

> *"Well, I think not very far into the future, if I'm honest. There are certain things that they can plan for such as cup finals, or the Olympics. Obviously, but I don't think they look terribly far into the future. But if they do they don't show it with the rest of us as much as we would like them to! Perhaps they are planning the future. I don't know, but it doesn't come across like that."*
> (RSSB Senior Manager)

Nonetheless, the RSSB do look to review the policies and the actions of the security group, which need to be carried out over the next two to three years. This review also incorporates new changes to national security and crime legislation and keeps stakeholders from the railway security group updated and informed. The RSSB security group also lobbies the Government on issues that affect the security and resilience oftherailwaynetwork.

> *"The new legislation, which deals with anti-social behaviour, we've been looking at that, in consultation since it came out about 18 months ago, we been tracking its progress, it's gone into the Queen's speech. However, it won't become legislation for the next 15 to 18 months. We just keep an eye on it and the group is commenting on how they think it will work and then we might feed that back to the Home Office and whatever to see how we can pursue that."*
> (RSSB Senior Manager)

The findings of the research highlight that the resilience of SPIRS to human malign security threatsissupportedbythefindingsofChmutina*et al.,* (2016) and Cole and Marzell (2010), that as a nation the UK's resilience is highly disjointed, with piecemeal strategies being undertaking by disconnected agencies and Government departments. At a local level, operational resources and resilience strategies sit within 'the private and voluntary sectors' (Cole and Marzell, 2010, p. 3). There are policies which do support increasing resilience through collaborative actions such as the CCA (2004), but the Local Resilience Forums which come under the remit have few legal powers and are inadequately funded and supported (Cole and Marzell, 2010). However, the benefits of the CCA (2004), such as the transfer of good practice and knowledge and the joint planning of stakeholders should be

recognised and incorporated into the resilience strategies of SPIRS. These should be replicated within SPIRS and this will allow designers and operational staff to come 'out of their silos to think collectively about the task in hand and the resources required' (Cole and Marzell, 2010, p.3). Yet the multiple and complex stakeholders within the space of SPIRS must not rely on others to ensure their resilience against security threats but must work and communicate effectively and efficiently to mitigate the risks they face. Often for simple day-to-day issues, stakeholders can work together to respond to small-scale incidents, however when the situation or space becomes more complicated 'the ability to respond collectively starts to breakdown' (Cole and Marzell, 2010, p.3).

There is little doubt that neo-liberal governance through some form of 'responsibilisation' (Garland, 1996) will play an increasing role in the resilience of spaces over the forthcoming decades; it will affect the operational procedures and policies within SPIRS. However, if the piecemeal and fragmented natures of the resilience strategies of the stakeholder continue without redress the replications and differences in these at worst will have repercussions on the lives of passengers, the public and staff in the event of a terroristattack. Cole and Marzell (2010, p.4) state

> the weakness at these interchanges might themselves present weaknesses and vulnerabilities that can be exploited. Risks that appear to be no-one's responsibility have the potential to affect everyone.

8.8 Future Railway Station Design and Resilience

As discussed previously in Chapter Four, SIDOS is a guidance document that should be considered when looking at the 'design physical security for new and major redevelopment railway stations' (Gov.UK, 2015). Regardless of the generic security recommendations that the SIDOS document suggests to designers and planners, several operational and senior BTP officers felt that there would never be a generic prefabricated standard station design. This was because of the different planning regulations and standards for the various regions in England and Wales. New build and refurbished stations should also follow the principles of the Secured by Design guidance. By following these principles, the (re)design of railway stations has changed significantly over the last few years. A Senior Manager from the RSSB stated that more could be considered when looking at the design of future railway stations

> *"they should be designing for all sorts of things, environmental things to reduce emissions, whether they should try and design out crime-so don't have done*

corners dark areas, have plenty of lighting or try and block off those dead ends and the station. And don't have, say waiting rooms with just one entrance, give people an escape strategy and again barriers to stop people from going where they shouldn't-to prevent trespass or suicides. The whole point about designing stations has changed enormously."

However, the analysis of the data has shown that at present planning regulations are minefields and that the guidance available maybe appropriate in some areas but not others. A Senior BTP Officer and Security Consultants both argued that when planning permission is sought for refurbishments and new builds for railway stations in the future common sense must prevail. They maintained that it becomes very complicated for guidance to be given on the security measures needed for refurbishments or new builds given all of the different stakeholders who need to be considered. They maintained that the security measures in projects will always be impacted on by the implications of the budget. A retired BTP officer stated that in the future regulation and powers are needed to be granted to the BTP so they can be involved at the very start of the design process, rather than the ad hoc/haphazard approaches which are currently in place. This stance was reiterated by a Security Design Consultant who has been involved in a number of railway station refurbishments and claims and believes they too should be involved at the start of the project as at present there is a very piecemeal approach to security measures and systems on such projects.

8.9 Future Resilience to Terrorist Threats

On the other hand, one participant felt that the designers, operators and the BTP will never be able to accurately assess what the future threats to resilience by terrorism are or when and where railway stations will be targeted. Thus, meaning it is extremely difficult to calculate the risk of a terrorist act. Another participant saw the West and subsequently the UK as a target for terrorist activity for the foreseeable future as international politics and religion cannot be avoided. One Security Consultant stated within the context of SPIRS and other Category A railway in England and Wales

"whether we like it or not, we're always fighting the last terrorist incident. Or we're always countering the last terrorist incident. But whether we like it or not the fact of life is we do live in a history."

(Security Consultant)

According to one Security Consultant, the analysis horizon for terrorist threats is actually very close, thus it is very difficult to come up with a range of designs based on terms of threat from effective attack methods, as the sort of devices used by actual terrorists is often variable.

> *"We still believe the enduring aims of any particular extremist group would be served by a specific set of design based threats…30 years doesn't mean a great deal in terms of intent, but it does a great deal of difference of capabilities, so you could the terrorist still wanting mass casualties but how's that going to be achieved? Or the terrorist still wants mass disruption of the critical national infrastructure but how is that going to be achieved? A low yield weapon of mass effect or conventional HME or high explosive or even gun and knife attack?"*
>
> (Security Consultant)

It was the opinion of one BTP retired senior officers that the BTP has done as much as possible to mitigate against mass causalities in railway stations such as SPIRS with the resources and technology which they have available. It has looked at the different methods that terrorists can use to inflict mass casualties. The operational capacity and expertise of the BTP developed predominately in a terrorist climate, the IRA, needed to continually reassess methods and capabilities of the terrorist threats to the nation's railway network and stations. At present, the BTP gathers and shares information which feeds into the bigger counter-terrorism plan for the UK and internationally.

An operational Network Rail participant stated that security threats need to be constantly reviewed and policies amended to deal with it, so the future landscape is only very short. Regular security bulletins are issued by the DfT, detailing any new methods of criminal or terrorist activities, intelligence in terms of what SPIRS should be looking for is always changing. Therefore, the security policies relevant to SPIRS and other Category A railway stations need to be an evolving process based on the perceived level of risk and not static. Nevertheless, the research has found that during the London 2012 Olympic Games this was a primary example of how a multi-stakeholder co-ordinated response in SPIRS was necessary to assuage the risk of terrorism 'and integrates the protection of critical infrastructures' (Bosher *et al.*, 2007, p.242).

8.10 Resilience, Future Technology and Investment

It is widely known that the numbers of passengers undertaking railway journeys are increasing year on year; therefore, it is key for railway stations to receive investment to update their

facilities and make them more appealing for the wider community to use. Demographical changes in the population, especially in the South East of England and London will affect transport infrastructure, hence demand and capacity of the railway network will be stretched. The ageing population transport needs in these areas must be considered now, what type of transport they will need and the type of areas they will be living in (The Parliament Office of Science and Technology, 2010).

Developers and Network Rail should appreciate these benefits and make 'the principle of station refurbishment an enticing and attractive proposition' (Railstaff.co.uk, 2013). Yet with the undoubted future investment in many of the railway stations in England is to make them multifunctional and appeal to a greater number of people will increase issues of the space being resilient to security threats, whether this to low-level crimes or to a terrorist attack. However, overall it was felt that the general consensus from the research participants was that despite technological advances the nature, function and physical limitations of historic railway stations it would be difficult to have systems such as sensing technologies and more advanced CCTV which reliably worked in such a busy environment and did not interfere with the concept of mass transit. One Senior BTP Officer stated

> *"I mean if you want totally safe railway, don't move trains, don't let people on, easy, but that fails the mass transit test, fundamentally, and part of the, the issue with the railway is you accept that, that there are opportunities for things to go wrong."*

To meet both current and future terrorist threats and attacks to metro railway systems and arguably, in the case of SPIRS, there is a requirement to incorporate all-inclusive security systems (Borrion *et al.*, 2014). These can be utilised for the exposure of and to interrupt the actions of terrorists the disruption of terrorist activities (Bocchetti *et al.*, 2009), specifically security checkpoints like those found in airports. Yet the literature review and the research have found that experts in both the railway industry and its security argue this type of security screening is not a viable form of prevention in the vast majority of Category A railway stations in England and Wales and SPIRS given the physical and frequently historical limitations of the buildings. Some Network Rail members of staff and operational BTP officers felt that by the very nature of the railway and expectations of the use of stations such as SPIRS that the security would never be as stringent. A participant from the RSSB had mixed opinions on the future use of airport-style scanners in SPIRS:

"They have flirted with sort of knife detectors-arches in railway stations, and they are the portable one, so they can be taken to different railway stations. But I don't think currently society would accept that kind of fixed security at stations. I think that everybody realises or accepts it is necessary in airports and on airplanes-so if terrorism was to begin or increase on trains or stations…I don't know would society accept that in stations? but if the risk grew I think it might have to go that way."

(RSSB Senior Manager)

However, another Network Rail participant was of the opinion that airport-style security would never be a feasible measure in the future due to the legacy of the building stock.

"the amount of money, in my mind, I'd imagine it would take to make a fundamental difference to the railway, I can't see anybody investing in the railway because they wouldn't get the return. The return is pretty much what the return is, so what you're looking at are people trying to cut costs, not make massive investments on the hope of recouping it over 2050, 40 years, and of course, the Government is not giving franchises for 40 years."

(Network Rail Member of Staff)

As discussed in Chapter Four, airports operate security processes to restrict the access and flow of passengers navigating the space. It is noted that the Eurostar Hub within SPIRS does use airport style security screening of passengers that is successful. Kappia *et al.* (2009) maintain CTMs would be likely to gain acceptance from passengers and the TOCs if their ingress and egress were not obstructed through the railway station. However, within a space such as SPIRS, these types of measures are not practical in for the environment (Jenkins *et al.,* 2010). The whole nature of how passengers use the railway network would have to change with passengers having to arrive sometime in advance of their train to allow time to pass through security checkpoints.

Without a doubt security and specifically in the context of the railway station is a highly sensitive political issue, yet it is important to recognise the difficulty in being able to envisage how relevant and significant how current security measures in railway stations such as SPIRS will be in the future (Borrion *et al*.,2014). The appropriateness of security measures fluctuates in the eyes of the public given the length of a last terrorist attack or in publicly acknowledged threat levels (Davis and Silver, 2004) and 'the perceived need to act against

future ones' (Borrione *et al.*, 2014, p.190).

8.11 Stakeholder Communications and the Future Resilience

A theme that developed from the data regarding the future resilience of SPIRS to security threats was the complex multiple stakeholder boundaries and how these affect the communication between the stakeholders. One participant discussed how current good practice regarding security measures in SPIRS could be shared among the stakeholders moving forward in the future.

> *"There is a lot of good practice. Bad practice, we do try to tell the train operating companies … we don't just want to hear about the good things, we do want to hear about the bad practice. We want to share good practice. But then also we don't want people to repeat mistakes…But people are very reluctant to tell us about things which haven't worked. So, the knowledge about bad practice isn't as good as it should be."*
>
> (Senior Network Rail Operational Manager)

The Government distributes security strategies, policies and directives through Network Rail (High-speed) and the BTP, however how the research has found that these are not always necessarily communicated with their staff at an operational level effectively to then be able to disseminate these with the multiple stakeholders, of SPIRS who have to operationalise security and resilience within the space. Consequently, adequate, and appropriate information must be shared with stakeholders for them to be able to reach decisions around security policies and agendas and the subsequent impact on resilience which are intentional and informed (Chmutina *et al.*, 2016, p.78).

Another operational participant believed the current operational complications of SPIRS and also other Category A railway stations in England and Wales would merely worsen in the future as more and more stakeholders will become involved in the operations of the spaces and the decision-making processes. This included the multiple stakeholders within the actual physical space of the railway station, but also others "who are on the margins of the station and who can influence the resilience of the space to security threats" (Gregson-Green *et al.*, 2013, p.38). Therefore, resolutions need to be pursued now as 'anything we do with technology is just going to be a waste of time unless we sort out the fundamental communication issues' (Gregson-Green, *et al.*, 2013, p.38).

Stakeholder analysis of the stakeholders with SPIRS shows given the number complex how difficult it is to communicate information efficiently and effectively to all the stakeholders who are responsible for the resilience of the space to human malign security threats. This research proposes that the stakeholders of SPIRS can impact the resilience of the space to security threats and that when decisions are made they can impact on future generations, who must be considered as stakeholders now (Friedman and Miles, 2006, p.9).

8.12 Chapter Summary

The findings of the research have provided substantial empirical evidence that resilience is not just a concept but that it can actually be an attribute which with careful consideration of the resilience of the total space, such as SPIRS, and not merely of the individual but the multiple stakeholders who have an involvement and investment. Furthermore, resilience must be considered in terms of being operationalised successfully on a day-to-day basis and which is able to handle security threats automatically and instinctively. However, the research has highlighted that SPIRS and other Category A railway stations in England and Wales are extremely complicated spaces and that for resilience to move from an idealised concept to a fully fluid and dynamic process, there must be a greater cross-organisational understanding and interactions.

Regardless of the existing position of institutional 'responsibilisation' (Garland, 1996) for resilience and the devolution of this from the Government, there must be greater regulation and direction for the multiple stakeholders who are required to accomplish this. This research has determined that in a complex space with numerous intersecting stakeholders such as SPIRS and other Category A railway stations there are no straightforward models or metrics for measuring the resilience of these spaces. However, what has emerged from the data and analysis is that a resilience strategy for railway stations can be found in known or anticipated security threats. Therefore, current resilience can be increased by minimising susceptibility and improving flexible and responsive capacity to respond to human malign security threats to the space.

Yet the future threats to SPIRS and other Category A railway stations in England and Wales can only be considered in small timeframes, participants felt that trying to horizon scan for anticipated threats in thirty to forty years' time is an unrealistic and impossible expectation. Gregson-Green *et al.* (2013, p.37) propose to improve the resilience of SPIRS to security threats, the stakeholders and their interfaces and agendas need to be stressed and

addressed 'during the (re)development stages of projects and its subsequent operation should be established at an early stage to ensure the effective assimilation of policies and strategies'. Regardless of the interdependencies between stakeholders and their intersecting agendas and legislative requirements, there is a distinct lack of a co-ordinated approach to both design and operational phases. The findings highlight a need for changes in institutional practices if threats to the future resilience of railway stations are to be lessened. The conclusions and recommendations made from the research are discussed in the following chapter.

CHAPTER NINE: RESEARCH CONCLUSION AND RECOMMENDATIONS

9.0 Chapter Introduction

This research is timely given the level of existing and future investment in the railway network within England and Wales, and it is critical to conduct research into the little-known areas of resilience and security. The research provides an original and novel contribution to knowledge, as through contemporary empirical evidence it has established that resilience and security policies and their 'responsibilisation' (Garland, 1996) are at odds with the reality of how these transpire in an ambiguous operational and legal space such as SPIRS.

To demonstrate the completion of the aim and objectives of the thesis, this closing chapter reports on the conclusions drawn by the research. It stresses the key findings and contribution to knowledge, with the validity and reliability of the research itself also being examined. Recommendations for further research and practical recommendations will then be presented, followed by the ultimate thoughts that emanate from the research. This research set out to examine, understand, and to drill down into the interdependencies and interfaces of the numerous and complex stakeholders within specifically SPIRS and other Category A railway stations in England and Wales, and to analyse how their operational and legislative requirements and agendas influence both the existing and future resilience to human malign security threats.

SPIRS and other significantly located Category A railway stations that allow passengers and the public unrestricted access to them are extremely vulnerable to terrorism and other forms of crime. Consequently, there is a clear requirement to acknowledge and catalogue the sizeable and complex range of stakeholders, policies, strategies, and individual organisational agendas that influence the resilience of railway stations to security threats. A unique case study of SPIRS was undertaken to examine at an institutional level, through the concepts of Stakeholder Theory and Resilience, the multiplicity of the agencies/stakeholders, their policies, and agendas, and how this may impact positively and negatively on the current and future resilience of the space to security threats. Therefore, the purpose of this research was to understand how this enacted and understood currently within SPIRS and how this relates to the body of theory and the implications of this. This concluding chapter:

- examines the extent to which the aim and objectives of the research have been

met,

- discusses the statements of contributions,
- presents the key findings of the research,
- examines the limitations of the research,
- provides recommendation and guidance for future research.

9.1 Addressing the Research Aim and Objectives

The research has successfully addressed the important research question that was set out in Chapter One:

> *How do the interdependencies and governance of the complex operational, and policy boundaries of SPIRS' stakeholders influence and impact the space's current and future resilience to human malign security threats?*

The aim of this programme of research was to

> *determine and examine the interdependencies and boundaries of the multiple stakeholders within St Pancras International Railway Station, and to analyse how their governance, operational and legislative requirements, and agendas influence both current and future resilience of complex Category A railway stations to human malign security threats*

This has been achieved by holistically understanding and unpacking the interdependencies and boundaries of the multiple stakeholders within a Category A railway station, and to analyse how their operational and legislative requirements and agendas influence both current and future resilience to security threats. This has been accomplished by undertaking a qualitative unique single case study of SPIRS. The above aim has been achieved through the fulfilment of the four research objectives, each of which is discussed in the below sections.

9.2 Research objective one

The first aim of the research was *to critically examine the literature and policy concerning counter-terrorism and crime prevention measures within the context of railway stations and infrastructure*. The researcher had access to a range of electronic and traditional media sources and sought peer-reviewed journal articles published from 1980 until 2014 by using the search words "resilience", "railway stations", "crime", "terrorism", "crime and counter-

terrorism measures" and "Stakeholders". The primary searches produced a large number of articles, which were screened by the title and then by the abstract. This process allowed only the articles and chapters that were considered relevant to the research aim to be included in the literature review chapters of the thesis. Furthermore, the literature review examined the theoretical standpoints, discussed within Chapters, Two, Three and Four, which have shaped and steered the initial semi-structured interview schedules for the data collection and subsequent analysis.

Moreover, the literature and policy review additionally assisted in the initial draft of the Stakeholder Map, the methodology of which was examined in Chapters Five and Six. The literature review has played an important role in the scoping of the unique case study (SPIRS) and it aided with understanding the context of the casestudy. It facilitated this awareness by highlighting to the researcher the entangled physical, legal and operational boundaries of the railway station. Such literature was examined in Chapters Three and Four and it identified the human malign security threats which impact on the resilience of railway stations in England and Wales and how to withstand and bounce back from such occurrences.

Furthermore, the literature review highlighted the ambiguous nature of the concept of resilience and how it has become entrenched in security policies at a national level, yet with the acknowledgement that assets such as SPIRS 'can never really be future-proofed to be totally resistant' (Bosher and Dainty, 2007, p.2) against human malign security threats. Moreover, the research has documented the disparate and complex nature of SPIRS is mirrored by both the current system of multiple stakeholders and is further seen in the patchwork of national and organisational resilience and security strategies, policies and agendas which surround it. Therefore, this research proposes that these policies cannot be viewed in isolation from the multiple, complex and often seemingly disparate stakeholders who enact and operationalise policies and strategies within the space of the railway station.

9.3 Research objective two

The second objective of the research was *to identify those stakeholders within the case study railway station, SPIRS, who (in) directly influence the current and future resilience to human malign security threats, and to develop a unique and innovative stakeholder map of the space*. To understand fully the role and resilience of SPIRS, the complex and multiple stakeholders within the space were identified through a process of Stakeholder Analysis and

Mapping, through the literature review and participant interviews. This process allowed for the examination their policies and strategies with security interests which (in) directly affect the resilience of SPIRS, some of which can be applicable to other Category A railway stations in England and Wales. The Stakeholder Map produced and presented in Chapter Six is a result of the analysis of the SPIRS stakeholders was verified by the research participants during their interviews. The Stakeholder Mapping process was analysed and presented in Chapter Five.

9.4 Research objective three

The third objective of the research was *to examine the SPIRS stakeholder's security, resilience, and operational policies, strategies, and agendas which (in) directly affect the current and future resilience of the space to* human malign security threats. This was achieved through the unique case study of how SPIRS 'complex and multiple stakeholders encounter and/or engage with both current and future social based resilience and security related policies and strategies, and operational procedures. This was reached through the collection of qualitative interview data and the subsequent qualitative thematic analysis, which is "a method for identifying, analysing and reporting patterns (themes) within data" (Braun & Clarke, 2006, p.78). This is a well-regarded qualitative methodological approach used in the Social Sciences as it permits the researcher to develop overarching themes which reflect the content of the participant's discourse and their socially constructed perceptions of reality.

9.5 Research objective four

The final objective of the research was *to analyse the tradeoffs, (un)intended consequences, and impacts of security and resilience policies and agendas which operate in the space of SPIRS, and to make recommendations to address the emerging themes from the research.* This objective was devised to provide a robust theoretical and empirical contribution that addressed the current gaps in the knowledge which surround the conceptual impact of the complex multiple stakeholders enacting policies and strategies for the current and future resilience of the railway station to human malign security threats. The research findings have clearly identified and acknowledged the effects of the complex and multiple stakeholders, and how they can have constructive and detrimental impacts, and compromise the resilience of the railway station to current and future human malign security threats. This contribution has been achieved by using the theoretical lenses of

Resilience and Stakeholder Theory and has been presented in the discussion and findings Chapters Seven and Eight. Moreover, the thesis has produced a body of work that has a number of practical recommendations which can be used by key decision-making stakeholders within SPIRS and other Category A railway stations in England and Wales to assist them in producing future guidance, strategies and day-to-day operations. The publication that was an output of this research is in Appendix 7.0.

9.6 Key Findings and Recommendations

The primary focus of this research has concentrated on the resilience of the complex and multiple stakeholders within SPIRS to current and future human malign security threats. It has emphasised some of the susceptibilities faced by SPIRS and potentially other Category A railway stations in England and Wales to these risks and the subsequent resilience of the space. The empirical data from the research participants have highlighted these susceptibilities are 'exacerbated by intricacies of controlling and overseeing the operational boundaries between the multiple stakeholders in SPIRS' (Gregson-Green *et al.*, 2013, p.38). Moreover, despite the concept of resilience and its application being embedded in national security and contingency policy and strategy, the research has found that at an operational grass roots level, the multiple stakeholders within SPIRS are often unaware of higher organisational and subsequent national resilience policies and strategies. Therefore, the findings of the research, in line with those of Chmutina *et al*. (2016), Bosher (2014) and Bosher and Coaffee (2008), call for the understanding and application of resilience policies and strategies concerning human malign security threats, and which must be improved and utilised by multiple stakeholders of a space such as SPIRS in a consistently cohesive manner. Thus, SPIRS and other Category A railway stations in England and Wales are planned, built/refurbished and operated 'in a transdisciplinary way; incorporating a wide range of stakeholders involved with the structural and non-structural approaches' (Bosher and Coaffee, 2008, p.145-146). However, the research findings deem that in order to safeguard the participation and contribution of strategic stakeholders in the development and planning of projects a greater governing methodology other than just guidance is necessary to facilitate change.

The research has examined for the first time the multifarious and complicated difficulties that are inherent in tackling and delivering SPIRS and other Category A railways station's conceptual plan, operational and legal obligations surrounding resilience and security. A

key finding from the data is it is crucial that the complex and multiple stakeholders involved in these processes accept they must improve and enhance their understanding of resilience and security issues from the 'whole' perspective of SPIRS and not just in standalone organisational silos. However, this thesis has demonstrated that this is complicated in practice because despite of specific guidance such as SIDOS for building in resilience to new build railway stations, the actual concept and understanding of resilience is a nebulous ambition of the Government and other Primary Stakeholders (Network Rail and the BTP) the research has shown that there is little demarcation between theory and practice.

In line with the aim and objectives of the research, and specifically surrounding research objective four, the research has presented a robust theoretical and empirical contribution that addresses the current gaps in the knowledge that surrounds the conceptual impact of complex multiple stakeholders enacting policies and strategies on the current and future resilience of the railway station to human malign security threats. Therefore, the key findings are presented in the below section. These cannot be viewed in isolation from the multiple, complex, and often seemingly disparate stakeholders who enact and operationalise policies and strategies within the space of the railway station. Moreover, these key findings of the research have additionally exposed a number of areas that necessitate further consideration and as such, make practical recommendations as well as recommendations for further research in sections 9.10 and 9.12.

9.6.1 Resilience and policy

The examination of the literature and the empirical data of the research have shown there are different types of prevention measures, planning, construction, detection, and operational procedures. The research has highlighted the ambiguous nature of the concept of resilience has become entrenched in security policies at a national level. Yet at the local level of (SPIRS), the research has evidenced the disparate and complex nature of resilience and this is highly evident in the piecemeal approach of strategies, policies, and agendas that surround it. This research has concluded that in spaces such as SPIRS, the security and resilience relationship is symbiotic and executed by local level policy, driven and 'responsibilised' (Garland, 1996) by national strategies.

Moreover, the considerable number of definitions of resilience that are espoused by

academia and the Government further exacerbates this confusion. The Government has 'responsibilised' (Garland, 1996) stakeholders, such as the DfT through the NRSP, Network Rail High-speed and the BTP to meet the obligation of ensuring the security and resilience of the space to human malign threats. Critically, the research has found that there are opposing and fragmented policies which surround resilience, for instance at a retail stakeholder level, day to day resilience to threats of minor crimes such as shoplifting were a far greater concern than the threat of terrorism. Whereas, the BTP and Network Rail High-speed perceived resilience to be achieved through strategies that devise plans that help to prepare for and prevent security threats. Moreover, through the alignment of the Critical Resilience Program and the CONTEST strategy, the Government attempts to deliver a clear and constant method for creating resilience across the CNI to security threats. However, irrespective that resilience and its use are entrenched in national security and contingency policies, the research has found that at an operational level, the multiple grass root level stakeholders within SPIRS are often unaware of higher organisational and subsequent national resilience policies and strategies. Their own company / organisational security and resilience policies are generally held in higher regard.

Hence, the research has revealed the inconsistencies between the rhetoric of the 'responsibilisation' (Garland, 1996) of resilience and its actual operationalisation by the multiple stakeholders within the spaces such as SPIRS. Stakeholders need to have a role in the resilience of the space against human malign threats. Yet the findings have shown it is played out with differing levels of importance and authority from the complex stakeholders. Some stakeholders such as the BTP and Network Rail had a greater level of responsibility placed on them, and despite a top down approach for the 'responsibilisation' of CPMs and CTMs. There was a level of stakeholder apprehension that the costs of CTMs would impact and without clear mandating from the state, local level stakeholders such as TOCS and retailers can divert resources and manipulate the ambiguity in the guidance to suit their own financial and security agendas.

9.6.2 Resilience and Policy Recommendations

The research findings have highlighted a need for changes in Governmental and institutional practices if threats to the current and future resilience and of railway stations are to be mitigated. Therefore, the complex interdependencies and responsibilities between the multiple stakeholders within SPIRS and their intersecting agendas and

legislative requirements need to be accounted for and understood from national strategies such as CONTEST to the NRSP enacted in a specific location such as SPIRS. This calls for a coordinated and flexible approach. Thus, the resilience plans of the multiple and complex stakeholders within SPIRS need to be dynamic and alter in accordance with the security threat levels. Without a doubt, SPIRS and the other Category A railway stations in London will always be at a bigger risk of a terrorist attack in comparison to other Category A railway stations located in other English and Welsh cities.

It is proposed that a collective assessment of resilience be undertaken which highlights what security threats pose the greatest current and foreseeable risk to SPIRS. It can be used as a project that aims to change, progress, and advance the overall resilience of SPIRS to security threats. A combined resilience project can have the ability to encourage collaborative co-working, which highlights similarities in policies and strategies (individual company and Governmental), spare capacity and where preventions measures and resources can be shared. The combined resilience projects could encourage one rational and collective tactic, a co-ordinated interagency platform, of tackling the resilience of SPIRS which intersects and joins the boundaries of the multiple and complex stakeholders. Resilience is reliant on these stakeholders being experts in their own area, but they must fully understand the capabilities and expertise of their fellow stakeholders and how their own expertise can be fully utilised to increase the resilience of the space to security threats. Therefore, the resilience of SPIRS and other Category A railway stations in England and Wales does not have to be a knee-jerk reaction if it can be understood and managed accordingly.

9.6.3 Resilience of current and future design

At present during the design phase of retrofitting or building new stations, the operationalisation of 'security-driven resilience' (Coaffee and Fussey, 2017, p.294) does not provide 'top down' holistic and collegiate approach for the shared 'responsibilisation' for resilience and security within these spaces. Moreover, the research has revealed the strains and pressures occurring at a local level given that at a national level the Government control spending and budgets, meaning stakeholders such as the BTP have limited powers to contest the priorities of national security and resilience strategies which without doubt take a precedence over localised crime prevention issues with SPIRS.

Concerning how resilience is embedded in current and future designs for railway stations, the research has found there is a definite need to understand and improve the application of resilience policies in a consistently cohesive manner. Hence, when SPIRS and other Category A railway stations in England and Wales are planned, built, refurbished, and operated, planners and designers must acknowledge the need for a multiple disciplinary stance to involve as many of the key stakeholders responsible for prevention measures.

However, the research findings deem that in order to safeguard the participation and contribution of strategic stakeholders in the development and planning of projects a greater governing methodology other than just guidance such as SIDOS is necessary to facilitate change. The SIDOS guidance devised by a collection of Governmental agencies, Network Rail, BTP and design agencies endeavours to ensure that prevention measures which increase resilience to security threats are considered and agreed to, from the starting stages of refurbishment or new build railway stations projects

9.6.4 Resilience of Current and Future Design Recommendations

It is maintained that at the time of collecting the research data and the writing of the thesis, it is too soon to state whether the SIDOS guidance will be appropriate and adequate to guarantee that the strategic stakeholders, such as the BTP and Security Advisors are participating in the initial phases of projects, thus being able to provide a measured, definite, strategic, and co-ordinated methodology at the preliminary phases of new build and refurbishment projects. The findings of the research call for this guidance to be strengthened by a purposeful and collective promotion of education aimed at the 'decision-makers' exposed on the Stakeholder Map. It is also essential the complex and multiple stakeholder interfaces which occur during the routine daily operations are understood and recognised in the railway station in order not to negatively influence the current and future security policies and strategies. It is maintained that if these concerns are challenged now, it will assist and make certain that consistent security policies and strategies are put into practice,

> 'to maintain the resilience of SPIRS and other Category A railway stations in England and Wales against a wide range of security threats for our future generations of passengers, the public, employees and organisations'
>
> (Gregson-Green, *et al*., 2013, p.38)

It is contended that it is the highly complex mix of both public and private stakeholders within SPIRS and other Category A railway stations in England and Wales which demand a substantial degree of organisation to 'legislate, regulate, implement, and police' (Loukaitou-Sideris *et al.*, 2006, p.737) effectively the space against existing and future security threats. Therefore, it is arguably SPIRS' complex and multiple stakeholders with differing and frequently conflicting agendas and standpoints, which can create considerable difficulties from both the perspectives of the operation of the space to the societal consequences of their choices (Zemp *et al.*, 2011).

9.6.5 Stakeholders, operational complexities, and communications

The research strongly advocates the need for the primary and secondary stakeholders (public and private) of SPIRS to communicate formally, consistently, and clearly, especially if they are responsible for the resilience of the space to human malign security threats. Therefore, it is proposed that by connecting with and including the complex and multiple stakeholders within the space of SPIRS and other Category A railway stations in England and Wales in deliberations and planning around the issues of resilience to human malign security threats can develop and boost a mutual working understanding of the concept of resilience.

This research found there was a greater need to involve the multiple stakeholders in discussions around the concerns of resilience given it can improve a mutual understanding of resilience. Moreover, resilience to security threats and more significantly as a day to day operational practice cannot be considered in isolation, but it should be a pre-emptive, combined and united concern for the 'security-driven resilience' (Coaffee and Fussey, 2017, p 294) by those stakeholders are responsible for these functions. Moreover, the research ascertained the participants believed that by building and maintaining strong relationships with other stakeholders within SPIRS this went some way to ensuring the resilience of the space in terms of security threats. The procedure of building and operating Category A railway stations necessitates an appreciation of the stakeholders concerned and an effective communication.

Many of the meetings and communications in SPIRS are not a direct organisational strategy, and are not mandatory to attend and are often initiated by individuals. The research has found those participants from the retailers, Network Rail High-speed and the BTP, Network

Rail who attended these meetings believed the objective was attempting to overcome the complications of the stakeholder boundaries and to enhance the communication of resilience and security strategies. The PACT meetings were voluntary and usual attended by the retailers, TOCs, public, the BTP and Network Rail High-speed, with the purpose being to create, co-operation, awareness and decide on strategies concerning security issues and threats to SPIRS. Yet, the research found that attendance by the TOCs and the retailers was often poor and representatives from other stakeholder organisations not be recognised or invited to these meetings.

9.6.6 Stakeholder, Operational Complexities and Communication Recommendations

It is proposed from the research findings that in order for SPIRS and other Category A railway stations in England and Wales to be effective and in making policy changes, strategies and projects, or day to day operations, it is critical that the complex and multiple stakeholders within the space must be analysed and mapped. Therefore, within SPIRS the process of Stakeholder Mapping must be undertaken to expose those who are significant to the problem area, interconnections, and requirements. When considering issues around the resilience of SPIRS to security threats, this will encourage ownership of strategies amongst the stakeholders and validity. Moreover, to develop and enhance the potential of SPIRS and other Category A railway stations in England Wales to pre-empt and react to security threats, there is a need to coalesce the experiences and opinions of the multiple stakeholders and others who define and operationalise the concept of resilience.

The research recommends the voluntary meetings in SPIRS such as the PACT meetings and the BTP and Network Rail High-speed could proactively drive security briefings. They could enhance awareness and foster stakeholder relationships, leading to security advantages for SPIRS. This would ensure that some stakeholder groups are not disregarded, their representatives are identified, and voices are heard in collaborative sessions when the issues of security and resilience is debated. Key and central stakeholders who can influence the resilience of space to security threats could achieve this, or for specific security operations and initiatives, being identified by the project lead but also those stakeholders on the margins need to be recognised in order to achieve a fully rounded and holistic understanding of the network.

Moreover, the research suggests considering the assimilation of these meetings into the obligatory NRSP as this would assure the stakeholders' compulsory attendance and would

produce controlled and well-defined instances to improve and develop the communication of security directives and strategies in SPIRS. However, the research advises there must be a directive and requirement from the Government, which the DfT filter down through the levels of stakeholders within SPIRS.

Furthermore, it was recognised by the participants that the existing operational complexities and issues of miscommunication would worsen in the future as additional stakeholders are incorporated into SPIRS. Therefore, a recommendation of this research that the key stakeholders of Category A railway stations in England and Wales, and the Government ought to immediately search for and take up an open practice of

> 'inclusive communication measures and strategies, which will facilitate the understanding of the complex stakeholder interfaces, which influence the current and future resilience of the railway station to security threats'
>
> (Gregson-Green *et al.,* 2013, p. 38)

Irrespective of the interdependencies between the multiple stakeholders in SPIRS and their interconnecting agendas and legislative obligations, there is a marked lack of a co-ordinated method in the design and operational phases. The findings of the research have highlighted a necessity for alterations in institutional practices if risks to the current and future resilience of railway stations are to be mitigated.

9.7 Addressing Contributions

As previously discussed, the research has supported the position that Category A railway stations in England and Wales are particularly vulnerable to human malign security threats because they are extremely open places that are habitually congested with passengers, members of the public and those who are employed by the rail industry. Regardless of this, thorough exploration of the existing academic literature it brought to light there is little known or researched about the multifaceted interdependencies of the stakeholders within these railway stations and how resilience and security policies and strategies are enacted. Moreover, the research has determined there is a scarcity of in the knowledge surrounding how the complex stakeholder interfaces and the Governmental and organisational security policies and strategies influence CPMs and CTMs in the railway station. Therefore, this research has significantly contributed to knowledge by challenging this dearth of

knowledge and under-researched area by recognising the broad range of strategic stakeholders and policies that influence the security and resilience of SPIRS, and considering how these can challenge their current and future design, operational and legal requirements.

9.7.1 Theoretical contribution

The thesis has provided an innovative and original contribution to knowledge. It has established there are significant gaps in knowledge, explicitly relating to how the multifaceted and interdependent stakeholders and policies within Category A railway stations in England and Wales affect its design and operational resilience, and current and future resilience to security threats. The research through the data collection and analysis has enriched and furthered to two areas of theory which are cross-disciplinary, those of Stakeholder Theory, and Resilience.

9.7.2 Stakeholder Theory

By using Stakeholder Theory, the research has been able to analyse, map and therefore conceptualise the multiple and complex stakeholders within the space of SPIRS. Therefore, this has been a key contribution to the knowledge as the current literature available fails to provide a useful and applied method for recognising and categorising stakeholders in complex spaces. Thus, research objective one of this research has been met, as through the literature and policy review, the analysis and subsequent mapping of the multiple stakeholders of SPIRS, who influence or are influenced by the security to human malign threats and the subsequent resilience of the space. The process of Stakeholder Mapping which was undertaken permitted the conception of the stakeholder's influence and control within the space of a Category A railway station institution.

In relation to SPIRS and other Category A railway stations in England and Wales, this research has moved beyond the accepted traditional classification of a stakeholder as being any individual or faction who can influence or is influenced by the realisation and or success of an institutions ideals and purpose (Freeman, 1984). Therefore, through the undertaking an analysis the stakeholders within SPIRS primarily and which may be pertinent to other Category A railway stations in England and Wales, the research has developed a holistic and innovative standpoint of Stakeholder Theory. Thus, when applied to these railway stations it has expanded the established view of stakeholders beyond their interactions and

connections based on contractual and fiscal involvements. The research has taken this notion even further and demonstrated that the complex stakeholders within SPIRS can be categorised as those who directly affected positively or negatively, by a project or operations, primary stakeholders. Secondary stakeholders have a transitional function and can have a key impact on the project or operations and finally external stakeholders do not directly participate, yet can be impacted on by a project or operations.

Furthermore, the research findings have added to Stakeholder Theory by demonstrating that SPIRS and other Category A railway stations in England and Wales must acknowledge in their operational and prevention strategies that illegitimate stakeholders have an interest and as such a stake in the space. Thus, in line with the recommendations of Laplume *et al*., (2008, p.1152) this research has fully understood the benefits of Stakeholder Theory through the analysis of SPIRS and hence has addressed the absence of knowledge through empirical qualitative research to support how organisations must understand and account for stakeholder's relationships, influence, and expectations.

9.7.3 Resilience

Moreover, the research has additionally contributed to theoretical debates which surround resilience. The research has clearly demonstrated that the concept of resilience within the unique case study of SPIRS is frequently used in different forms and arenas of policies, strategies and discourse. However, Chapters Seven and Eight highlight that there is a definite disparity between SPIRS stakeholders and the concept significantly lacks clarity as it is interpreted by different rail industry professionals, stakeholders, and the Government. There is a Governmental overarching definition of resilience for CNI, however, analysis of the stakeholder's interview data, it is evident that the overall space of SPIRS does not have one definition of resilience. Thus, tensions and conflicts transpire when the complex and multiple stakeholders are responsibilised by the Government at a local level to ensure the space is resilient to existing human malign security threats. This has led to many disjointed and opposing policies concerning how to maintain and increase resilience to human malign security threats. Network Rail and the BTP's priority lay clearly in ensuring the space was as resilient as possible to these threats and with business continuity plans in place to ensure 'business as usual' if an incident occurred. However, the retailers within SPIRS maintained that their organisational priority and threat to their business came from the lower end of the crime continuum, that of shoplifters.

Contemporary acts of terrorism against national and international soft targets have demanded that concept of resilience and security measures within the confines of Category A railway stations, such as SPIRS, are reconsidered and based on 'more proactive' (Coaffee and Rogers, 2008, p.104) rather than reactive strategies. Moreover, the research has added to the understanding of the theoretical contribution surrounding the physical (CTMs and CPMs) and intangible aspects (social) of resilience of SPIRS and other Category A Railway Stations and the participants have shown these can be accomplished if they are built in from the conceptual stages of a refurbishment or new build project (Bosher *et al.*, 2007 and Bosher and Dainty, 2011).

Therefore, resilience within spaces such as SPIRS should be a holistic and incorporate a suitable design (CTMs and CPMs), emergency responses which are effectual and efficient, planning comprehensive business continuity and incident recovery preparations. The research has emphasised the design of new and the retrofitting of railway stations to increase resilience to security threats rely on stakeholders such as Network Rail and the BTP being able to effectively communicate with security planners, designers and the construction industry to realise 'an in-depth understanding of the expertise and knowledge on avoiding and mitigating the effects of the hazard' (Bosher, 2008, p.3).

9.7.4 Empirical contribution

The research has provided a substantial empirical contribution which has delivered original and uncollected data on how complex and multiple stakeholders in the unique case study station, SPIRS, influence or are influenced by the current and future resilience of the space to human malign security threats. Therefore, the research provides a considerable body of original empirical knowledge as result of the abductive research of the complex and multiple stakeholders within the space of SPIRS who are responsible for its operational resilience and also to those who are accountable for the planning, construction of future new build and refurbishment of existing stations to ensure prevention measures are appropriate and incorporated at the earliest possible stages of the project (research objectives Three and Four). Moreover, this research is additionally pertinent to those more broadly to pseudo-public spaces who build and operate with multiple stakeholders and who must be mindful of the considerable and multifaceted collection of stakeholders, policies, strategies and distinct organisational programmes that affect the resilience of such spaces to security threats.

9.8 Practical contribution

As well as the findings of this research providing a contribution to knowledge it also provides an enhanced practical knowledge to the multiple stakeholders within SPIRS and other Category A railway stations in England and Wales with an insight into how resilience can be practically operationalised within a complex structure. The practical beneficiaries of the research will be those listed in Chapter Six who are responsible for policy and strategy and operational stakeholders in the railway station, as they will be able to attain an in-depth knowledge and understanding of the processes and dynamics that influence and regulate the resilience of railway stations to security threats. Furthermore, it is anticipated the diverse range of stakeholders will gain a greater appreciation for the need to have a collaborative and integrated strategy towards resilience that addresses conflicts and tensions at the planning stages of projects and the subsequent day-to-day operations within the railway station. A significant practical contribution from this research has been the Stakeholder Map of those who can influence or by influenced by the resilience of SPIRS to human malign security threats. As discussed in Chapter Six and Seven, the process of Stakeholder Analysis and Mapping developed by the researcher when undertaking the case study of SPIRS has the ability to be transferable to other Category A railway stations in England and Wales, who share a similar network of complex and multiple stakeholders. It is further argued that the practical process of Stakeholder Analysis and Mapping developed through this research could also be applicable to other pseudo-public spaces. Particularly those which operate with multiple stakeholders, such as shopping centres and who need to be aware of the sizeable and complex range of stakeholders, policies, strategies and individual organisational agendas that influence the resilience of the space to human malign security threats.

9.9 Reflections of the limitations of the research

This section establishes the limitations of the research and endeavours to pre-empt the questions that may be raised given the abductive and qualitative nature of the study. It is maintained that the greatest limitation of the research was the issue of participant or stakeholder support. Consequently, not all the stakeholders who areinvolved or who impact on the current and future resilience of SPIRS to security threats participated in the data collection. The stakeholders who were contacted but did not participate in the research are listed in Appendix 5.3. For example, the researcher despite having numerous points of contact and emails of recommendations could not secure an interview with a participant

from the DfT. A potential reason for the lack of participation from some of the stakeholder groups could have been the lack of motivation to take part in the research. It is maintained if a Governmental department had sponsored the research it is expected it would have received more of a positive response from the stakeholders especially from the civil service and the TOCs.

Moreover, given the sensitive nature of the area of research, it is maintained this could have significantly influenced the decision of some stakeholder's. A further factor which the researcher speculates could have contributed to the lack of participation, particularly the DfT, is the research has found there is often a quick turnaround of staff posts and contacts are lost. The case study protocol has accounted for these barriers to the research. Therefore, to obtain the Government's and other stakeholders who did not participate in the research position on the resilience of SPIRS to current and future security threats, reports and documents have been located and analysed. Thus, providing evidence that is not only generally specific to SPIRS, but it can be applied at a group level when considering Category A railway stations in England and Wales.

As noted already in Chapter Five, had the researcher had utilised different research strategies it would have undoubtedly created different types of results. If the research strategy had taken on an epistemological position of positivism, then a quantitative research strategy would have provided a methodology that would have addressed a set hypothesis by using structured questionnaires and statistical analysis. However, the research has used qualitative research strategies and methods that supported the epistemological position of interpretivism and the ontological stance of constructionism. The collection of qualitative research data, observations and documentation was part of an abductive process and consequently evolved throughout the eighteen-month collection period. However, the masses of thick and rich data created made analysis extremely time-consuming.

Moreover, it was not possible to revisit the research participants for them to validate the research findings. In addition, during the writing up phase, five of the participants have subsequently retired or moved positions. It is maintained that the validation of the research findings could have provided further substantiation into the emerging themes. A further consideration in terms of limited resources was that research data was collected and

coded by a single researcher and did not permit various other positions from academics to be considered which would have been applicable to a larger funded research project.

9.10 Dissemination and impact of the research

The participants involved in the data collection phase should be informed of the research findings which demonstrate how the future resilience of SPIRS and other Category A railway stations to security threats can be enhanced by considering the current interdependencies of the complex operative, physical, and legal boundaries of stakeholders who are interconnected through the space. Moreover, they should be informed of the barriers to current and future resilience and recommendation how to overcome these. A significant future conceptual impact of the research could be the composition of a guidance document which could be delivered to stakeholders to inform future guidelines and strategies when looking at the resilience of the space to human malign security threats.

Table 9.1 highlights those stakeholders who should be informed as part of this process.

Stakeholder	**Role**
BTP, MET, TOCS, Passengers, Network Rail, Retailers, ORR, RSSB, HS1	**Primary** stakeholders who are directly affected positively or negatively, by a project or operations
DfT, ATOC, Trade Unions, NaCTSO, CPNI, SO15/SO20, FOCs, Freight Operating Association, Local Authority Emergency Planners	**Secondary** stakeholders have a transitional function and can have a key impact on the project or operations
Home Office, The Treasury, Local Communities, Passenger Watchdogs, BTPA, ACPO	**External** stakeholders do not directly participate, yet can be impacted on by a project or operations

Table 9.1 SPIRS Stakeholder categories and roles for dissemination programme (Adapted from Freeman 1984 and Jepson and Eskerod, 2008).

The research has created and achieved economic and societal, and academic impact from the findings. The RSSB participant requested that researcher present the findings of the research at one their stakeholder meetings and that the Stakeholder Map of SPIRS and the more generic map of Category A railway stations in England and Wales could be used as part of their policy and strategy reviews. Moreover, the London Fire Brigade and BTP have both requested permission from the researcher to use the Stakeholder Map for operational planning and future franchise requirements. Finally, the researcher has published the preliminary findings of the research and the Stakeholder Map in a peer-reviewed journal

article for The Institution of Engineering and Technology, in a special interest publication for Infrastructure, Risk and Resilience: Transportation (ISBN 978-1-84919-696-3, 2013).

9.11 Future Research

This section will focus on recommendations for future research and which could continue the academic understanding of the relationship between stakeholders, resilience and security, and the symbiosis of such. These recommendations lead from the above sections and can form a programme of research. It is proposed that a program of future research is required as this initial research has proved challenging given the number of complex and disparate areas which have emerged in terms of both theory and practical application which can influence a space such as SPIRS and other Category A railway stations in England and Wales.

This research set out to examine the interdependencies and boundaries of the multiple stakeholders within a Category A railway station, and to analyse how their operational and legislative requirements and agendas influence both current and future resilience to security threats. As the analysis of the research progressed, it was evident that resilience is a disparate concept to the multiple stakeholders within SPIRS, created by the often-fragmented competing policies which surround it. Consequently, the challenge of how to secure this has created the numerous multiple challenging 'logics of resilience' (Coaffee and Fussey, 2015, p.87) which require future examination.

9.12 Future research using other case study category A railway stations in England and Wales.

Due to the nature of the qualitative research methods generalizability to all Category A railway stations in England and Wales would be impossible to defend. However, if additional resources were available in the future, it is suggested that the unique single case study of SPIRS could act as a pilot case for a larger multiple case study of other Category A railway stations in England and Wales. Thus, in order to fully address the gaps in the literature which surround the future resilience of these stations to security threats through examining the current interrelated complexities of the stakeholders who are located in the space, further empirical research should be carried across a range of broader stakeholders in Category A railway stations.

Thus, it is suggested that a multiple case study could be conducted to aid the understanding of the stakeholders in a wider number of Category A railway stations and

to examine them in terms 'of individual, group, organisational, social, political and related phenomena' (Yin, 2009, p.4). There would be no difference between the case study protocol framework (discussed in Chapter Five) used by multiple or single case studies. Moreover, there are 'analytic benefits from having two or more cases'. However, there is a disadvantage of conducting a number of multiple case studies given the number of resources and time that would be needed. Therefore, it is recommended that this research would have to be a full-time project over a number of years and preferably be carried out by a team of transdisciplinary researchers who could examine a large and complex dataset.

Moreover, the researcher maintains that future research would benefit from a partnership with Network Rail and or the BTP. It is believed this would increase the legitimacy of the research in the eyes of the stakeholder participants, especially in the cases of those who would not buy into the participation of this research study. One set of stakeholder voices which was absent from this current research was those of the public, whether they be passengers, users of the retail space or the local community. This inclusion of this stakeholder group in the proposed multiple case study would provide policy makers, Network Rail, and the BTP with an accurate view of how the public perceive and acknowledge the current and future security threats to the case study stations. This could be achieved if a mixed strategy of both quantitative and qualitative methods is used to collect data from the public. Quantitative methods such as questionnaires could provide a Likert Scale of the public's opinions. However, this would be extremely resource intensive, so it is proposed if a partnership was formed with a passenger watchdog group such as Passenger Focus; these questions could be incorporated into their quarterly rail survey. Passenger Focus could ask the public two questions regarding their perceptions of safety when using the railway station. It would be delivered to a specified sample population in order to make generalisations to the population which use and travel through Category A railway stations in England and Wales. Moreover, it is suggested that future research would benefit from a formal partnership with Network Rail and or the British Transport Police. The researcher believes this would increase the legitimacy of the research in the eyes of the stakeholder participants, especially in the cases of those who would not buy into the participation of this research study.

The case studies could be broadened to include Kings Cross and Euston railway stations,

both neighbouring stations to SPIRS but operated by Network Rail rather than Network Rail High-speed, and to expand the range of perceptions and experiences other Category A railway stations in England, such as Birmingham New Street and Liverpool Lyme Street. As with the single unique case study of SPIRS, the aim is not to attain statistical significance through a mix methods strategy. Rather it would be to investigate the cases in-depth, and given the complexity of the current research problem, the cases would be 'directed towards the analysis of a number of interdependent variables in a complex structure' (Dubois and Gadde, 2002, p.557) like a Category A railway station. Moreover, this research could be expanded and strengthened by studying a number of comparable railway stations globally. These case studies could potentially illustrate the international highly complex and significant railway stations acknowledge and manage the interdependencies and boundaries of the multiple stakeholders in the space and to analyse how their operational and legislative requirements and agendas influence both current and future resilience to security threats. Finally, the process of Stakeholder Analysis and Mapping has proved to be an important tool when structuring the qualitative interviews with the participants as it allowed them to visualise the boundaries, importance, interconnections of the all of the stakeholders who could affect or be affected by the current and future resilience of the space to security threats. It is suggested that this process is also suited to other research contexts such as, pseudo-public spaces with multiple stakeholders, such as shopping and leisure complexes, and must be conscious of the considerable and multifaceted range of stakeholders, policies, strategies, and agendas that influence the resilience of the space to security threats.

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APPENDICES

Appendix 1: Railway policies in England and Wales

Act/Regulations	Date	Government Department	Summary
Railways Act	1993	DfT	Primary superseded by the 2005 Railways Act. The ORR under the Act can issue licences to operating companies. Station and Light Maintenance Services access contracts are regulated by this Act.
Transport Act	2000	DfT	Largely superseded by Railways Act 2005. Permitted ORR, if required to request operators/owners of stations/facilities upgraded or build new ones. Has an impact on the SRA, outlines role and discretion for it carrying out designatedduties.
Railways Act	2005	DfT	Primary purpose of the Act is to deal with historic structural issues of the railway.PermitstheSecretary ofState to provide monetary aid for any purpose regarding railways grants Scottish Ministers to develop and create arailwaystrategyforScotland. Abolished the Strategic Rail Authority (SRA) and replaced with the Office of Rail Regulation (ORR). Permits the TOCs, subject to the approval by the Secretary of State, to create bye-laws which aid them and the BTP to control the actions and behaviour of the public using the rail system. Amends 1993 Act, ' relating to the provision and regulation of railway services; and for connected purposes'
Railway and Transport Safety Act (RATs)	2003	DfT	Office of Rail Regulation supersedes the Rail Regulator in this Act.Section 31 details the jurisdiction of the BTP, throughout England, Wales and Scotland. Further allows BTP to purse suspect/deal with railway related crimes outside the boundaries of the railway infrastructure
Health and Safety at Work etc. Act (HSWA)	1974	Health and Safety Executive	TheActistheframeworkforregulation of health and safety at work in Great Britain. The ORR is responsible for upholding the act in relation to the railways
Management of Health and Safety at Work Regulations	1999		Ensures operators have a duty of care to manage the health and safety of their employees and to ensure allstaff receive proper training to carry out theirdutiessafely.

Health and Safety (Enforcing Authority for Railways and Other Guided Transport Systems) Regulations (EARR)	2006	DFT	Allow the ORR to enforce the HSWA on the railway network, grant the power to issue enforcement notices and prosecutions
The Railways and Other Guided Transport Systems (Safety) Regulations (ROGS)	2006	DFT	Creates a regulatory framework for rail safety, for rail operators and infrastructure operators to adhere to a Safety Management System and hold the relevant licence before they can be operational
Railways (Access to Training Services) Regulations	2006	DfT	When operators apply for a safety certificate, it also allows them the right to have staff and train drivers trained
The Railways (interoperability) Regulations	2006 /201 0	DFT	Issues of railway safety and interoperability are very closely linked. Interoperability is concerned with the criterion that all rail assets are designed and built, and latterly upgraded. It additionally ensures these criterions are complied with, and finally the Safety Authority authorises it before it can go into operation
The Railways (interoperability) (Amendment) Regulations	2007		
Consolidated High-speed Directive (96/48/EC)	1996	EC	Two European Interoperability Directives, additionally covers issues of safety. Enables a legal framework for the operation railway criteria of the European transport strategy. Member states are legally bound by these directives and therefore must translate them into their own law
Consolidated High-speed Directive (2001/16/EC)	2001		

Rail Vehicle Accessibility (Interoperable Rail System) Regulations	2008	EC	Permits compliant heavy rail vehicles from being regulated from Railways (interoperability) regulations 2006 and RVAR
Railways (Access and Management) Regulations	2005		Generally, a 5-10 yea access contract issued to operators, terminal owners and or logistics companies
Railways (Licensing of Rail Undertakings) Regulations	2005		The regulations states majority of railway operates (TOCs and FOCs) must hold a European licence. Also required under the regulations is a Statement of National Regulatory Provisions (SNRP)
Railway Group Standard Codes (issue 3)	2008	Office of Rail Regulation	Rail Safety and Standards Board (RSSB), and developed a cross industry group defined safety code.
The Railways (Accident Investigation and Reporting) Regulations	2005	DfT	Defines the working remit (role and powers) of the RAIB
The Railways Safety Levy Regulations	2006	ORR	Authority is granted to the ORR to raise revenue for safety functions by placing a levy on all rail service operators
Reporting of Injuries, Diseases, Dangerous Occurrence Regulations (RIDDER)	1995	Secretary of State	Major and important health and safety incidents must be reported by railway services providers to the ORR
Cross Rail Act	2008	DFT	New southern counties east-west rail link. Objective is to help provide relief from congestion on the established rail and underground systems, allowing in transport growth for future generations. Crossrail extensions, and the use of rail facilities for the purpose of Crossrail exempt to the Planning Act 2008

The Rail Passengers' Rights and Obligations Regulations	2010		Statutory Regulation which is concerned with passenger rights and the obligation of service providers. Section 26 of the Regulation necessitates that rail operators 'to adequate security measures'. The majority of railway operators must have a formal agreement with the BTP concerning 'the policing of railway services and assets' The ORR is responsible to enforce the regulation, as stated in the regulation. The regulation set outs the role and power London TravelWatch and Passenger Focus as the authorised bodies to handle passenger complaints
Transport and Works Act	1992	DfT	Under the Act, the Transport and Works Act Orders Unit, makes decisions concerning the operation and construction of railways, tramways and other guided transport systems
Greater London Authority Act	1999	GLA and TfL	Section 175 states there must be co- operation between the Transport for London, the Secretary of State/DFT
The Network Rail (Hitchin (Cambridge Junction)) Order	2011	DFT	The order permits Network Rail for the purpose of creating a new separated junction at Hitchin, to compulsorily attain land and the rights to it, to build and maintain the works. NOTE: There are numerous other Network Rail Orders relating to works at other sites in the UK, this is just one example.
Incorporation of Railways Clauses	1845		The Act is now generally inserted into other Acts/Orders permitting the making of Railways
Level Crossings Act	1983	Secretary of State	The Act outlines orders for level crossings and the how users should be protected
The Road Safety Act 2006	2006		The Act initiated the use of new measures at level crossing to improve on the safety. For instance, driver's behaviour is more controlled by using kerbs which are built-out, rumble strips, improved signs to dually reduce the speed of drivers and to minimise the numbers going around the barriers
The Competition Act	1998	Office of Fair Trade (OFT)	The ORR can regulate agreements relating to the railways. Any business which conducts itself in a manner which could have a detrimental outcome on the competition and consequently the consumer, the Act can fine/prosecute.
The Enterprise Act	2002	OFT	ORRs power under Section 5 to review ownership of transport infrastructure, if it believes it will undermine the market

Local Transport Act	2008		Permitted Passenger Transport Executives (PTEs) greater powers, such as the right to rename themselves Integrated Transport Authorities
Localism Bill	2011		Bill was introduced by the Secretary of State for Communities and Local Government (CLG), the coalition endorses the concept of localism - building a framework for the big society by aiming to decentralise power and give it to local authorities.
London Olympic Games and Paralympics Games	2006		ORR has a responsibility of proffer and facilitate transportsystemsforLondon 2012Olympicgames
Local Democracy, Economic Development and	2009		The part five of the Act amalgamates all regional strategies, transport, economic etc into one whole regional strategy
Highways Act	1980		Cattle grids can be used for the protection of railways. Some railways will be exempt from contributing to private street works. Railway operators must come to an agreement with local authorities to maintain bridges/viaducts when used as public highways. Various other measures listed (LA's not permitted to place waste bins on, under or within 10 feet of a railway bridge, without the owner's/operator's permission) Details removing bridges and having level crossings, agreements required for expenditure.
Planning Act	2008		The Act established the Infrastructure Planning Commission and make provision about its functions. The act defines the 'construction or alteration of a railway...rail freight interchange' as a 'nationally significant infrastructureproject'
Town and Country Planning Act	1990		The Act consolidated the various enactments concerning town and countryplanning
Natural Environment and Rural Committees Act	2006		ORR has responsibility upholding the conservation of biodiversity in the context of the railway system
Climate Change Levy	2011	Dept. of Energy and Climate Change	Energy used in industry, business both in the public and private sector will be liable to taxation. The objective of the tax is to encourage energy efficiency, and for new types of renewable energiestobeinvestedin

Climate Change Act	2008	Dept. of Energy and Climate Change	The Act established a new framework to administer and respond to the effects climate change in the UK. The UK's railway system will be effected through the government being legally required to achieve a minimum of 34% reduction in greenhouse gas emission by 2020 and an 80% reduction by 2050,
Civil Contingencies Act	2004	Civil Contingencies Secretariat	Updated terms for Emergency – replacing 1920's and 1940's Acts. UK: one framework for 'civil protection' 'Local Resilience Forums' (based on police areas) Will co-ordination and co-operation between responders at the local level
Terrorism Act	2000	Home Office	The Act replaces previous counter- terrorist legislation. Provides the governments definition of terrorism. Details count-terrorist powers, for instance the police can prevent vehicles from parking outside a station as a form of terrorism prevention, making it illegal to park in this cordon. Powers of stop and search, uniformed officers can stop and search for instance train drivers, passengers, pedestrians in or outside stations - under Terrorism Act 2000 (Remedial) Order2011
Crime and Disorder Act	1998	Home Office	Local authorities and the police have a statutory duty to co-ordinate crime and disorder reductionary strategies with community groups. Publicsector organisations fall under section of the Act, whereby they have a duty to reasonable prevent crime and disorder. Covers anti-social behaviour orders
Strategies and Plans			
Contest	2006 and 2009	Home Office	'Aim-to reduce the risk to the UK and its interest overseas from international terrorism, so that people can go about their lives freely and with confidence' Strategy delivered in 4 work streams: Pursue, Prevent, Protect, Prepare. The Prevent stream has been revised in June 2011.

			strategy permits the government to work with stakeholders to reduce the risk of terrorism to transport infrastructure. Delivered by The Office for Security and Counter-Terrorism (OSCT)-part of the Home Office
PUBLIC SERVICE AGREEMENT 26 (PSA 26)	2007	Cabinet Office	CONTEST is a priority for the government during the years 2008/2009 and 2010/2011, therefore the PSA26 will help measures progress and deliver the CONTEST strategy– performance management framework – structured around the 4 P's
Strategic Defence and Security Review	2010		The objectives of the National Security Strategy are listed in the strategy, for instance determining the maintenance and improvement of key counter-terrorism measures and the development of cyber security measures
Cyber Security Strategy	2009		Detailed the creation of the Cyber Security Operations Centre (CSOC) and the Office of Cyber Security and Information Assurance.
National Risk Register			Government monitors the most significant emergencies that the UK may face over next 5 years through the National Risk Assessment (NRA). Risks are list in context (natural, malicious and accidental) mentions cyber-attacks on infrastructure, attacks on infrastructures-transport. Mentions failure of the National Grid. Transport accidents. The NRR and NRA detail possible events which may cause major harm to the citizens of Britain
National Infrastructure Plan 2013	2013	HM Treasury and Infrastructure UK	Acknowledges need clear analysis of interdependences of critical national infrastructure, economic growth, new investment strategy (£200 billion up to 2015), reducing carbon targets, ensuring energy security, climate change, new technologies. Describes interdependences – floods 2007 disruption to water supply and impact on transport infrastructure.

Securing the Future – delivering UK sustainable development strategy	2005	Department for Environment, Food and Rural Affairs (DEFRA)	The strategy outlines what sustainable development is and how it can be achieved. In the Rail Act 1993, the railway sector's responsibility to the environment and sustainable development were outlined. Endeavour to achieve sustainable development and to be aware of the environmental effect of the railway sector.
Delivering a sustainable railway	2007	DFT	Governmental white paper which looks at the future of the railway over a 30 year period. It establishes the railway sector and the government should be aspiring to threelong-term goals: railway capacity is increased, passenger receive a quality service, and realising the full environmental capabilityoftherailwayinfrastructure
Rail Technical Strategy (RTS)	2007	DFT	Wrote in conjunction with the above white paper, the government looks at how current and future technologies will affect the railway. The following long-term strategies were established by the RTS: 'simple, flexible, precise control system: optimised traction power and energy; an integrated view of safety, security and health; improved passenger focus; rationalisation and standardisation of assets; differentiated technical principles and standards.
Route utilisation strategies (RUS)	2011	ORR	Network Rail is obligated under its license to create and manage RUS for the rail network and endorse effect regional routeutilisation
McNulty Report	2011		Costsavingreview. Estimatesby2018 £1bn could be saved by the railway in theUK.Major issues with over staffing. Will create the Rail Delivery Group.
Renewable Energy Strategy	2009	DECC	Launched in 2009 the Renewable Energy Strategy (RES), under EU direction, intends that by 2020 the UK that 15% of its energy requirements, for instance transport, heating and electricity will be generated from renewable energy sources. These sources of energy are naturally occurring and replenishable, such as solar and wind power (Carbon Trust, 2011)

Appendix 2: Categorisation of railway stations in England and Wales

Category	No	Type of Station	Criteria per annum
A	25	National Hub	Over 2m trips: over £20m
B	66	Regional Interchange	Over 2m trips: over £20m
C	275	Important Feeder	0.5 – 2m trips: £2-20m
D	302	Medium Staffed (1 Network Rail)	0.25-0.5m trips: £1-2m
E	675	Small Staffed	Under 0.25m trips: under £1m
F	1,192	Small Unstaffed	Under 0.25m trips: under £1m
Total	**2,535**		

(Source: DfT Better Rail Stations Report 2009)

Appendix 3: IRA S Plan Attacks

The below listed incidents are those which specifically related to attacks on railways stations in Britain under the S Plan:

Year	Month	Location	Details
1939	February	London, Kings Cross	Twobombs exploded
1939	April	Liverpool Railway station	Twobombs exploded
1939	July	Birmingham LMS Railway Station	Extensive damage caused at due to bomb exploding in left luggage area
1939	July	London - Kings Cross and Victoria Railway Stations	Both stations sustained serious damage, with one fatality and seven serious injuries.
1940	February	London-Euston Station	Two mail bag bombs exploded- some damage sustained to building

(Bowyer Bell, 1996)

Appendix 5.1: The various methods of qualitative data collection and the benefits and disadvantages of each

Method of collection	Options within methods	Benefits of method	Disadvantage of method
Interviews (chosen as a data collection method)	Internet, Skype, email interview Focus groups, multiple participants are interviewed in a group setting Interviews are carried viathe telephone Face to face interviews	Questions and schedule can be followed and regulated by the researcher Researcher can follow interesting lines of information by further probing Beneficial when participants cannot be directly observed	Noteverybodyis insightful or communicative Responses may be influenced by the researcher being there Interview setting is normally predetermined by the researcherandis not a field situation
Observations (chosen as a data collection method)	Complete observer-researcher observes but does not contribute Participant observer-role of	Can be used to delve into sensitive or difficult topics with participants Observation allows for the recognition of	Some groups of vulnerable participantsmay be reluctant to build connections and affinities with researchers
	observer is secondary to role of participant Observer as participant-researcher's roleis known to participants Complete participant-role ofresearcheris hidden from participants	atypical facets of participants Occurrences can be recorded as it happens Researcher has direct involvement and knowledge with participants	Researcher may have poor observational ability Some observed data will not be reportable by the researcher Participants may view the researcher as invasive and disruptive

Documentation (chosen as a data collection method)	Private-journals, letters, emailsor diaries Public-articles, newspapers, company papers, or official reports	Information is already accessible and saves time and costs in not transcribing Data is thorough as it has been composed with awareness and consideration Data can be retrieved opportune times for the	Documentation may be inaccurate or faked Documentation can be partial Information be challenging to locate so can be time consuming Information required may be located outside of public access
		researcher, it is a discreet resource The participant's semantics and lexis can be explored	Not all documents are created by people who are communicative or insightful
Audio-Visual sources	Film Social Media Software Objects of Art Visual recordings Photographs	Creative as it seizes interest visually Research participants can immediately communicate their lived actuality Can be used as a discreet technique of gathering data	The photographer being there can be disrupting and impact replies and reactions Could be limited access to the data collected Could be challenging and problematic to decipher and explain

Qualitative research methods and the benefits and disadvantages. Source adapted from (Creswell, 2009, p. 179-180)

APPENDIX 5.2: Data Protection Act 1998

The data collected for the purpose of this research covers the following aspects of the Data Protection Act 1998,

Personal data shall be processed fairly and lawfully

Personal data shall be obtained only for one or more specified and lawful purposes, and shall not be further processed in any manner incompatible with that purpose or those purposes

Personal data shall be adequate, relevant and not excessive in relation to the purpose or purposes for which they are processed.

Personal data shall be accurate and, where necessary, kept up to date.Personal data shall be processed in accordance with the rights of data subjects under this Act.

Appropriate technical and organisational measures shall be taken against unauthorised or unlawful processing of personal data and against accidental loss or destruction of, or damage to,personal data.

Personal data shall not be transferred to a country or territory outside the European Economic Area unless that country or territory ensures an adequate level of protection for the rights and freedoms of data subjects in relation to the processing of personal data.

(www.legislation.gov.uk, 2013)

Appendix5.3: Stakeholders who did not participate in the research

Stakeholders who were contacted and ask to participate in the research, but either declined to participate or did not respond to the request for assistance

Stakeholders contacted but declined or failed to respond to the participation request					
1	**Network Rail**		Security Manager		Contact established, and participation agreed, never responded to emails to arrange
2	**LandSheffifs**		PrivateSecurityforHS1,forSt Pancras, looking after perimeter of station		Emails sent but no response received
3	**Transport for London**		"Transport Guru"		Email and declined to participate
4	**Metropolitan Police**		TBC		Email sent but no response received
6	**CPNI**		Transport Rep (		Email sent but no response received
7	**HS1**		Engineering and Asset Manager		Email sent but no response received
8	**DfT**		HeadDomesticLandTransport Security		Email sent but declined to participate
9	**South Eastern Trains**		Head of Crime and Security		Email sent but no response received
10	**East Midlands Trains**		Emergency Planning and Security Manager		Email sent but no response received
11	**Camden Borough Council**		Planning		Email sent but no response received
12	**SECURITY CONSULTANT**		Worked for Nactso Helped created Project Argus and Griffin with Brian Howat. CurrentworkingwithBBCon securityand the Olympics	Response received, awaiting telephone call from Richard	Email contact established, agreed to participate but no response received to subsequent emails
13	**London Ambulance Service**				Email contact established, agreed to participate but no response received to subsequent emails
14	**Transport for London**				Email contact established but declined to participate in the research
15	**Transport for London**		Transport Crime Problem Solver		Email contact established but declined to participate in the research
16	**University of the Arts, St Martins**		Research Centre for Design Against Crime	Arrange interview in the Jan/Feb 2013	Email and personal contact established but unable to find a suitable time to meet
17	**ORR**				
18	**Passenger Focus**		Researcher		Email contact established, but felt was not suitable for me to speak to so put me in touch

					with a colleague
19	**Department for Transport**				Email sent but no response received
20	**Transport for London**				Email contact established but declined to participate in the research
21	**St Pancras Renaissance Hotel**				Email sent but no response received

APPENDIX 5.4: Participant Information Sheet

Participant Information Sheet

LucyGregson-Green
CivilandBuildingEngineeringDepartment
Loughborough University
Leicestershire LE11 3TU

l.e.gregson-green@lboro.ac.uk Tel: xxxxxxxxxxxxxx

What is thepurpose of thestudy?
This research (conducted between May 2011 and April 2014) will pose the question, how can the 'railway station' be designed and operated to ensure the current and future resiliency to human malign threats from a multiple stakeholder standpoint? How are divergent policies interrelated to this?

Who is doing this research and why?
This study is part of a Student research project supported by Loughborough University.

Doctoral Researcher: Lucy Gregson-Green
Supervisors: Professor Andrew Dainty and Dr Lee Bosher
Sponsored by: EPSRC funded R-Futures project

Once I take part, can I change my mind?
Yes! After you have read this information and asked any questions you may have we will ask you to complete an Informed Consent Form, however if at any time, before, during or after the sessions you wish to withdraw from the study please just contact the main investigator. You can withdraw at any time, for any reason and you will not be asked to explain your reasons for withdrawing.

Will I be required to attend any sessions and where will these be?
Initially this is an introductory interview. Any further interview sessions will be arranged at your convenience.

How long will it take?
The interview will take approximately one hour

What will I be asked to do?
You will be asked to take part in an interview. The researcher will use an interview schedule to ask you questions. The researcher may ask you to go into greater detail on some of your responses.

What personal information will be required from me?
Name: Position:

Will my taking part in this study be kept confidential?
The interview will be recorded using an audio-recording device, transcribed and stored securely in accordance with the Data Protection Act 1998.

The transcribed data will be seen by the research student, their supervisors. It may be possible some of the data collected will be used for the final doctoral thesis.

Names and any other identifying characteristics will be anonymised.

The recorded data will be kept for a period of 48 months after which it will be destroyed.

What will happen to the results of the study?
The results of the study will be used to inform the doctoral thesis.

I have some more questions who should I contact? Professor Andrew Dainty: a.r.j.dainty@lboro.ac.uk Dr Lee Bosher: l.bosher@lboro.ac.uk

What if I am not happy with how the research was conducted?

The University has a policy relating to Research Misconduct and Whistle Blowing which is available online at http://www.lboro.ac.uk/admin/committees/ethical/Whistleblowing(2).ht m

Appendix5.5: Semi-structured interview schedule

INTERVIEW SCHEDULE:

Introduction of my research – aims and objectives

The future resiliency of railway stations in England to security threats: A doctoral research project

What: This research (conducted between May 2011 and April 2014) will pose the question, To what extent can the future resilience of the railway station to security threats be ensured, when considering the interdependencies of the multiple operational, physical and legal boundaries of stakeholders which intersect the space? This research is a component of the EPSRC funded R- Futures project.

Why: The literature review conducted to date has established crucial gaps in the research surrounding the current and future resiliency of English railway stations to security threats. Overarching issues of the multiple boundaries within the railway station in terms of (operational, policy/legal, physical) are considered to be a major obstacle in attaining current and future resiliency.

Aim: The aim of the research is to holistically comprehend and unpack the interdependencies and boundaries of the multiple stakeholders within Category A railway stations, and to analyse how their operational and legislative requirements and agendas influence both current and future resilience to security threats. This will be achieved through three case studies examining the railway stations in terms of their stakeholders and their operational, political, legislative and physical boundaries, and how these affect their resilience to security threats.

Objectives: To meet the aim of the research, the objectives will:

Critically examine the literature and policy concerning counter-terrorism and crime prevention measures within the context of railway stations, infrastructure and other urban transport networks.

Map the stakeholders with security interests in railway stations and associated infrastructure.

Map the policies and strategies operationalised by stakeholders which (in) directly affect the resilience of the railway station

Examine through case studies how multiple stakeholders encounter and/or engage with both current and future resilience-related policies, strategies and operational procedures

Identify and acknowledge the effects of multiple stakeholders, and how they can have constructive and detrimental impacts, and compromise the resilience of the railway station

Beneficiaries: Beneficiaries of the research will be the multiple layers of stakeholders within

the railway station who will attain empirical knowledge and comprehension of the processes and dynamics which direct and regulate the resiliency of the railway station to malicious threats. Thus, a broad range of stakeholders (Inc. public/private, government body/non-governmental body) will gain an understanding of the importance of how current policies and strategies combating security risks may impact of the future resiliency of the railway station to such issues. Furthermore, stakeholders will gain an appreciation for the need for a co-ordinated strategy that acknowledges how resiliency conflicts and tensions will need to be addressed at the planning stages of projects within the railway station.

St Pancras International Railway Station has been identified as being suitable case studies for

the research study

Outcomes of literature review

> is insufficient research into **how current policies and strategies are entrenching and influencing the future resilience** of the railway station to human malign threats. Moreover, it has been ascertained there is a paucity of knowledge surrounding **how the multiple stakeholders within the railway station enact security strategies and the unforeseen consequences on how this affects both current and future resilience to human malign action**s. Thus, it is contended it is the overarching issues of these multiple boundaries within the railway station, which are considered a major obstacle in attaining future resilience against human malign actions.

What is your role within XXXXX?

What are your responsibilities?

In terms of your role what does resilience mean to you?

In broader terms of the railway station what does resilience mean

What key policies and strategies shape your role? (how are these referred to you?)

How do you respond to security policy initiatives? (work with policy makers?)

Are you aware of National Security Strategies (do these shape your role?)

When stations are designed and retrofitted how are the needs of stakeholders

accounted for?

When new tenants move in, how do they ensure their unit has necessary crime prevention and counter-terrorism measures

In your opinion how far into the future do NWR security strategies look?

How do you think these policies impact on the stakeholders and tenanted properties within the railway station?

When railway stations are redesigned and retrofitted fitted with security measures, at what stages are stakeholders consulted and who are they?

What measures are used or would you recommend to protect the inside of the retail units?

In terms of public safety, what do you think their greatest fear is? (crime or terrorism)
Do you think crime prevention and counter-terrorism agendas can be reconciled? *Do tenants look at both threats equally?*

Do you think passengers and public opinion impacts on the crime prevention and counter-terrorism agendas in the railway station?

Which stakeholders within the railway station do you deal with? (use map to tick off)

Are there any stakeholders who are not on the map, who you think should be included on my map?

Do you find any issues with communication, coordination with the other stakeholders on the map?

Who else do you speak to (other agencies)? (or would like to be engaged with)

How do you think the future resilience of railway stations to security threats can be improved? (What are the greatest threats faced?)

Could you offer some advice about other stakeholders who you think it would be beneficial for me to speak to?

Appendix5.6: Interview Transcript from R Futures Interview

Interviewee: XXX Date: May 2011

Recording Length: 75:42

So, just to begin with, could you say a little bit about your background, your role here and your past experience?

Okay. My role here is I'm head of emergency planning and business continuity for the council. I manage a small team, taking… looking at everything to do with resilience emergency planning, business continuity across the council, working with the departments. The key thing at the moment, really, is preparing for the Olympics stuff and making sure everyone is prepared for what the impact of that might be.

Hmm.

How our realities of getting in and out of London and moving about London and XXX will change next year when none of the transport links, sort of, we've got more pressure on them and the ORN and things like that, so that's our focus at the moment. Background – I've been here since 2004. So I was here through 7/7 and various other big events we've had. Previous to that I was working for the fire brigade doing emergency planning for the whole of London.

Yes. I guess that… So in terms of your sort of everyday…

Every day is…

Sort of role.

Yes. On-call for anything happening in XXX, so between the team we split the on-call requirement anyway. Most of what we get are very small disruptiony-type things, so power failures, water supply issues, in housing blocks and things like that, ranging right up to bigger events like 7/7, and then just being the link between the council and the emergency services for that. Day-to-day – not on-call bits. So, the in-the-office bit is basically making sure that all our planning procedures are up to date and in place; training, exercising with council staff and with other agencies; liaising with other agencies around what they're planning for various things and working on different work streams, so a whole range of work streams we work on that have been set across London that all the boroughs have to

comply, so things like mass fatality incidents, so what we would do with mortuary arrangements, flooding arrangements, mass evacuation, flu pandemic – you name it, we've got it on the list.

Hmm. Hmm.

So it's just sort of a programme of managing those and developing plans and improving them [unclear]ly.

Okay. So you're… I mean in terms of the other agencies you're working with…

Mainly police, fire, ambulance, but in XXX we do also liaise quite a lot with other businesses – the universities, the transport sector, obviously, because XXX's got three mainline stations.

Hmm.

So we have quite a lot to do with these other partners as well, but the main ones would probably be the police or the fire brigade.

Okay. I mean, this is a question I've been asking everyone.

Mmhmm.

And I guess you can sort of answer it in a nutshell, really. What does resilience mean to you?

(Laughs) Hmm. I suppose to me it's XXX's ability to bounce back from whatever faces it and get through and keep going.

Hmm.

In terms of delivering our core… So we've got a duty to deliver our core services, and it's being able to make sure that the council can keep doing those things.

Hmm.

Whatever is affecting us out there and making that happen, whether that's a small thing or some sort of small business disruption or a massive national thing, a bit like the pandemic could have been.

Hmm. Hmm.

And it's making sure we've got… Thought about all of those things and we can keep… get through it and keep going.

So maintain the water services [unclear] or…

Yes. Err… No. Not really. The utilities companies would do that, so our thing is more around supporting vulnerable people if any of those things are affected, so… And that's our biggest thing, is vulnerable people.

Right.

The social care sort of side. So normal day-to-day, we do meals on wheels and we do social care visits into the council premises and other premises supporting people. It's looking at if something else happens that means more people are vulnerable or, so, like the flu pandemic, potentially, if your main carer is ill.

Hmm. Hmm.

And, you know, they don't normally rely on the council picking up that extra capacity.

Hmm.

And also things like when we had 7/7, can we actually get out and about in the borough, because the transport network is down, to deliver that service and deliver meals and wheels and making sure we can still do those…

Hmm. So it's council, local authority services are maintained within…

Yes, yes.

Given that there is…

So it's dealing with the impact of other things not happening.

Yes, yes, yes.

Can we still do those things?

Yes, yes.

And then sillier things which seem to be more upsetting to the public which are like refuse collection and making sure the library is open. The number of complaints we had at 7/7 because the library was in accordant…

Hmm.

So I think trying to keep those things and making sure that people can still go to a different library.

So people want to use the internet or something…

Yes, yes. It's silly.

Well, yes.

We've got 13 libraries in XXXX. The fact that one was in accordant,

Yes.

It shouldn't have been that difficult to [unclear]. They were very upset.

Hmm. Yes. So people lose sight of things.

Yes. Definitely.

Yes. Okay. I mean, I think I guess it would be a good idea. Obviously I could look and find out about sort of the services that the council delivers.

Hmm.

So, I mean, looking at these scenarios, I'm not sure. I mean, if you wanted to just sort of position them. I mean, we can perhaps sort of look at these in turn. I'll just explain this a bit more.

Mmhmm.

It's probably quite sort of self-explanatory, I guess, but we've got… I mean, we've looked at various sort of future reports which are related to sort of engine transports that are produced by the government, some produced by companies like Shell or… and they have tended to sort of adopt quite a similar approach and sort of identify these sort of big uncertainties – these sort of major uncertainties about the… about the future, really, and we've, I guess, drawn upon those and sort of integrated those into our approach. So on this sort of horizontal axis we've got really sort of a sense of how globalisation is going to develop or not – the kind of pace of globalisation, really.

Mmhmm.

So are we going to be living in an even more interdependent, convergent world or are we going to sort of become more self-sufficient? Perhaps more sort of inward-looking? More independent or divergent? And this could be, I guess, a kind of response to lots of different things but it could… one of the things, it could be a response to sort of climate change,

Yes.

That we're perhaps travelling less, looking to sort of become more self-sufficient, perhaps producing more of our electricity. And we've left it quite open. I mean, we've, for example, on here we've sort of… these are really metaphors, I guess, rather than necessarily saying that everyone's going to be living in a village in the middle of nowhere, in the woods or something.

Mmhmm.

I mean, our high-tech hamlet could be a sort of city region that's more independent than it currently is, or it could be a small sort of self-sufficient community in mid Wales. You know? We left it quite open as to what that might be, but generally speaking we're thinking on these… this sort of side of the matrix of these scenarios. We're talking about lots of self-sufficient communities. And I guess there's already, well, technical… because a technical sort of [unclear] for that, in terms of embedded power. Perhaps people just generally sort of travelling less, travelling more on foot and by bike, and therefore sort of there's perhaps… [unclear] interdependence between different parts of the country or even different parts of the city, and also things like the push to devolution politically.

Yes.

I guess you can see sort of parts of the big society stuff and the kind of localism agenda that's sort of getting through [unclear] at the moment. And on the other side, we've got to extrapolate here the sort of globalisation theme that we're going to be working more and more with people on a sort of global basis or on a sort of supranational basis, and the EU, for example, might become more powerful; the transport networks are going to be becoming more interdependent than they currently are, I guess.

Mmhmm.

Obvious things, I suppose, like the Eurostar or something… you know? Those sort of things and as you can imagine, you know, currently [unclear] companies are talking about coming in as well and if that were, you know, if we developed our own high-speed rail network, what might that mean? And also, I guess, we could think about it in terms of energy, that perhaps would be instead of going down to this sort of micro power, we might be building more and more big nuclear power stations; we might be sharing energy across Europe and there might have to be some quite draconian ways of managing that sort of in the home and that might be a kind of smart grid that turns appliances on and off as people haven't control over their own…

Yes. Right.

Not generating their own power. It's sort of subject to, I don't know, taking power, perhaps. I mean one of the things we were talking about there was it might be a kind of sub-Saharan or a Sahara solar ray that's providing power to Europe. And then the other… I guess the other [unclear] on the services axis is just how much are people likely to embrace or resist technologies, really?

Right. Okay.

[unclear] kind of solutions to kind of climate change. So, again, yes, I mean sort of one example might be sort of automated cars. Are people likely to want to accept that? You know? Even at the moment Ford are sort of developing technologies where cars brake themselves. You know? They park themselves and that sort of thing, so it's something…

Sounds great. Parks themselves? (Laughs)

Yes. You can imagine on a kind of motorway or on sort of major roads that cars would be kind of packed, sort of, you know, efficiently along that road and those sorts of… those sorts of things and then they might be sort of anxious for doing that. And then sort of in terms of energy as well that people perhaps in these scenarios are more likely to accept new things like sort of PHP plants, those sorts of things, rather than whereas in these scenarios people are kind of turning to social solutions or sort of [unclear]

Yes.

To some of the challenges. I mean, I don't know. That in a nutshell captures what our approach is and where the scenarios… how the scenarios related to each other.

Right.

It may be, if we start, I mean if we start, perhaps, with this scenario here.

Yes.

I mean this… so in this scenario we're talking about a sort of high-tech… obviously but sort of independent world, I mean I don't know whether you would like to sort of perhaps say more about the sort of resilience of these sorts of scenario, or some of the potential resilience consequences of this scenario or talk more generally about the sorts of infrastructure that might be required or how it might sort of operate or how… or perhaps how it wouldn't operate.

Yes. I suppose from my perspective, if we're, from this side of things, there are more localised things. That, from my own perspective in XXX here, probably makes them a bit easier because localised and more focused focuses of power in the localism bill. What I'm sort of hoping that will come out of some of that stuff that is looking at is a sort of more focused community that looks after themselves and starts to take on some of the sort of community resilience messages that are coming out now and supports itself, so I suppose in that respect, I suppose my challenge with this one is actually that low technology would be much better than high technology. (Laughs)

Hmm.

The high technology thing, I think, for me, is always a challenge, although it gives some options to resolve things and make things easier, I think more and more people rely on technology and it isn't resilient. And that's just where at, at the moment, if we're looking, I suppose, ideally, if high-tech can also mean that it's more resilient is built in to that high technology, then fine. That's all good and well but, at the moment, my experience of XXX alone with energy and transport and those sorts of things is they break down regularly, they are very reliant on certain things and so there are often problems with them and that is, actually, in terms of the two things we've probably had the most issues with in XXX now, energy supplies, gas, electricity, and water as well, failures and transport failures, people getting stuck on the tube, people not being able to get to places because it's all broken down are probably the biggest issues we deal with now, so this… anything up this end where we're going to more people relying on those things.

So more sophisticated…

Yes. It means more challenges, I think.

In this scenario, one of the things in this scenario is that we might… something that's, perhaps, to some extent inevitable – that road vehicles will become more electrified.

Hmm.

I mean, could that… does that sort of…

I suppose on the basis of the number of power failures… I don't think people realise how many power failures there are in London at the moment but if we are going to rely on being able to charge your vehicle up and those sorts of things then, yes, potentially that's, you know, it's going to… everything is going to be based on that. You know? That's even more impact when it does go wrong.

Hmm. Hmm.

So that would be difficult. But I suppose it's the flip of the fact that it's very localised and your power base is local as well, I think that does give you some get out of jail support if people are more focused on what their local community needs rather than what London needs or what the UK needs, then it can be better.

So thinking about, I don't know, sort of major terrorists… kind of 7/7,

Hmm.

If you've already got these sort of on-going problems with breakdowns and maintenance problems, that can obviously just sort of comparis…

Makes it worse. Yes.

Yes.

Yes. I suppose the terrorism one depends on obviously what the scenario is and how they would approach it, but the terrorism one tends to be a short, sharp hit.

Hmm.

Your other one, you were talking about the flooding one, which is more sort of on-going.

Hmm. Hmm.

And anything technology-wise, being hit by a flood (Laughs) it just makes it even worse and…

Makes it more… yes.

Yes, exactly. So it's… I suppose my challenge would be, to any of these companies, looking at making our world more high-tech and more reliant on some of these different technologies is how do you make them as resilient as possible? And are they building that in? Or are they living in this fantasy that, oh, it will never happen to me. And I think there's a bit of that been going on in the past.

Hmm.

You know? The floods we had a couple of summers back that affected the national infrastructure obviously were a bit of a wake-up call. But it's whether there's enough going on, or are we still not investing the money in that? Protecting things.

Hmm.

Because these, you know, new technology is great but only when it works.

Hmm. Hmm. So you'd want, sort of, to make this scenario more resilient, you would…

Yes.

Need to think about lower tech solutions or not replacing things, kind of substitute, you know,

Yes. There needs to be… I think there needs to be back-up to things, so having the lower tech solutions or back-ups, but also I think whatever you're going for, I think whatever new, high… you know, high-tech solutions there are, as long as people are building in the resilience, you know? Protecting some of those things. So if we're going down to one central power station that's covering a whole massive area. Are we protecting it from floods? And how have we got the best security around it? And things like that, and

probably security, one of the things, probably one that they do take a lot of care about and interest, but some of the more climate-focused scenarios that might happen.

Hmm. Hmm. Hmm.

You know? The impact of snow and can people get into the place to do the maintaining and the repairing and those sorts of things. Do…

To run the trains or…

Yes. Exactly. So that's where I think, you know, as a country, currently, at the moment, silly things like snow and a bit of severe weather would knock out the country massively.

Hmm. Hmm.

And we shouldn't be…

[unclear] likely to have more effects [unclear] (Laughs) yes.

Yes. And if the climate change carries on going the way we're going – we're getting more severe sort of weather scenarios, then we need to be thinking about those things a bit more than I think it appears we are.

Hmm. Hmm. Yes. I heard, in one of our steering group meetings, someone who's… who used to be the chief science adviser for transport.

Right.

And he was actually speaking to the secretary of state about it and he apparently said, "Why… Why is our rail network not working? We've just got a bit of snow." He said, well, you shouldn't have gotten rid of all those railway cottages, because we… [unclear] people can't get into work. That's why it's not working. The trains can work but if people can't get onto them, and drive them… (Laughs)

Yes. I think, you know, it has got a bit of a joke, the transport trains, particularly, you know, snow, they don't run and then the other day when we had a bit of hot weather they weren't running then because of the hot and it's like you just need a sort of middle-of-the-road, average UK day and everything is fine but the reality is….

10 to 20 degrees. (Laughs)

Yes. As soon as we get any hot weather, everything stops and the tube is a nightmare and the trains don't run; as soon as you get snow, everything stops as well. So…

So you… So in this sort of scenario, I guess your concern would be that, you know, that the technology, it needs to have the sort of redundancy built into it or there needs… it doesn't

need… you shouldn't kind of replace perhaps what already exists, so automated cars might be fine but people need to be able to override them if the system is not working or the system fails. That there would be… And there's been perhaps… perhaps [unclear] sort of increasing reliance maybe on even in sort of local energy production, that that could be sort of problematic if people are using… relying on that pattern more or…

Yes. I think there are always people who are thinking about redundancy of things,

Hmm. Hmm.

And building in options. Then you…

But generally, I mean if we were to sort of… I'm just trying to think of other issues that are around sort of level of kind of political fragmentation, does that cause…

Erm…

I mean, you spoke about the sort of localism…

Yes. I think for me…

Quite a positive thing for [unclear]

I think for putting power back in the hands of local people and encouraging them to take responsibility for some of these things is a good thing because I think, definitely, at the moment, when something goes wrong, there's almost… Although definitely at times you hear them saying, well, we don't want a nanny state but yet as soon as something goes wrong, they all phone… they phone the… on a local level, if at XXX Council something goes wrong, people phone XXX Council and say my power is off. Well, the power supply is nothing to do with XXX Council.

Hmm. Hmm.

But they still phone us and expect us to solve it for them, and if the power is off for a long time during the cold weather, they still phone us and expect us to bring them a blanket and things like that. So anything that gives more responsibility and power back to the local people makes them think about that, actually, they're together, collectively responsible for this and looking after each other and not expecting someone to swoop in from higher… [unclear] say them, it's good for me because I think we've got to this point where it's ridiculous – I'd never phone my council and ask them for a blanket.

Hmm. Hmm.

But yet I get called regularly, so can you give me a torch?

(Laughs) Some matches. Yes.

Yes. Not a box of matches, no – [unclear] we've had too many of them. But it just shocks me a little bit how people are at the moment, so anything that's going to push that the other way.

So what would you… in this… so what would you like to see in this sort of, in 40 years' time, what would you like to see that could make…

I think, you know, I think people feeling like they've got more… This is why some of those localisms… People feeling that they've got more say and more responsibility for what's happening and the decisions that are being made locally and how they…

So…

And so that they can't almost bury their head in the sand.

So more public involvement in sort of resilience forums and…

Yes. Well, not necessarily just resilience forums but anything that might impact you, so how, you know, the energy and the technology stuff, more decisions locally and people getting involved in that.

Hmm. Hmm.

I think at the moment it's very much there is local involvement in some of these things through your elected members and things but it's very much the same people.

Hmm. Hmm.

I think it needs to be a much greater community involvement in these decision-making things and that happen.

Hmm. Hmm.

Because I think, yes, people need to take responsibility for all sorts of things. They can't just sit back and moan.

Yes. So I'm just trying to think how you'd actually…

Yes.

How you actually kind of operationalize that, really.

I suppose…

Or an example, just so I can sort of say, you know…

Something we're looking at locally is, as money is being cut and services are being changed, we are looking at things like, on a simple level, can we give over the running of some of the local services to a local community group.

Hmm.

So they can decide how it runs, they get some funding via us,

Hmm.

But they're much more empowered to shape how their local area works and…

What are the sort of aims of that group and…

Yes. So, rather than it being XXX, it's an award basis of just one area, and they come together and I think that is… it's quite an interesting thing for me. It's obviously very different from how we are at the moment,

Hmm.

But it would be interesting to see how that could be pushed further,

Hmm.

So that you are more community-spirited, I suppose – more community-minded of what's going on in your local area and how…

And those sorts of broad issues, even if they're not explicitly resilient,

Hmm.

They could sort of foster a greater sense of kind of responsibility when there is a…

I think anything that fosters a greater sense of my community and we are lo, you know, together, will have an impact on how people will then respond when something does happen in their community; they pull together more naturally.

So less explicitly a resilience-related initiative or…

Yes.

Okay. That's interesting. Is there anything else about this scenario that you'd like to kind of add about how resilient it might be, or any ways in which you could kind of improve the resilience? Kind of a detailed…

I don't think so. I talked about the main things. Any sort of technology stuff, there's a redundancy in it.

What about the sort of vulnerability? I mean, one of the things here is that… well, actually, it's not a scenario but what do you think of the sort of fuel property implications might be of sort of increased… increased sort of embedded power? Sort of more micro generation, for example. Is that something that, you know, not just [unclear] or is that something that could be quite useful?

Yes. I think anything that, you know, anything that's more local and will take on board the issue, who you've got in your community and how to best focus on those things, so yes. I've lost [unclear] thinking… my mind's going mad at the moment about all the logistics…

Sorry. There's quite a lot in there, isn't there?

(Laughs) Yes. I think anything with more localised focus is going to have a better impact on fuel poverty and those sorts of things, because you know who's in your area more and the sorts of it's more focused on the needs of your smaller community than something that's trying to focus on a whole, as the whole country, and taking an approach that works across the whole country when you've got very varied situations going on in different communities and different groups. So, you know, what works in London isn't going to work in rural Wales, necessarily.

Hmm.

So anything with localised decision-making and power and things is going to have, I think, a better…

Yes.

That's my own personal feeling. I'm sure the government doesn't think that but, I don't know, they are going for localised… Yes. They are…

Yes. (Laughs) I mean the likelihood is it will probably end up…

Somewhere in the middle.

Yes. (Laughs) But it's interesting to kind of think about the implications of going further…

Yes. It's certainly something we're thinking about. Some of the management meetings I've been at recently here – how far the localism stuff will go – and it's quite interesting.

Yes.

Because although you like to think that XXX Council is one [unclear] 33 of London is quite localised. Actually, we're pushing it beyond that to much more focused on what… it's quite interesting to see what will happen with the council structures and things like that, whether they just go… It will be much more…

Hmm. Yes.

Yes. A little… I suppose hamlet is the right term but, yes – we're sort of looking at more ward-based things and how that will work.

Hmm. Hmm. Hmm. So the sort of extreme of this sort of scenario where, you know, we've got a lot of our power being generated sort of locally but maybe not necessarily solar panels on someone's roof but perhaps a sort of CHP plant that serves, I don't know, a ward, for example, that's… how… Is that something that sort of community power generation…

I think the community stuff is already starting to happen to some extent, so one…

What would that mean for the resilience or…

Yes. I mean I think… I think I suppose it's good as long as you've got the flip in there that if the power is not there you can fall back on the main network,

Yes.

So looking at something similar here that, there's a medical research centre just being given planning permission just behind St. Pancras Station,

Hmm.

And part of that is that their excess heat and things is going to go into energy supply for the community.

Right. Okay.

So, and there's sort of… and the community where they're going to serve is quite a sort of poor community, I suppose.

Hmm. That's something that the council played a role in.

Yes. It's one of the things we've put into their sort of contracted their planning permission.

Hmm. Hmm.

They had to do certain things for the community and one of the things was this energy thing, so it's quite interesting that that… so, obviously if then something happens at the site, they've got other redundancy to switch back into the main network to…

Hmm. Hmm. Hmm.

But I think that's definitely a positive thing. I think there are lots of, probably, places, like they were saying, that generate far too much heat and energy and things.

Yes. Well, certainly he… I mean, most of what [unclear] heat, I guess.

Yes. It was quite interesting, seeing how that was going to work, and I think there's definitely scope for that to go further, to be using those sort of bigger in… bigger sort of establishments to support your [unclear] member of the community.

Hmm. Hmm. Hmm.

But it is, for me, it's the redundancy of something that goes wrong then…

Yes. What happen to… yes.

Yes. So it's just not over-aligning…

Having the ability to share.

Yes. Back-ups to things, and that's… I suppose the issue to that is that all cost to keep all the back-ups and redundancy things in there for…

Hmm. So that's a negligence issue you could see with that sort of embedded power or community power.

Yes, yes. I think so.

Okay. (Laughs)

It's an interesting, fascinating project. Don't [unclear] thinking more than next summer so, like, ooh.

I know there's been a bit of a… I think there's been a thing…

The whole world ends next summer. (Laughs)

I mean, the two reasons why we've done 2050, I mean, well, firstly I guess because some of the people we're talking to won't want to talk about the current day, you know, sort of working in the current CT sector I think where there are confidentiality issues that they can't really talk about. You know? So it's useful to get them to think beyond that and also because a lot of these decisions about whether we're going to… how far we're going to get [unclear] nuclear power,

Hmm.

How far we're going to develop our high-speed network. They have to be taken decades in advance because it just takes so long to make changes.

Yes. That's it. Yes. You're saying that… the high-speed link, potentially going into Euston. That shocked me, the timescales of that one.

Hmm. It could be sort of 2030, '40…

Yes. It's going to be years before it's running. So why are we talking about it and worrying about it now? So…

Yes. And even by now, even by 20… well, by this hypothetical, now, 2050, we might not still have trains running from Scotland to…

No.

We could just still be developing that…

No. Yes.

[unclear] And by then, Scotland could be its own country. (Laughs)

Yes.

So just… I mean if we look, so your sort of preference for this kind of [unclear] might be something similar to this in terms of sort of resilience.

Yes. I think… I suppose it obviously has its risk but for me I'm quite interested with looking at how… I suppose, for me, it's looking back in history and looking at how London supported itself through the war and various other things that have happened and how communities kind of pulled together and this whole thing we're in now where they don't support each other and they're very reliant on things being bought into them and bigger technologies and things and so when something goes wrong, probably it's more of an issue than it probably would have been when the technology wasn't there and the reliance wasn't there and the community was more, so anything that goes back to a more localised feel with more local community supporting each other and making decisions, to me, seems like a good way to be going.

So, really more sort of social solutions, I suppose.

Yes, yes. And I've been quite interested in some of the stuff that the transition movements are doing at the moment. So we've got… Been talking to one of those locally about the stuff they're working on and they've been doing lots of stuff on fuel poverty and things, so…

Hmm.

It's quite interesting, sort of putting that on my normal thing that any… A lot of the incidents we have, if people were more supportive of each other and had more local solutions and weren't relying on technology, they probably wouldn't be as impacted.

Hmm. Hmm. Hmm.

And, you know, and like the little picture when they're on bikes but, you know, the tube goes down in London, it's like a disaster, isn't it?

No one knows what to…

Get your legs out. A map. And walk.

So the thing is like people buy an A to Z and, 7/7, you know, not knowing how to use them and stuff.

Yes. And I think people were shocked at 7/7 of they get on a tube normally and they pop up at that tube but actually, in reality, to walk, it probably didn't take that long. I know quite a lot of people who realised it wasn't actually that far to walk and they'll walk most days. It saves them a fortune, but…

Hmm. So people actually learn things from these events as well.

Yes, yes. I think, you know, we're all so reliant on technology and the fast… everything is so easy now.

Hmm. Hmm. Hmm.

That when it's taken away from you, it's probably worse.

Hmm. Hmm. So… So the Boris Bikes, would they be kind of…

I love Boris Bikes.

Yes. They would be a good example, I guess, of this sort of stuff.

Yes.

In some ways, a technical solution, but a pretty low-tech solution.

Very low-tech. Yes.

So they would be a useful kind of resilience.

Yes. They are.

I guess providing a kind of redundancy, I suppose, to…

I think they'll be… If, you know, if we had something like 7/7 again, I don't think there'd be a Boris Bike left on the stand, because everyone would be getting on one and off, so…

(Laughs) Yes. I mean, is there anything you could do to improve that or any other elements… Any other things? Kind of low-tech solutions that locally could improve resilience in this.

I think, you know, some of the things, say talking to the transition movement, that some of their sort of local-grown food and sort of community support groups and things that sort of takes away some of the emphasis of relying on bringing things into your community, I think that's good.

Hmm. Yes.

Obviously, yes, you know, most people want to be able to get the things they want when they're not in season and stuff like that, but anything like that, I think, having those to fall back on.

So allotments, even, I guess.

Yes. So that's a lot of the stuff the transition movement are doing and mending things and, you know, not relying on branding equipment and things like that is quite interesting. I don't know. I suppose my only challenge with me thinking, my lovely world, that that would be the great way. I can't see many people giving up their iPods and all the technology that exists now and going down to this road.

Hmm. Hmm.

Unless forced.

Yes. I mean, obviously big events can become a catalyst for change.

Yes, yes.

Or the cost of food, even.

Yes. So… Yes. I think, you know, people are so used to having things the way they are at the moment that it would take a big catalyst to push people down to perhaps more low-tech.

Hmm. Hmm. Yes.

And local supporting [unclear] that…

What about things like sort of more multi-generational family [unclear].

God.

(Laughs)

I was thinking about that from our own perspective. That means live-in [unclear] no thanks. (Laughs)

Although people live in… you know, because

Yes.

People tend to, well, the trend has been more towards people commuting further and further apart, people perhaps living further and further from their relatives and their family and friends. People are much more prepared to go and see family on the other side. What do they… They were… quite [unclear] can,

Yes.

But in this scenario, perhaps they couldn't. What might that mean? Would that…

I think, if you couldn't, I suppose, again, for resilience side, if you can't… if you don't have your family support network near you, then it does put more pressure on you needing support from someone else. So anything that brings the family and the support groups closer together,

Hmm.

Means you're probably less likely to need support from other agencies when something does happen.

Hmm.

So I suppose your flooding scenario or something like that, it's easy… it's quite nice for us as an organisation with our role to be able to say, "Can you go and stay with family and friends if you've got a problem in your area?"

Hmm.

And if they can get there, because it's local, that's fine. When it's miles away, that's not so good.

Hmm.

So… yes. I suppose any… bringing groups together. I suppose the only thing is if how close you bring them together at the moment, if you're living in the same house or the same street, then you're more likely… it does knock out your… the flip is it knocks out your support network if they're that close.

Hmm. Hmm. And they [unclear] affected. Yes.

You're all affected by… So, yes, it's a balance between us, really.

It depends on the event, I suppose, of how…

Yes. How it affects you. And does it affect your home? Or is it something…

I'm trying to think… you could probably go back to the blitz or something, to think about families who were living all in one house and…

Yes. That's what I'm thinking. That most of my family, back in that time, were all living together so if the house got bombed out, it was a bit of a problem. So were several generations.

Hmm.

But then [unclear] stay with aunties and uncles.

Hmm. Hmm.

But even they lives quite closely to each other, so anything that was sort of more of a widespread… I suppose a flooding scenario would affect a wider area.

Hmm. Hmm.

Would affect all of us. Severe weather, sort of thing. But it is quite interesting, I think, the sort of support network that your family and close friends give you, and if they're in Australia or miles away,

Hmm. Hmm.

It's quite having…

So in the same house it might be difficult, but maybe locally…

Yes. Locally.

Living more locally.

Yes.

Yes, yes. Okay. I mean, one of the reasons we sort of said that is because we had a… when we were sort of setting these things out, an economist sort of looked at these things and sort of said, yes, but you're… we're not having a global [unclear] trade, so where out pension funds are going to fall apart and how are we going to provide social care? And I said, well, how did we used to provide it?

Hmm.

We used to provide it because of relatives and… yes. Exactly. (Laughs)

[unclear] God. Let's hope this doesn't happen in 2050.

We'll have to sort out a social care to… Well, that's one of the problems at the moment, isn't it? How do we pay for the aging society? I guess that was one of the things that we looked at…

Yes. Yes, and I think that's…

Perhaps an extreme version but what we used to do, I guess…

I suppose other cultures still have that, to some extent.

Yes.

You know? If you look at the aging community, they tend to all live…

Yes.

Grandma tends to live in the house, as does… Anyway, you got married…

And when you've got bigger families, maybe you should be passed around…

You still tend to live… yes.

Passed around different, you know…

Yes.

A dozen different children. (Laughs)

[unclear] More children. No. It's an interesting one.

Okay. And you think XXXX, for example, as a kind of…

Hmm.

Would be quite well positioned to perhaps do this?

Parts of it.

Parts of it?

Yes. I think parts of it are already starting to sum… not probably as far down the line as your scenario has gone but are starting to think about some of those things and the small groups I suppose might, yes, going back to the point I made earlier. My key thing would be some of the communities now would take some major catalyst to push them into…

Yes. There would be a lot of resistance to…

Yes. People are used to being able to go into the local supermarket to get whatever they want; used to be able to getting on the train and jetting off wherever.

Hmm. Hmm. Hmm.

To give that up would be a…

Hmm.

A significant thing. And sort of, it is almost going back in history, that one, I think,

Hmm.

Going back to the way we used to live.

Yes, yes.

But I think there are, you know, there are small pockets already starting to look at that and starting to do some of that and people starting to live in those ways and…

Do you think different parts of London, for example, would be better positioned to sort of adopt this sort of… self-sufficient… almost a kind of self-sufficient sort of approach?

Yes. I suppose so. Yes. I suppose so. I suppose you've got to look at the sorts of people, the sorts of things that go on in different parts, and whether it would work.

Because that's one… I mean, this is one of the things we've looked at. I mean, you know, if your [unclear] local approach are… Different parts of the country or different parts of your city might have different resources,

Hmm.

And different abilities to kind of become more self-sufficient, perhaps, than…

Yes.

I don't know. I'm just throwing ideas…

I suppose… It's hard in your mind to sort of think that, you know, a lot of people come in and work in XXXX and commute out from miles away, including myself. So if you take those people out and say we're more… Well, they're all staying where they live and working… doing things locally, it would make it a very different place.

Hmm. Hmm. Hmm. I mean, I think there might be some level of in transport…

Yes.

Between different areas, but probably less, really.

Hmm.

Perhaps people might be working from home or… I don't know, exactly.

Yes. That's potentially the way we're going anyway. I think even… That's probably more of a high-tech solution than this, though,

Yes.

But one of the things that we're all looking at is we can't afford to build this anymore in these organisations, so, we're looking at a potential way of how thousands of our staff can work from home every day.

Hmm. Hmm.

So XXXXX Council staff, working from Hertfordshire and Essex and wherever.

Hmm. Because it gives people the choice of you work at home or you lose your job… (Laughs)

Well, yes. Yes. Some people, I suppose, would be quite happy to work [unclear] how much people [unclear]

Yes. I work [unclear] some time. (Laughs)

I was going to throw… It's a bit like the technology thing. I was going to throw my laptop out of the window when I worked from home because it wasn't instant. Failed me miserable.

Yes. I find it… yes. I live in a village in Derbyshire. People presume I've got the fastest internet connection but I really haven't, so it's quite hard to do them.

Yes.

So, okay. I mean how are we doing for time? Are we…

Yes. Fine.

If we can try and have a look at these two as well,

Yes.

So with this sort of iWorld scenario where sort of multinational companies govern the supranational sort of government agencies and institutions are kind of pushing through a sort of quite a top-down approach to tackling sort of energy and security in climate change. So we're… particularly across Europe, I mean, I guess there are already sort of some precursors to this. As I say, I know speaking to people in the energy industry that they're looking to kind of create more interconnectors between countries and create sort of European energy codes and things and stuff that I don't personally know a lot about but I know there seems to be some sort of movement, some sort of direction. You can kind of imagine, I suppose, in this scenario, that we might kind of upscale the national grid so that power is sort of managed across Europe. And there could be some advantages to that.

Mmhmm.

For example, you know, that if the wind's now blowing in the UK, if we're spending a lot of money on wind farms, then we need some reserve somewhere else, perhaps, in Europe, to kind of make up for that. So maybe the sun shining in Spain or, you know. And across the year as well, I guess, it's likely that there's going to be more kind of a wind resource than there is in the summer and maybe it makes sense to kind of upscale these things onto a kind of supranational level, particularly in terms of energy production. I guess… So, in this scenario, yes, we're kind of trying to kind of look outwards and kind of solve our sort of energy and transport problems. And it's got… I mean, this will cost a lot of money. I guess this is the key thing. And this is probably not, in some ways, far off the way that the national grid talks about things at the moment,

Hmm.

And that fuel costs are going to be sort of tripled and to pay for sort of infrastructure improvements. And obviously [unclear] issues for sort of fuel poverty, potentially.

Hmm.

I mean, the other thing is that so in this scenario we're perhaps looking at about demand-responsive kind of vehicles, you know, that you can kind of dial into your computer and a car will appear and perhaps take you to your… take you to a train exactly sort of on time, sort of thing. I don't know how (Laughs) but some people think that that could happen. So, and also with the sort of European super-smart groups, [unclear] describing that appliances could perhaps be turned off, then, to sort of balance the load or turned on to balance load when it's needed, and that could be quite useful in a… during a sort of critical episode, I guess.

Hmm.

I don't know if you want to just… And we haven't copyrighted (Laughs)

(Laughs)

Hmm. I suppose, as you were saying, the interesting one with this, most of my thoughts are from a people point of view, because that's where I'm sort of supporting people at the moment, so while it sounds nice to be able to have that sort of, in some respects, resilient approach, because we've got all these options across the whole of Europe – that the wind is blowing, the sun is shining and whatever's happening, it is that cost thing of can people actually afford to have it?

Hmm. Hmm.

I suppose the… on, you know, on the point I was making earlier about things don't work, I suppose with this one I suppose it does give you that lots of options.

Yes.

We are joining up the world and not just focusing on the UK, but we're not looking at a Europe model. I suppose there's still that… There is still that technology thing around, is the… is the resilience in there in terms of the technology, getting that energy into the country and making it work.

Hmm. Hmm.

And are those links as secure as they can be?

So they could become a target, I guess, for…

Yes. And I think, well, yes, a target or just knocked out. If we're sort of reliant on a limited number of bringing it in from Europe and the wind's not blowing in the UK so we are relying on Europe is that… is how easy is it to knock those things out?

Hmm. Hmm.

What idea of this smart grid? Turning things off.

Obviously that… Because that's quite a cultural…

There's a very good advocate, who used to work here – she used to spend her life going round turning everything off behind people and going mad at people.

(Laughs)

Not that… you know. We are sort of… I suppose we're sort of moving towards some of that already. You know? In the organisation just here, we've got technology. If your computer's not used for so long, then it… IT, switch it off.

The power's down. Yes.

Yes.

In fact, this… it's one of the things, like [unclear] smart [unclear] it could do that and you could kind of balance loads and instead of having to, you know, power up [unclear] power stations because everyone has a cup of tea at the end of a World Cup Final, maybe some people can't do that or something. (Laughs) I don't know.

Or I suppose kind of… the thing, I think, with that, is that if things are switching themselves off automatically, does it take the responsibility away from the people?

Hmm.

And if there's always an option somewhere near the sun shining, the wind's blowing or whatever it is that's happening, again, does that sort of take away that kind of message that we're getting at the moment to be…

To empower?

To be careful and be, you know, to, yes, think about [unclear] we're taking away that personal responsibility.

So the technology is almost responsibility for the technology.

Yes. I suppose the balance is there, if the cost is so high that you have to be careful, then that might push you, but for those people perhaps who can afford it then…

Yes. I mean, I guess one thing might be… Sort of one of the things I've thought sort of thought about is that, you know, you might… okay. You can run your tumble dryer now, but it tells you it's going to cost a certain amount of money.

Hmm.

Almost like booking a train, whereas if you run it in terms of, you know, if you run it a couple of hours later, then it will be 20% less or those sorts of things, I guess.

Hmm.

Which comes back to kind of smart metering, I guess, as well, doesn't it, really?

Yes. I suppose my challenge with my thinking about all of these things is that I don't believe… I don't believe technology is that [unclear]…

Technology can… [unclear] (Laughs)

I don't do that. I'm so used to picking up the pieces when everything's gone wrong and no one's got any power or water or a gas and trains aren't running and the train company have just decided to close the station and send them that way. It's like, oh, yes.

So the more… I guess, then… I mean, does it pose more of a problem the more complex it gets? The more…

Yes. I think the more complex it gets, the more people rely on these things. I suppose it might… as long as… My challenge will always be as long as the organisations that are providing the backup plans and arrangements for what to do when it doesn't go to plan, because as a council I think we are picking up the pieces when these companies, you know, that [unclear] is a good example.

Mmhmm.

You know? They wanted, the last three years? We've had a winter disruption. No. They're not running. And they wanted to close the stations several times and give us thousands of people who are stuck here, can the council look after them? And it's like, well, they're your customers.

Hmm.

They don't live in Camden; they've not paid in any council tax in Camden; they pay to go on your train.

And so they wanted you to kind of put them into temporary housing or…

Yes. [unclear] us to temporarily accommodate them until they could get a train.

Sports halls or something.

So I suppose the more of these things we rely on, the more we are going, you know, across the world and travelling about more. The [unclear] scenarios and things like that, the more it puts that… Someone's got to have that backup plan of what happens when these things fail or fall over because of a flood terrace town or whatever. The unexpected. I suppose the ash cloud was a good example of that.

Hmm. Hmm.

But, you know, that's when people just don't… people don't expect them to fall over and therefore haven't got a backup plan themselves and then the organisations who run these two generally don't either and rely on someone else, so…

Hmm. Certainly more potential I guess to kind of pass the buck so people become distanced from the…

Yes, yes. Unless, of course, that's all built in as we're moving that way – recognising the trends, but now moving, as we go more high-tech and more reliant on these things and more well-travelled and stuff, it's building in that expectation that there is a backup plan if it goes wrong.

Hmm. But I guess the issue then is finding that kind of local, like you were talking about, where do people go when their trains aren't running?

Hmm. Yes.

How do Eurostar, who've got their offices… I'm not sure exactly where Eurostar's offices are but probably…

Yes.

The people making those sort of decisions are probably quite a long way away.

No. Exactly.

And they're not thinking about those sorts of things, perhaps, or…

No. But they should be. (Laughs)

They should be.

Well, they're taking their money. So…

But when you've got these organisations that are kind of multinational companies or, you know, they're sort of insulated some way, you know, perhaps until the media get hold of it.

Yes. I think… And they've sort of lived in this… it won't happen to us. You know? It's happened three years in a row.

Hmm.

It won't happen again so the, you know, for us, we've been saying get hotels on standby; get coaches on standby. You know? Get enough weather warnings [unclear] it's coming.

Hmm. Hmm. Hmm. So people aren't taking the…

But they're not just… it seems every year we have the same problem.

Hmm. Hmm. And you can imagine that getting worse if…

Yes. I think so.

The more trains, sort of…

Yes. The more we rely on these things and travel around the world, then when you do get the bigger impact I think it has when you do get some of these things happen.

I mean, I guess it's very difficult, thinking about weather warnings,

Hmm.

They might say, well, it's quite difficult to… When people are travelling from the other side of Europe or, you know, how you do that.

Well, I don't know. Technology is there. (Laughs)

We should have an app for it or something.

Well, that's it. If the technology is going to improve, there are already enough apps to get you weather warnings for god knows wherever you want.

Yes. It's someone taking responsibility.

Now, it is that responsibility thing. It's… if it… you know, it makes life very easy in some respects, but in other things you'd be [unclear] you can travel around the world easily. If you can… if your appliance switches off if it tells you when it's cheaper to run it and all those sorts of things. It makes life easy, which is great at the best of times. It's when it goes wrong, that reliance and that responsibility for this is my problem to solve. It's who picks up the pieces for me is the challenge with these ones.

Okay.

I quite like this little community looking after each other. I like it. Like the people knocking on doors, looking out. Global community doesn't sound like people knocking on each other's doors saying, "Are you okay?"

No.

It sounds like I'll get my app out and check whether the people in my street are okay.

Hmm. Yes. Okay. I mean, is there anything else you wanted to add about…

I don't think so.

No? [unclear] I mean, in this scenario, I guess, we're sort of thinking of lower-tech solutions, really.

Hmm.

So we're still… people are still kind of out, generally, wanting to travel quite a lot and outwardly looking, but they're perhaps more prepared to sort of travel more slowly, perhaps.

Right.

We're sort of taking social solutions as well, so banning [unclear] cars from city centres may be one sort of example of that. In some ways this is more probably, kind of, you know, we're thinking about kind of today's technology. The technology hasn't moved on a lot but, in some ways, but we're still wanting to travel quite a lot. I guess you'd have, I don't know, I find this kind of perhaps one of the more sort of challenging scenarios to think about, really.

Hmm.

Probably because globalisation has gone on hand-in-hand with sort of higher technology.

Yes. Yes. It's an interesting one. If we're expecting more sort of world travel and more…

But you can imagine…

But on a slower…

Yes. People might be tele-working more. People might be more prepared to get sort of slower trains rather than fly. I mean, one of the elephants in the room is where does aviation go? Because there isn't a sustainable… There isn't a replacement for jet fuel. And we will run out of jet fuel. (Laughs)

I'd better get my holiday in quick.

(Laughs)

Well, I don't know. I suppose perhaps the little window in to some of the stuff down here about not using the planes in teleconferences was some of the stuff that came out of the ash cloud and how some of the businesses have already,

Hmm.

Had a think about still… I still want to be dealing with those countries, but do I want to be sending people over there for a meeting or can we do it on that way?

Hmm. Hmm.

So, yes. I'm just trying to think. I like lower technology.

(Laughs)

I'm not a technology fan. I just think it causes more problems in some respects. She says, who has all the technology, with hundreds and hundreds of bits of kit.

I guess the more you use it, the more you realise how it is dependent on that (Laughs)

Yes. You know, after 7/7 nothing worked, so I ended up with runners to talk to people.

Right.

Because the radio didn't work; the phones didn't work. You know? People… it was easier just sending someone in the van or walking up the street to pass notes on post-it notes, so I keep saying we're going to get pigeons next. Train a troop of pigeons.

I guess that was one of the big things, wasn't it? Mobile phone networking.

Yes.

So, you know…

It's a bit of an eye-opener as to how reliant people are, because that's people's biggest thing of the day. [unclear] I couldn't talk to anyone.

One of the things, I suppose, in these scenarios, in these two, this idea of kind of sharing knowledge.

Mmhmm.

I mean, is that useful… How useful can that be? Sort of… I mean, if we're sort of in terms of kind of learning from other events,

Definitely very useful. I think we do the same things too many times. And we don't learn from each other's experiences.

Hmm.

And I think actually, in some respects, although I've been saying [unclear] local community, it's great. Anything on a global scale in terms of sharing information and learning from other people's issues I think is good.

Hmm.

I think we don't do enough. I think we… I suppose the challenge is how we learn as well. We do a lot of listening to what's gone on, but not necessarily putting that on our own overlay and saying how it will happen or how that might impact here and what we can do to limit that, so anything that involves sharing of knowledge and learning from each other's experiences is good as far as I'm concerned.

And that, obviously… I guess that becomes harder in these scenarios, just because people are travelling less.

Hmm.

People are sort of more inward-looking but also maybe because the sorts of systems are quite different.

Yes.

Hmm.

And as well, you are taking that plus that we have got with technology at the moment, and, you know, the far extreme where you were, I think the moment where we are with anything, it's so easy to find out something about what's gone on elsewhere in the world and probably will only get better with apps and, you know, I've got… found an app the other day on the iPod that's sort of a disaster alert, and it tells you if there's anything going on in the world. It's like 22 minutes ago, there was a tsunami… it's weird, but…

Hmm. Hmm.

It is… that's a positive, I think.

And that's something you'd like to see more of, by…

Yes.

You'd imagine to see more of by…

Social [unclear] is an interesting one – this one as well. And that's one that's been bubbling away a little bit recently.

Hmm. Well, I think, yes, I mean, I guess sort of thinking about in a lot of these scenarios, we're thinking that the sort of effects of climate change might be more… certainly energy and security might be involved. The cost of energy would likely be higher. And that, I guess, has implications for…

Hmm. Yes.

Sort of eco-terrorism and…

Yes. Massive implications, I suppose. All of those things. Any… Any social… from my, again, from my perspective back in the local authority is going to have a big impact and anything that's, you know, I suppose all of these things, looking at you're, saying that energy is going up and other security measures and things is also almost dividing the population as well between those who are rich and can afford and those who are poor and that's one of the things that's very clear in Camden at the moment. I think for London we've got the biggest divide, I think, between our lowest earners and our highest earners. And so that, to get even more exacerbated by any of these [unclear] I suppose is quite interesting because that group at the lower end that need more support from us.

Hmm. Hmm.

Which is, again, I suppose, interesting, because this one I was saying, we're back on the localism stuff, if you're moving away from having the sort of local authority in those sorts of support networks that the localism bill seems to be pushing to then, actually, what happens? It does rely on people taking responsibility for their lower income poorer members of society and supporting each other.

Hmm. Hmm. Hmm. Yes. Whereas this, you can [unclear] to go perhaps a bit more.

Yes. It's all about responsibility. I think [unclear] responsibility. Hmm.

Hmm.

Interesting. I'm not sure if anything I've said is any use for you, but it's very interesting.

No, no. It's been useful. I mean it's useful because you're the only person we've spoken to who has the kind of local perspective.

Right. Right.

I mean, we've got another work stream running sort of later on, sort of [unclear] to engage local authorities et cetera.

Right. Okay.

But I thought it would be really useful at this stage as well to have that.

Yes.

Most people have adopted a sort of, you know, quite a top-down… inherently are coming from quite a top-down perspective, because that's the nature of their work, perhaps.

Yes.

Although perhaps they can talk about local examples.

Hmm. I'm not sure where I…

Okay. Okay. Is there anything else you want to add about just generally…

I don't think so.

For this one or… things that… things that could be kind of issues, issues for you in 2050? I mean, I know it's quite difficult.

I think I'll be retired. (Laughs)

Your organisation [unclear]

Yes.

Assuming that local authorities take this and…

Yes. That's the challenge. I suppose, really, it's just that… That thing of looking at [unclear] the vulnerable people and anything that goes down this more community focus and going back to the good old days of the war and sort of where people look out for each other takes away some of the responsibility and the ownership of the council to step in and be a big brother almost looking out for people.

Hmm.

But anything on this high thing, I think, and I suppose for some… it's quite interesting to look at whether the local authority role will change, but it's still having someone there that, actually, when it doesn't quite all go to plan.

Hmm. Hmm. Hmm.

And to, you know, particularly more reliant people come on… become on technology and other things.

Hmm.

And don't make… have the responsibility for making certain decisions themselves about how things work, maybe.

Yes. Or they don't feel they have the power to fit something that they're not allowed to fix or something.

Then I think… No, that's it. And I think that's when you… When something does go catastrophically wrong, whatever causes it, it's almost that more… I think the impact is probably worse than, perhaps, where people have more responsibility and are involved in it because it's that shock and then it's, well, what do we do? And what options have we got?

Hmm. Hmm.

And probably the farther up that way you go, I think people have less and everything's taken care of.

Hmm. Hmm. So you [unclear] bigger agencies to cope with that.

Yes. And I think, you know, the thing is, from our perspective, is most of the scenarios… a lot of the things that could happen are quite predictable but when you think about the ash cloud and probably if you'd said to someone before 9/11 that two planes would be, you know, flown into the towers, probably everyone would say, "Don't be silly."

Hmm.

So I think it is just building in that, what do you do when the really unexpected that people haven't had the foresight to think about or look at

Yes. And it's like, you know, twice now.

Hmm.

So it's those sorts of things that people just don't see. I think, you know, there's lots of stuff people are saying about people expect the unexpected and you should be thinking about those things, but I don't think anyone would have said the ash cloud example, previously.

No, no. No. It seems a world away, doesn't it?

Yes.

Everyone [unclear] Iceland.

Yes. So it's really, I think, about having… What is the… Who are the sort of people who come in and help when those things happen that you don't expect that are quite…

Hmm.

Have quite a dramatic impact on people's lives.

Hmm. Hmm. Okay. Okay. And in terms of the approach, are you happy with… There's nothing you… Any comments on what we're doing?

No. It seems very interesting. It's just a bit weird of trying to get your head into that space.

Yes. I mean it's a long… the future, really. I mean, I guess we're just sort of collecting people's opinions about these things, really. Ideas about these things. I mean, we're running some workshops where this is going to be… the results of this, as we go along, the results of this will be disseminated to various stakeholders. I've got your contact details. I can let you know about [unclear] they'll be at London.

Okay. (Laughs)

Possibly not the [unclear] the final one. I mean, obviously we're going to end up with, like I said to you, these sorts of [unclear] I'm not quite sure how the models are going to be sort of disseminated.

Yes. I think that would be the interesting thing – it's how you get people to get their head in the right space of thinking they're in that space and moving away from resourcing back to now.

People come back to [unclear]

Yes. But I think, you know, the projects [unclear] very good with almost the sound effects of… and the way they spell it out to you, it does get you kind of to think up here.

Hmm.

Still, it is still in the here and now, but you do some [unclear] okay. That's where I am and that's what's going on around me, so…

Hmm. Hmm.

It's finding a way to get people into that…

Yes. Yes.

To then…

Yes. I mean, the different options we could take. Some people [unclear] so produce like cartoons and things that you could download, like a day in the life of someone in 2050.

Right. Right.

Which is another way, I suppose, you could illustrate the scenarios, but…

Yes.

We're trying to… We want to make it as interactive as we can. I think initially the models are probably going to be quite static, like that sort of thing.

Hmm. Yes.

This is how things might look. You know? Those sorts of things.

Right.

But, ultimately, we'd like to create something which is quite, sort of, interactive whether people can almost kind of, right, okay – I'm in this scenario. What would happen if I did this?

Yes.

How would that change things? You know? This is how I'd react now I'm in this scenario and I've kind of forgotten I'm in this scenario, and I've reacted how I normally would, but it's caused all these problems,

Right.

You know? Those sorts of things, I guess.

Yes. That's interesting.

Yes. It is challenging, because obviously 40 years' time, quite a lot of people we're interviewing probably won't be in their current roles. (Laughs)

No. I'm having enough problems getting people to think about next summer, so…

Hmm.

There's the challenge. Trying to get people to put their head into… We're in the middle of the Olympics. That's not running. That's not happening like that.

Hmm. I guess it's going to be a huge…

Yes. We did an exercise last week with some people and just they resorted back to that was a building site. And I went, well, it won't be a building site next year; by next year it will

be a major development with lots of thousands of people coming and watching TV screens.

Hmm.

Ah. Yes. So you're trying to get people in that…

Yes. Thinking of… Yes.

Yes. Time [unclear] out is very challenging.

Yes.

It's interesting.

We've had a bid in Loughborough because they've got the Olympic team [unclear]

Yes.

the games, really.

Yes.

It's been quite interesting to see how that… Mind you, a lot of people [unclear] goes on behind the scenes, I don't think they… (Laughs)

No. It is very interesting, I think. Getting closer and closer now – it's a bit scary. But I think for me the interesting thing is going to be how the transport network's going to…

[unclear] avoid St. Pancras.

Well, yes. And, you know, I go to all these meetings and they tell me that to make it work they're going to need, you know, 30% of normal London capacity to not be coming in every day and I'm like, look, have you been publically saying that? Well, I've done a little bit of public… Well, you need to do a lot more because people are expecting to carry on working and… yes. But, you know, they're going to have to divert trains to getting people to the Olympic Games and back and things, and businesses are going to have to take the impact and the hit, but I don't think a lot of them have realised…

Hmm. Have people done that when they talked about how much the Olympics would generate in terms of the knock-on effects? (Laughs)

Yes, yes. And, you know, the road network. You know? People are looking at the map thinking, well, I'm based up here so that's fine. Well, they're not realising that to get across that road, it's going to be an absolute nightmare and they're probably going to be queuing, traffic through there… where they are. So there's still going to be a knock-on up

here even though they're not thinking about it. So it will be quite interesting. I'm sort of intrigued to see how it all pans out, really.

(Laughs) Hmm. I guess that's it, isn't it?

Yes.

No one really knows until the…

No.

Until it happens.

Yes. Part of me hopes it's a bit of a flu pandemic and Y2K sort of washout of over-panicking, but I suspect not.

Hmm. Hmm. Yes.

We say two weeks – we can cut it.

Yes. I guess that's it, isn't it? Yes. (Laughs)

I'm sure the media will make anything they can out of any kind of delay.

Yes. Well, that's it. That's the thing for Camden. It's been quite interesting. We've got the world's media based in Camden for the Olympics.

Right. Yes.

So they're all staying in the Russell Square, Bloomsbury sort of area.

Hmm. Hmm.

So anything that goes wrong in Camden, that's the under spot. That's like, oh, great. (Laughs) So, yes. Not 20,000 of them. That was all I need. Something happening around the corner. They'll all be out there in their 'jamas watching and reporting back, so, yes. It will be interesting.

Mind you, sometimes, I mean like at Atlanta, everyone went on about Atlanta saying how bad, you know, it all went, and then afterwards people sort of said, oh, it was really good. The legacy was really good.

Oh right? Oh. I've only heard bad things about it.

Because they used the stadium and it really… it was quite cheap compared to some of them,

Right.

Whereas if you look at, like, I don't know, even Sydney and Athens, they built the Olympic park so far out, it's just kind of a rustic holt now.

Well, yes.

It's just sometimes over time people look back on these things differently and, you know…

Yes. All I've seen are the pictures of people queuing for… they're trying to all get on the little one train and then the sort of queue goes off into the distance. (Laughs) Waiting to get on this train. It's like, oh, god. I just had visions of St. Pancras looking like that.

Yes. It could be interesting, really, to see how that… I suppose it's just getting people to realise it's going to be difficult and don't… Try and think of options and don't travel in or…

Well, yes. I think they've sort of promoted the javelins as a way to get to the park, but it can only take about a quarter of the capacity it needs… people going to the park. So, and your train tickets, it's including your Olympic ticket, and your travels, so lots of people will be trying. My fear is I think it was Toronto, the Winter Olympics, apparently there were reports of people queuing for up to 9 hours to go on a zip line because it was an Olympic experience that lasted 30 seconds.

Oh dear.

And I'm like, well, if people really want to go on the javelin, they're going to queue. And they're like people… We won't let them queue more than half an hour.

Should we call it the javelin? (Laughs)

It's a train. It's a boring train. It's no different from any other train.

Well, can't they… People can walk, can't they?

Exactly.

It doesn't take 9 hours to walk from St. Pancras to…

No. So, they've got other routes, but…

Yes.

It's a bit

I guess it's all communication, isn't it?

That's the thing. It's Boris. (Laughs) The javelin is the only way to get there. Ooh! It's not! There are other ways. Please don't. So…

Appendix5.7: Full list of nodes and number of times coded

A : BARRIERS FOR RESILIENCE	B : AGENDAS	C : AUTHORITY	D : BUILDING LIMITATIONS	E : DIFFERENCES
0	1	0	0	2
1	1	0	0	0
15	13	9	1	7
10	7	4	0	3
3	2	2	0	0
22	12	4	0	8
0	0	0	3	0
0	0	0	0	0
2	1	0	0	0
1	1	0	0	0
0	1	0	0	0
0	0	0	0	0
2	2	1	0	0
2	0	0	0	0
0	1	0	1	0
8	3	8	0	6
0	0	0	0	0
0	0	0	1	0
1	2	1	0	3
1	0	0	1	2
9	6	1	3	5
0	0	0	0	0

F : FRAGMENTED	G : INCONSISTENCY	H : PIECEMEAL APPROACHES	I : SILO MENTALITY	J : SUBJECTIVE MEANING	K : BUILT ENVIRONMENT
0	0	0	0	0	0
0	1	0	0	0	0
4	0	1	2	0	2
0	2	2	0	3	0
1	0	0	1	0	0
6	6	5	3	2	11
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	1	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	1	1	0	0
0	0	0	0	0	0
1	0	1	0	1	0
10	12	10	2	0	0
0	1	0	0	0	0
0	0	0	0	0	7
2	6	0	0	0	0
1	2	0	0	0	3
0	0	0	1	0	2
0	0	0	0	0	0

L : SUSTAINABILITY	M : URBAN REDEVELOPMENT	N : COMMUNICATION	O : CONFUSION	P : CO-ORDINATION
0	0	5	0	5
0	0	4	2	2
2	1	10	1	3
0	0	7	2	4
0	0	2	0	0
4	6	17	4	6
0	0	3	0	0
0	0	1	0	1
0	0	1	0	1
0	0	2	0	2
0	0	1	0	0
0	0	4	1	4
0	0	1	1	2
0	0	0	0	0
1	0	4	1	4
0	0	13	8	15
0	0	3	0	3
1	0	4	0	1
0	0	6	4	2
0	2	4	4	4
0	0	12	0	11
0	0	0	0	0

Q : DISSEMINATION	R : INDIVIDUAL NETWORKING	S : INTERPRETATION OF INFORMATION	T : CASCADE IMPACT
0	0	0	0
0	0	1	4
0	2	3	0
0	2	4	0
0	1	1	0
0	0	6	0
0	0	0	0
0	0	0	0
0	1	0	0
0	2	0	0
0	0	0	0
0	3	4	4
0	0	1	1
0	0	0	0
0	0	0	0
0	2	0	0
0	1	0	0
0	0	0	1
0	0	0	0
0	0	0	0
5	0	13	2
0	0	0	0

U : JARGON	V : KNOWLEDGE TRANSFER	W : LOCAL KNOWLEDGE	X : SENSITIVE INFORMATION
0	0	0	2
0	5	0	0
0	2	0	1
0	0	0	0
0	0	0	0
0	8	8	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	4	2	1
0	1	0	1
0	0	0	0
0	0	2	0
0	1	2	0
0	0	0	0
0	0	0	0
0	1	0	0
1	1	0	0
2	11	8	1
0	0	0	0

Y : JOINED UP THINKING	Z : CRIME	AA : COOPER THEFTS	AB : CRIME CONTINUUM
1	0	0	5
1	0	0	0
1	13	0	6
0	3	0	0
0	1	0	1
12	12	0	2
1	0	1	0
1	0	0	0
0	1	0	0
0	0	0	0
0	0	0	1
2	6	0	3
0	4	0	1
0	0	0	0
0	0	0	0
4	2	0	0
0	0	0	0
2	0	0	2
1	0	0	0
2	0	0	0
7	7	0	0
0	0	0	0

AC : CRIME PREVENTION STRATEGIES	AD : CPTED	AE : PACT MEETINGS	AF : SECURE STATION
6	0	0	1
3	0	1	0
11	3	0	2
4	0	0	1
0	0	0	0
11	9	0	0
0	0	0	0
0	0	0	0
1	1	0	0
0	0	0	0
0	0	0	0
5	0	1	0
2	0	0	0
0	0	0	0
2	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	1
1	0	0	0
6	0	2	1
0	0	0	0

AG : CRIME RATES	AH : CRIMES IN THE STATION	AI : CRIMINALS	AJ : DUALITY CP & CTMS
3	9	3	4
1	2	0	0
5	8	5	5
0	2	0	0
0	0	0	0
1	2	0	5
0	3	0	0
0	0	0	0
0	1	1	0
0	0	0	0
0	1	0	0
0	0	0	4
0	5	2	0
0	0	0	0
0	0	3	4
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	4	2	2
0	0	0	0

AK : PUBLIC DISORDER	AL : SECURE BY DESIGN	AM : DESIGN STAGE	AN : ASSESSMENT
0	0	1	0
0	0	0	0
0	2	8	1
0	0	8	0
0	0	4	0
0	0	31	16
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
1	0	0	0

0	0	1	0
1	0	4	2
1	0	2	0
0	0	0	0
0	0	3	0
0	0	0	0
1	0	1	0
1	2	4	0
0	0	0	0

AO : BENCHMARKING	AP : BUILDING STANDARDS	AQ : DEVELOPERS	AR : EARLY INVOLVEMENT
0	0	0	0
0	0	0	0
0	2	2	4
0	2	6	7
0	1	2	1
0	9	16	11
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	1
0	0	0	0
0	0	0	1
1	1	2	1
0	0	2	2
0	0	0	0
0	6	0	0
0	0	0	0
0	0	0	0
1	1	1	0
0	0	0	0

AS : HISTORIC BUILDING	AT : PROJECT BY PROJECT	AU : RETROFITS
0	0	1
0	0	0
0	6	0
0	0	4
0	4	1
2	9	3
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	1
0	0	0
0	0	0
0	0	1
2	0	3
0	0	0
0	0	3
0	0	0
2	0	2
2	3	2
0	0	0

AV : EMERGENCY SITUATION	AW : DISASTER	AX : EMERGENCY COMPLEXITIES
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1	1	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
2	2	1
0	0	0
0	0	0
0	0	0
8	7	6
1	0	0
0	0	0
4	0	5
2	0	3
8	3	4
0	0	0

AY : EVACUATION OF STATION	AZ : EMERGENCY PLANNERS	BA : EMERGENCY PLANS
2	0	0
0	0	3
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	1	1
0	2	1
0	0	0
0	0	0
0	0	0
1	21	18
1	4	1
0	2	0
1	1	9
0	2	4
1	7	6
0	0	0

BB : EMERGENCY SERVICES	BC : FINANCIAL IMPLICATIONS	BD : COSTS	BE : FUNDING
0	0	0	1
0	0	0	0
0	8	2	7
0	5	4	2
0	1	1	0
0	12	10	0
0	0	0	0
0	0	0	0
0	1	1	0
0	0	0	0
0	0	0	0
1	2	2	1
0	0	0	0
0	0	0	0
0	0	2	0
1	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
2	1	1	0
3	1	1	0
0	0	0	0

BF : INCOME	BG : INVESTMENT	BH : RAILWAY COSTS	BI : FUTURES	BJ : FUTURE FUEL
0	0	0	0	0
0	0	0	0	0
0	4	1	8	0
0	4	0	2	0
0	0	0	2	0
0	1	0	18	0
0	0	2	0	5
0	0	0	3	3
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	1	0	4	0
0	0	0	0	0
0	0	0	0	0
0	0	0	2	0
0	0	0	2	0
0	0	0	0	0
0	0	0	0	3
0	0	0	0	0
1	5	0	3	0
1	0	0	10	0
0	0	0	0	0

BK : FUTURE INVESTMENT	BL : FUTURE RAIL	BM : HIGH SPEED RAIL 2	BN : FUTURE RESILIENCE
0	0	0	0
0	1	0	1
1	4	0	5
1	2	0	1
0	2	0	2
1	2	0	18
2	9	0	0
0	4	0	0
0	0	0	0
1	1	0	0
0	0	0	0
1	2	0	1
0	0	0	0
0	0	0	0
1	1	0	0
1	3	1	5
0	0	0	0
2	0	0	0
0	0	0	0
2	3	1	3
0	9	0	12
0	0	0	0

BO : INSTITUTIONAL CHANGES	BP : FUTURE TECHNOLOGY	BQ : FUTURE THREATS (2)
0	0	2
0	0	0
2	0	3
1	1	1
0	0	1
4	0	10
0	7	0
0	4	0
0	0	0
0	0	0
0	0	0
0	0	2
0	0	0
0	0	0
0	1	2
1	1	0
0	0	0
0	1	10
0	0	0
1	0	2
6	3	6
0	0	0

BR : FUTURES FIVE YEARS	BS : FUTURES POLICY	BT : INFRASTRUCTURE
2	3	0
0	1	0
0	1	2
0	3	0
0	0	0
5	7	1
0	5	0
0	1	0
0	0	0
0	0	0
0	2	0
0	0	0
0	0	0
0	0	0
0	1	0
2	3	1
0	0	0
0	5	0
0	0	0
0	1	2
2	3	1
0	0	0

BU : CRITICAL NATIONAL INFRASTRUCTURE	BV : ELECTRICITY
1	0
0	0
0	0
0	0
0	0
1	0
0	5
0	2
0	0
0	0
0	0
0	0
0	0
0	0
0	0
1	0
0	0
3	0
0	0
0	0
0	0
0	0

BW : LOCAL CRITICAL INFRASTRUCTURE	BX : RAILWAY SYSTEM	BY : HIGH SPEED RAIL
0	0	0
0	0	0
1	1	0
0	0	0
0	0	0
0	0	0
0	0	2
0	0	2
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1	0	0
0	0	0
1	0	0
0	0	0
0	0	0
0	1	0
0	0	0

BZ : OPERATIONAL COMPLEXITIES	CA : EUROPEAN BORDERS	CB : GOOD PRACTICE
3	0	0
3	0	1
9	0	5
2	0	2
0	0	0
7	0	5
5	2	0
0	0	0
0	0	0
0	0	0
1	0	0
0	0	0
5	0	2
0	0	0
0	0	0
14	0	1
1	0	0
0	0	0
4	0	0
2	0	1
13	1	5
0	0	0

CC : INTERDEPENDENCIES	CD : CONTRACTUAL RELATIONSHIP	CE : MULTI AGENCY WORKING
0	0	0
0	0	1
5	0	2
1	0	1
0	0	0
6	1	5
0	0	0
5	0	0
0	0	0
0	0	0
0	0	1
0	0	0
1	0	0
0	0	0
0	0	0
7	0	10
0	0	0
2	0	0
2	0	1
2	1	1
9	6	8
0	0	0

CF : OLYMPICS	CG : OPERATIONAL SECURITY	CH : RESPONSIBILITY	CI : RISK
0	0	2	7
0	5	5	1
4	0	1	0
1	5	5	3
0	0	0	0
2	4	5	8
0	0	0	5
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
8	0	0	0
0	0	0	0
0	0	0	2
6	7	7	7
0	0	0	0
0	0	0	3
0	0	4	1
1	4	1	1
0	12	11	8
0	0	0	0

CJ : MITIGATION	CK : VULNERABILITY	CL : POLICY & GUIDANCE
0	2	0
0	0	0
0	0	12
2	1	7
0	0	2
2	5	10
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	5
0	0	1
0	0	0
0	1	0
0	5	3
0	0	0
2	4	0
0	2	0
0	2	0
2	6	14
0	0	0

CM : 2 PARALLEL LEGISLATIVE SECURITY PROCESSES	CN : CCA 2004
1	0
0	0
0	0
2	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
1	0
0	0
0	0
0	6
0	0
0	0
0	0
0	1
0	4
0	0

CO : GOLD SILVER BRONZE COMMAND	CP : CONTEST	CQ : CRIME AND DISORDER ACT
0	0	0
0	0	0
0	1	0
0	0	1
0	0	0
0	0	1
0	1	0
0	0	0
0	0	0
0	0	0
0	1	0
0	0	0
0	0	0
0	0	0
0	1	0
2	3	0
0	0	0
0	0	1
0	0	0
1	0	0
2	1	1
0	0	0

CR : DFT SECURITY LEGISLATION	CS : EU POLICY	CT : FLOOD & WATER MANAGEMENT ACT
10	0	0
1	0	0
4	0	0
0	0	0
0	0	0
1	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1	0	0
0	0	0
0	0	0
0	0	0
0	0	1
0	0	0
0	1	0
0	0	0
0	1	0
10	2	0
0	0	0

CU : HEALTH AND SAFETY AT WORK ETC ACT 1974	CV : HIERARCHY OF POLICIES
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	2
0	0

CW : HISTORICAL LOCK INS	CX : HOME OFFICE POLICING LEGISLATION	CY : LEGAL OBLIGATION
0	6	0
0	0	3
1	1	1
3	2	3
0	0	0
0	1	3
9	0	0
1	0	0
0	0	0
0	0	0
0	0	0
0	1	2
0	1	0
0	0	0
0	0	0
2	0	1
0	0	0
0	0	0
0	0	2
2	0	0
1	0	7
0	0	0

CZ : HEALTH AND SAFETY	DA : LIABILITY	DB : LITIGATION	DC : PUBLIC SAFETY
1	0	0	0
0	3	0	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	1	1	0
0	0	0	0
0	0	0	0
0	0	0	0
2	0	1	3
0	0	0	2
0	0	0	2
0	0	0	0

DD : LOCAL DEVELOPMENT FRAMEWORKS	DE : NATIONAL INFRASTRUCTURE PLAN 2010
0	0
0	0
1	0
1	0
0	0
1	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
1	0
1	0
0	0
0	0
0	0
0	0
0	0
0	0

DF : NATIONAL RISK REGISTER	DG : NON-STATUTORY GUIDANCE DOCUMENTS	DH : NRSP
0	1	0
0	2	0
2	5	3
0	6	0
0	2	0
0	8	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	1	2
0	0	0
0	0	0
0	2	0
1	3	0
0	0	0
1	2	0
0	3	0
0	0	0
2	4	7
0	0	0

DI : PLANNING	DJ : POLICY DISCONNECTS	DK : POLICY RAILWAY	DL : PRIVATISATION
0	0	0	1
0	0	0	0
2	0	2	0
0	0	1	0
0	0	0	0
0	0	2	0
0	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	1
0	0	12	0
0	0	0	0

DM : REGULATION	DN : SIDOS	DO : TERRORIST ACT	DP : RAILWAY STATION	DQ : EUSTON
0	0	2	0	0
2	0	0	0	0
4	2	1	12	1
6	0	0	11	0
1	1	0	1	0
3	0	0	13	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	5	0
0	0	0	4	0
0	0	0	0	0
0	0	0	0	0
1	0	0	8	7
0	0	0	0	1
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
10	2	0	16	0
0	0	0	0	0

DR : KINGSCROSS	DS : ST PANCRAS	DT : ST PANCRAS HOTEL	DU : CROWDED PLACES
1	0	0	1
0	4	0	0
1	3	0	0
0	0	0	0
1	0	0	0
1	2	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	2	0	0
0	0	0	0
0	1	1	0
0	5	0	1
0	0	0	0
0	0	0	0
11	16	3	0
1	1	0	0
0	0	0	6
0	5	0	0
2	5	1	0
1	4	0	1
0	0	0	0

DV : LANDOWNERSHIP	DW : PASSENGERS TRAVEL PEAKS	DX : PLACE
1	3	0
0	0	0
1	0	0
0	0	1
0	0	0
1	0	7
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1	0	1
0	1	5
0	0	0

DY : RAILWAY STATION FUNCTION	DZ : BRANDING	EA : CAPACITY	EB : DESTINATION
0	0	0	0
0	1	0	0
1	0	0	0
0	0	0	0
0	0	0	0
5	0	0	0
0	0	4	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	1
0	0	0	0
0	0	0	0
1	0	0	0
0	3	0	1
9	1	1	2
0	0	0	0

EC : INTERNATIONAL TRAVEL HUB	ED : MASS TRANSIT SYSTEM	EE : MULTIMODAL TRANSPORT
0	2	0
0	0	0
0	0	0
0	0	0
0	0	0
0	1	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1	0	1
0	0	0
0	0	0
0	0	0
1	0	0
0	0	0
0	0	0

EF : RAILWAY STATION CATEGORY	EG : TRANSPORT HUBS	EH : RAILWAY STATION NATURE
2	0	5
1	0	0
0	0	1
0	0	1
0	0	0
0	0	0
0	2	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	1
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	2	0
1	2	8
0	0	0

EI : STATION OWNERSHIP	EJ : STATION STAFF	EK : ADEQUATE STAFF TRAINING	EL : TRAINS
1	1	0	1
0	3	0	0
2	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	2
0	0	0	0
0	0	0	0
0	1	0	0
1	0	0	0
0	2	1	1
0	0	0	0
0	0	0	0
0	1	0	0
0	1	0	0
0	0	0	0
0	0	0	0
0	2	1	1
5	0	0	0
1	2	2	2
0	0	0	0

EM : USERS OF THE SPACE	EN : RESILIENCE	EO : BUSINESS CONTINUITY
1	3	0
0	1	0
0	8	0
0	0	0
0	0	0
11	16	4
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1	3	1
0	0	0
0	0	0
0	1	1
1	6	1
0	0	0
1	3	0
4	0	1
2	1	0
6	15	2
0	0	0

EP : CONTINGENCY PLANS	EQ : RESILIENCE CHALLENGES	ER : RESILIENCE FORMS OF
0	0	0
0	2	0
1	5	2
0	0	0
0	0	0
3	18	4
0	0	0
1	0	0
0	0	0
0	1	0
0	0	0
0	3	3
0	0	0
0	0	0
0	2	1
3	2	2
0	0	0
2	0	2
0	2	0
1	1	0
2	13	2
0	0	0

ES : RESILIENCE DEFINITION	ET : RESILIENCE OF RAIL	EU : STAKEHOLDERS	EV : ACPO
0	0	11	0
0	0	4	0
3	2	15	1
0	0	5	0
0	0	2	0
1	2	13	1
0	7	5	1
2	0	1	0
0	0	4	0
0	0	1	0
0	0	0	0
3	1	6	0
0	0	1	0
0	0	1	0
1	0	2	0
1	0	7	0
0	0	0	0
4	0	1	0
0	0	7	0
0	1	0	0
1	7	18	0
0	0	0	0

EW : CPNI	EX : ENGLISH HERITAGE	EY : EUROSTAR	EZ : FOCS	FA : GOVERNMENT
3	0	0	0	0
0	0	1	0	2
1	0	0	0	4
0	0	0	0	3
1	0	0	0	2
1	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	2	0	2
0	0	0	0	0
0	0	0	0	0
1	0	0	0	0
0	0	1	0	9
0	0	0	0	0
2	0	0	0	0
0	0	0	0	0
0	0	1	0	2
1	2	2	1	5
0	0	0	0	0

FB : LOCAL	FC : CAMDEN BOROUGH	FD : LONDON PLAN	FE : PLANNING DEPARTMENTS
0	0	0	0
0	0	0	0
2	0	0	1
1	0	0	0
0	0	0	0
2	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	2
22	24	0	2
0	0	0	0
0	0	0	0
0	0	0	0
0	1	0	0
3	0	0	1
0	0	0	0

FF : NATIONAL	FG : DEPARTMENT FOR TRANSPORT	FH : TRANSEC
0	2	3
0	2	1
5	4	0
3	0	0
2	2	0
0	0	0
0	2	1
0	0	0
0	0	0
0	0	0
0	0	0
1	1	1
0	0	0
0	0	0
0	0	0
1	0	0
0	0	0
0	0	0
0	0	0
0	0	0
2	2	2
0	0	0

FI : GOVERNMENT DEPARTMENTS	FJ : HOME OFFICE	FK : HIGH SPEED ONE
0	1	0
2	0	1
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1	0	0
0	0	0
0	0	1
0	0	0
0	0	0
0	0	0
0	0	0
1	0	0
0	0	0
0	0	0
3	2	0
0	0	0
0	0	10
0	0	0
0	0	0

FL : ILLEGITIMATE STAKEHOLDERS	FM : LOCAL COMMUNITY USAGE
0	0
0	1
0	1
0	0
0	0
0	6
0	0
0	0
0	0
0	0
0	1
0	1
0	0
0	0
0	0
0	4
0	0
0	0
0	1
0	1
1	4
0	0

FN : LOCAL RESILIENCE FORUMS	FO : LONDON UNDERGROUND	FP : MEDIA	FQ : NACTSO
0	1	0	1
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	2
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	1
2	0	2	1
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0

FR : NEIGHBORING ESTABLISHMENTS	FS : NETWORK RAIL	FT : DEVOLUTION OF NWR
0	5	0
0	5	0
2	2	0
0	0	0
0	1	0
4	3	0
0	0	0
0	0	0
0	0	0
0	1	0
0	0	0
1	3	0
1	0	0
0	0	0
0	2	0
3	6	0
0	0	0
0	0	0
3	4	0
0	1	1
1	14	0
0	0	0

FU : ORR	FV : PASSENGER TRANSPORT EXECUTIVES	FW : PASSENGERS	FX : POLICING
0	1	0	1
0	0	0	0
0	0	0	18
0	0	1	2
0	0	0	0
0	0	7	7
0	0	0	11
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	1	3
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	2
0	0	0	0
0	0	0	4
0	0	1	1
2	0	2	0
0	1	4	3
0	0	0	0

FY : BTP	FZ : APPROACHABLE	GA : BTP ARMED OFFICERS
16	1	5
0	0	0
19	0	3
7	0	0
1	0	0
4	0	0
7	0	0
0	0	0
0	0	0
3	0	0
0	0	0
6	0	0
5	1	0
0	0	0
2	0	0
7	0	0
0	0	0
0	0	0
4	0	1
2	1	1
4	0	0
0	0	0

GB : COUNTER-TERRORISM POLICING	GC : MET POLICE	GD : POLICING GENERALIST
3	2	5
0	0	0
3	2	2
0	0	0
0	0	0
2	3	2
0	1	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	1
0	0	0
0	0	0
1	0	0
0	6	2
0	0	0
0	0	0
0	1	0
1	0	0
1	1	0
0	0	0

GE : PUBLIC	GF : DISASSURANCE	GG : FEAR OF CRIME	GH : FEAR OF TERRORISM
8	3	3	4
0	0	0	0
4	0	3	0
1	0	0	0
0	0	0	0
10	1	4	1
0	2	0	2
0	0	0	0
1	1	1	0
0	0	0	0
0	0	0	0
4	1	2	0
0	0	0	0
0	0	0	0
1	0	1	1
1	0	0	0
0	0	0	0
0	0	0	2
3	0	0	0
1	0	0	1
6	0	0	0
0	0	0	0

GI : PUBLIC INFORMATION	GJ : PUBLIC NEGATIVE REACTION	GK : Stakeholder engagement
2	3	0
0	0	2
0	0	5
0	0	1
0	0	0
0	2	9
0	0	3
0	0	0
0	0	1
0	0	4
0	0	1
2	0	8
0	0	0
0	0	1
0	0	0
0	0	8
0	0	1
0	0	1
2	1	0
1	0	0
0	0	19
0	0	0

GL : STAKEHOLDER ISSUES	GM : STAKEHOLDER MAP	GN : TENANTED PROPERTIES	GO : TOCs
1	9	5	4
2	1	6	0
6	0	0	8
5	0	0	5
0	0	0	1
11	0	0	1
0	0	0	3
0	0	0	0
1	0	0	1
0	0	0	3
1	0	0	0
1	0	2	5
0	0	0	0
0	0	0	0
1	0	1	0
6	5	1	2
0	0	0	0
0	0	0	0
9	0	0	1
0	0	0	4
11	0	8	5
0	0	0	0

GP : FRANCHISES	GQ : TRADE UNIONS	GR : TRANSPORT FOR LONDON
0	1	3
0	0	0
0	0	0
0	1	1
0	0	0
0	0	0
0	2	0
0	0	0
1	0	0
1	0	0
0	0	0
3	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1	0	0
0	0	0
0	0	0

GS : UK BOARDER CONTROL	GT : TERRORISM	GU : CONSEQUENCES
0	10	5
0	0	1
0	14	0
0	3	1
0	7	1
0	17	3
0	12	9
0	0	0
0	0	0
0	0	0
0	0	0
0	10	1
0	4	1
0	0	0
0	1	3
0	6	1
0	0	0
0	13	3
0	0	5
1	0	2
0	9	8
0	0	0

GV : COUNTER TERRORISM MEASURES	GW : ANPR	GX : ATTRIBUTES	GY : ACCEPTABILITY
7	0	0	2
1	0	0	1
11	0	2	3
2	0	2	1
4	0	3	2
13	0	3	4
7	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
7	0	0	0
2	0	0	0
0	0	0	0
5	0	0	2
1	0	0	0
0	0	0	0
5	0	0	3
0	0	0	1
6	1	0	4
6	0	5	4
0	0	0	0

GZ : ACCOUNTABILITY	HA : APPROPRIATE MEASURES	HB : CONSISTENCY	HC : DETERRENT
1	3	1	2
1	0	0	0
0	4	1	2
0	1	0	1
1	2	0	1
4	4	0	1
2	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	5	0	4
0	0	0	0
0	0	0	0
0	0	0	0
3	1	0	0
0	4	1	6
2	4	3	6
0	0	0	0

HD : EFFICIENCY	HE : FIT FOR PURPOSE	HF : PROPORTIONATE
0	0	3
0	1	0
1	2	2
0	1	1
3	1	2
1	4	5
0	0	1
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	1	2
0	0	0
0	0	0
0	0	3
0	2	0
9	5	2
0	4	6
0	0	0

HG : REASONABLE CTM MEASURES	HH : REASSURANCE	HI : ROBUST	HJ : AVIATION SECURITY
3	5	0	1
0	0	1	0
1	0	0	0
0	1	1	0
2	0	0	0
5	0	0	0
0	1	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
3	1	0	0
0	0	0	0
0	0	0	0
0	2	0	0
0	0	0	0
0	1	0	1
1	1	0	2
0	0	0	0

HK : C 3 FRAMEWORK	HL : CCTV	HM : ALGORITHMS	HN : POST EVENT ANALYSIS
0	1	0	0
0	0	0	0
0	2	0	0
0	3	0	0
0	0	0	0
0	1	0	0
0	2	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	2	1	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
2	0	0	1
0	2	1	1
0	0	0	0

HO : CLEAN LINES OF SIGHT	HP : COUNTER-TERRORIST STRATEGIES	HQ : CROWD MANAGEMENT
0	13	0
0	8	0
0	2	0
1	0	0
1	0	0
0	1	0
0	8	0
0	0	0
0	0	0
0	1	0
0	1	0
0	2	0
0	0	0
0	0	0
1	4	0
0	0	0
0	0	0
0	9	0
0	2	0
0	6	2
1	6	1
0	0	0

HR : HOME OFFICE CT STRATEGY	HS : HOT PROTOCOL	HT : HIDDEN OBJECTS
1	0	1
0	3	1
0	1	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	2	2
0	1	1
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	1
0	1	2
2	3	2
0	0	0

HU : HOURLY LEFT OBJECT SEARCH	HV : REPORTING SUSPICIOUS BEHAVIOURS-OBJECTS
6	1
4	2
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
2	2
0	0
0	0
0	0
0	0
0	0
0	0
0	1
0	0
3	2
0	0

HW : RETAIL STAFF SECURITY TRAINING	HX : STATION SECURITY PLAN	HY : STOPPING PEOPLE
3	0	0
7	7	0
0	0	1
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
2	1	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
1	0	0
1	0	1
5	1	4
0	0	0

HZ : CREEP AND SURGE	IA : CTSA's	IB : FORTRESS DESIGN	IC : Intelligence
0	1	0	0
0	0	0	0
1	0	1	4
0	3	0	0
0	1	0	0
0	4	1	1
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	3	0	0
0	0	0	0
0	0	0	0
0	8	1	0
0	0	0	0
1	0	0	0
0	0	0	1
0	0	0	0

ID : OVERLAY SECURITY MEASURES	IE : PAS 68	IF : PROJECT ARGUS	IG : SNIFFER DOGS
0	0	0	2
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	1	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	1	0
0	0	0	0
2	1	0	1
0	0	0	0
0	0	0	0

IH : STAND ALONE SECURITY	II : TARGET HARDENING	IJ : TEMPORARY SECURITY MEASURES
0	1	0
0	0	0
0	2	0
0	1	0
0	2	0
0	1	0
0	2	0
0	0	0
0	0	0
0	0	0
0	2	0
0	0	0
0	0	0
0	0	0
1	3	0
0	0	0
0	0	0
0	2	0
0	0	0
0	1	1
0	2	0
0	0	0

IK : DEFINITION	IL : LEARNING FROM PAST TERRORIST ATTACKS	IM : 7 7 LONDON BOMBINGS
4	3	1
0	0	0
0	4	2
0	2	2
0	2	0
0	4	2
0	0	3
0	0	0
0	0	0
0	0	0
0	0	0
0	2	0
1	0	0
0	0	0
1	0	0
0	1	2
0	0	0
0	1	0
0	0	0
0	1	0
0	5	2
0	0	0

IN : 9 11 USA TERRORIST ATTACK	IO : MADRID	IP : MUMBAI	IQ : TOYOKO
0	3	3	2
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
1	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0

IR : PUBLIC EDUCATION	IS : TERRORISM PREDICTIVE	IT : TERRORIST CAPABILITIES
0	2	0
0	0	0
0	1	0
0	0	0
0	0	0
0	2	5
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	1
0	0	0
0	0	0
0	0	0
0	1	0
0	0	0
1	0	2
0	0	0

IU : TERRORIST METHODS	IV : CBRNE	IW : CYBER TERRORISM	IX : hostile reconnaissance
5	1	0	0
0	0	0	0
2	0	0	0
0	0	0	0
1	0	0	0
5	1	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	2
0	0	0	0
0	0	0	0
0	0	2	0
1	0	0	0
0	0	0	0
3	0	0	0
0	0	0	0

IY : HVM	IZ : PRIMARY DEVICES	JA : SECONDARY DEVICES
2	0	0
0	0	0
1	0	0
0	0	0
1	0	0
3	1	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	1	1
2	0	0
0	2	1
0	0	0

JB : TERRORIST ATTACK MULTIPLE SITES	JC : TERRORIST TARGET	JD : SOFT TARGET
2	5	0
0	0	0
0	1	0
0	0	1
0	0	0
0	1	0
0	5	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	1	0
0	0	0
0	1	0
0	2	0
0	0	0
0	3	0
1	2	0
0	0	1
1	5	2
0	0	0

JE : SYMBOLIC	JF : TERRORIST THREATS	JG : AL QAEDA	JH : IRA
0	4	0	1
0	0	0	0
0	3	0	0
0	0	1	0
0	0	0	0
0	5	1	1
0	0	1	2
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	1	0	1
0	3	1	1
0	0	0	0
0	1	0	0
3	1	0	0
0	0	0	0
0	0	1	1
0	0	0	0
1	0	0	1
1	4	1	1
0	0	0	0

Appendix 6.1: TOC Routes

Below is a chart outlining the routes, the train operating companies and Network Rail managed stations therein:

Train Operating Company	Anglia	Kent	London North Eastern	London North Western	Midland and Continental	Sussex	Wessex	Western	Scotland
	C2C Owned by National Express Group plc	Eurostar	Cross Country	Arriva Trains	Cross Country	Gatwick Express Ltd	Cross Country	Arriva Trains Wales Owned by Deutsche Bahn Ag	Cross Country
	Cross Country Owned by Deutsche Bahn Ag	First Capital Connect	East Coast Owned by the government, a subsidiary.	Chiltern Railways Owned by Deutsche Bahn Ag	East Midlands Trains	First Capital Connect	First Great Western	Chiltern Railways	East Coast
	East Midlands Trains Owned by Stage Coach Group PLC	Southeastern	East Midlands Trains	Cross Country	First Capital Connect	First Great Western	Island Line Owned by Stage Coach Holdings PLC	Cross Country	First Scotrail
	First Capital Connect Owned by First Group PLC	Southern Railway	Eurostar The high-speed services to Europe are operated under Eurostar UK Ltd, SNCB and SNCF trade under the Eurostar name. London and Continental own Eurostar	First Great Western Owned by First Group PLC	London Midland	Southeastern	London Overground Rail Operations Ltd	First Great Western	First Transpennine Express

			UK Ltd						
	London Overground Rail Operations Ltd Owned by Deutsche Bahn AG) and MTR Corporation (Hong Kong Mass Transit Railway Corporation)		First Capital Connect	First Scotrail	Northern Eurostar	Southern Railway Owned by Go-Ahead Group PLC and Keolis SA	South West Trains Owned by Stage Coach Holdings PLC	Heathrow Express	Virgin Trains
	National Express East Anglia Owned by National Express Group plc		First Scotrail Owned by First Group PLC	First Transpennine Express	Southeastern Owned by Go-Ahead Group PLC and Keolis SA		Southern Railway	London Midland	
			First Transpennine Express Owned by First Group PLC and Keolis SA	London Midland Owned by Go-Ahead Group PLC and Keolis SA				South West Trains	
			Hull Trains	London Overground Rail Operations Ltd					
			London Midland	MerseyRail Owned by Serco plc with Ned Railways (Nederlandse Spoorwegen)					
			National	Northern Rail					

			Owned by Serco plc with Ned Railways (Nederlandse Spoorwegen)	Owned by Virgin Rail Group Ltd					
				Wrexham, Shropshire and Marylebone- Closed 28.01.11					
	Network Rail Managed Stations								
	Fenchurch Street	Cannon Street	Kings Cross	Birmingham New Street	St Pancras International	Gatwick Airport	Waterloo	Paddington	Edinburgh Waverl
	Liverpool Street	Charing Cross	Leeds City	Liverpool Lime Street		Victoria			Glasgow Centr
		London Bridge		Manchester Piccadilly					
				Euston					

Source: Network Rail (2011 c) and Fifth Dimension Associates (2011).

Appendix6.2: Key Stakeholders in the Railway Station and Infrastructure

The below table is a supporting document to the map of key institutions, stakeholders, and forums within the railway infrastructure in Britain. It is by no mean and exhaustive list of those who are at present involved with the railway infrastructure in Britain.

Name	**Role**
Secretary of State	Works with the Office of Rail Regulation. The Rail Act 2005 permits the Secretary of State to provide monetary aid for any purpose regarding railways. The Secretary of State under the Railways Act 1993 has the authority to give directions concerning the security of railways
Department of Transport (DFT)	Is granted its authority by the Secretary of State, to operationalise the railways long-term strategy. With regard to the railways, DFT ensures transport sector achieves goals by working with private, national and regional sector partnerships. Role is managing the franchise leases to the TOCs in England and Welsh and Scottish inter-city services. Works in partnership with contractors on major projects. Transport system should stimulate economic growth and safer and environmentally friendly, communities are improved.
Rail Group-DFT	Works with the rail industry to try to ensure railway suits the needs of passengers. Price efficient, sustainability. Co-ordinates UK strategies at EU level- safety and interoperability
Strategic Rail Authority (SRA)-DFT	Under Transport Act 2005, allows the Secretary of State to enable the SRA guidance in how it 'exercises

	its functions.'
TRANSEC (Land Transport)	The DfT Transport security and contingencies team. Primary objective is the protection of passengers, employees, physical assets of the transport sector, against terrorism. They aim to preserve confidence in the security of the transport sector without impinging on the efficiency of the system and passengers experience of travel. They also have responsibility for the DfT's contingency plans in case of 'serious disruption of national life, actual or threatened, however caused'. Transec LT deal with the security of the underground, light rail system and the national rail network.
National Welsh Assembly	Devolved rail responsibilities, in their own geographical areas
Transport Scotland	Is an executive office of the Scottish Government. The Rail Act 2005 grants Scottish Ministers to develop and create a railway strategy for Scotland. Manages the leasing requirements of Scot Rail franchise. Also finances work carried out on the rail network and can offer funding for upgrading facilities (Stations) etc.
Office of Rail Regulation (ORR)	Is responsible for enforcing the safety aspects of the Health and Safety at Work etc. Act 1974. Is responsible for Consumer protection. Compiles rail statistics. Issues operators of freight and passenger services, mainline network, maintenance depots and stations. Also is responsible to regulate access to stations, maintenance depots and tracks
Public Transport Executives (PTEs)	Are regional agencies with the duty to establish and maintain transport policies and spending in their

	areas. Objective of each is to provide an integrated and accessible form of public transport (not just rail). There are 6 PTEs West Yorkshire, South Yorkshire, Tyne and Wear, Merseyside and Greater Manchester. They have a combined budget of £700m per annum and provide a service to over 11 million passengers. Funded is provided by governmental grants, revenue from council taxes. The PTEs are accountable to the ITAs. Role is to be accountable for local transport plans, publish strategies on how to improve the local transport system, in partnership with the DfT plan and manage local rail services, and provide investment towards local stations. Some of the PTE's have re- established trams in their areas.
Integrated Transport Authorities (ITAs)	Are composed of local council representatives. They encourage better public transport across UK regions. Funded by tax payer, government, EC grants and the private sector. Centro-West Midlands ITP
Network Rail	Income is appraised every 5 years by the ORR and operates under a licence issued by them. Operates 18 main stations, 11 in London and 6 other major UK cities. The other 2500 stations are leased to the TOCs. Is devolving responsibility for maintenance to individual routes/operators. Owns the fixed rail infrastructure - bridges, tunnels, track and signals.
24 rail operators	The nine geographical areas are awarded franchises and they lease the rolling stock and stations. Help to fund the BTP, in London the Transport for London (TfL) also is a source of funding. The Railways Act 2005 permits the TOCs, subject to the approval by the Secretary of State, to create bye-laws which aids

	them and the BTP to control the actions and behaviour of the public when using the railways (Rails Act 2005)
Association of Train Operating Companies	ATOC, is an industrial body which communicates opinions to the stakeholders, government and the public
Freight operators	FOCs transport goods via the rail network, cost effective with environmental benefits
Freight Operators Association	Established in 1889 and is one the largest trade associations in the UK, supporting freight companies who deliver goods by road, rail, air and sea.
Rolling Stock Companies	ROSCOs - own the actual trains, responsible for replacing/phasing out aging stock. 3 leasing companies which lease stock to the TOCs
Rail Safety and Standards Board. (RSSB)	Railway Standards Board only supports the mainline industry only. Manages Railway Group Standards Research
RAIB	Is the independent investigation body for dealing with railway accidents/incidents. Makes recommendations, has no powers of enforcement
Rail Freight Group (RFG)	100 members. Objective to 'promote cost effective rail solutions for freight'
Passenger Focus	Independent passenger group. Focus is to ensure 'the best deal for passengers'. Passenger Focus is the operational name of the Rail Passenger's Committee, which is sponsored by the DFT
London TravelWatch	Independent organisation, acting on behalf of London's public transport users - objectives improving public transport, through more integrated transport policies. The London Assembly funds the

	organisation.
Transport WatchUK	Independent group, interest and lobbying
London Transport Community Safety Partnership. (LTCSP)	Anon-statutory organisation, with the primary purpose of a co-ordinated response to handling crime and anti-social behaviour on London's transport system
National Union of Rail, Maritime and Transport Workers (RMT)	Objective is to protect and better conditions and pay for their members
Associated Society of Locomotive Engineers and Firemen (ASLEF)	Union dedicated to train drivers train operating companies (TOCs, FOCs, London Underground and Light Rapid Transport (some). Est. 1880.
Transport Salaried Staffs' Association (TSSA)	Est. in 1897, union for those employed in transport and travel industry
British Transport Police	Force dedicated to the policing of railways. Divided into 9 geographical areas. The BTP is not connected to the Home Office but the Department of Transport is the sponsoring department. The British Transport Police Authority is the independent body responsible for ensuring the BTP is effective and efficient. Funded by the TOCs and TfL by Police Services Agreements. The ranking of BTP officers mirrors the forces which come under the Home Office (The Police Act 1996). The BTP consistently have to access private property as part of their duties, covered by a parliamentary 1949 private Act and the agreements with operating companies, Network Rail and SRA. Since 2004 the

	BTP has been responsible for policing the railways in England, Wales and Scotland (Morgan and Cornish, 2006). They are also responsible for policing the London Underground and Docklands Light Railway in London (Morgan and Cornish, 2006).
British Transport Police Authority	Created by the Railway and Safety Transport (RATs) Act 2003. The creation of the authority in the Act is generally reflected by the Police Act 1996. The executive board are appointed by the Secretary of State
Metropolitan Police	Operational area is Greater London. Joint investigation work with BTP, various crime prevention measures (pick pocketing etc)
City of London Police (COLP)	Operational area is 'the square mile' of London
Transport for London (TFL)	Operational responsibility for London Under and Over Ground, and London Tramlink. Funds policing activities on transport system, BTP predominately police the stations. Priority to operate a system which is 'resilient and reliable'
Home Office Police Forces	Will frequently deal with crimes in and around stations
Centre for the Protection of National Infrastructure (CPNI)	It is an 'interdepartmental organisation' and offers critical national infrastructural organisations security advice, primarily to decrease terrorism.
National Counter-terrorism Security Office (NaCTSO)	Is a police unit within CPNI. It advocates the Contest Strategy through the Protect and Prepare Strands.' Protecting the UK's most vulnerable and valuable sites and assets.

	• Enhancing the UK's resilience to terrorist attack. • Deliveringprotectivesecurityadvice'
CivilContingencies Secretariat	Is situated within the Cabinet Office, works interdepartmentally, Welsh Assembly, Scottish Parliament andkeystakeholderstoaugmenttheUK's 'ability to prepare for, respond to and recover from emergencies'
Local Resilience Forums (LRFs)	Local Resiliency Forums were created as a response to the Civil Contingencies Act (CCA) 2004 and are comprised of local agencies and organisations which handle emergencies. The CCA 2004 allocates the duties of the LRFs into responses categories, those organisations which are the primary responders at an incident, (blue light services. NHS, local authorities and the Environment Agency) and secondary responders who described as the 'co-operating bodies' don't being directly involved in the primary response plans but they could have involvement in the incident (Network Rail, Airports, voluntary groups, utility companies, Health and Safety Executive). The LRFs are aligned with policing areas, for instance Leicestershire and Rutland. LRFs are a co-ordinated multi-agency response to local emergencies, they are tasked with the following duties: to work collaboratively and effectively communicate with other local responders, risk of emergencies in the local will be assessed, the inauguration of continuity plans for businesses and advice, and systems to keep local citizens aware of warnings and information in an emergency

Environment Agency (England and Wales) and Scottish Environmental Protection Agency (SEPA)	Issues of biodiversity, have the power to enforce environmental legislation, for example they can request a railway body resolve issues of excessive noise, which can impact on the environment
Office of Fair Trading (OFT)	Role is to ensure consumers receive the best possible treatment from the market. As a result, sectors are open to fair competition. OFT endeavour that consumers/public have as much choice as possible.
Infrastructure Planning Commission (IPC)	Under the Planning Act 2008, the IPC was established; it is an independent body which reviews applications for major national infrastructure projects, such as power stations, railways - infrastructure which is important to the public and the economy.
Energy providers	For stations, electrification, diesel, gas
Water	For stations, and sidings
Telecommunications	For stations, control rooms, trains, retail units

Appendix 6.3 IET Paper 2013

Understanding the impacts of multiple stakeholders on the future security of main English railway stations

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Abstract: During the next decade, railway stations in England will be impacted by the billions of pounds being invested in current projects such as High Speed 2, Cross Rail and new refurbishment schemes to modernise and develop rail infrastructure. Railway stations are highly networked and open locations that are often crowded, which makes them particularly vulnerable to security threats. Hence, there is a clear need to identify the range of stakeholders and policies that influence the resilience of railway stations to security threats, and to understand the challenges that are inherent in addressing the legislative and operational requirements of their design. As part of an on-going research project, a state-of-the-art literature review, stakeholder analysis and mapping and interviews with key stakeholders have established critical implications for the future resilience of railway stations. Findings reveal that there is a multiplicity of stakeholders responsible for the complex operational and legal frameworks affecting major railway stations. Regardless of the interdependencies between stakeholders and their intersecting individual operational regulations and legislative requirements, there is a distinct lack of a coherent consistent and collective approach to resilience, with issues being dealt with by separate stakeholders and policies. This paper provides a current and innovative contribution to aid the understanding of the complex and interconnected forms of relationships which exemplify the station. The diverse range of stakeholders will gain an increased knowledge and appreciation of the necessity for a collaborative and integrated strategy, which is essential in both addressing the design and operation of the railway station. The findings advocate changes in institutional practices, so these interconnections are addressed now to ensure the effective assimilation of strategies are cohesive and which safeguard the resilience of railway stations for future generations.

Keywords: Railway station, stakeholders, resilience, security threats, communication

Introduction

The railway station is recognised as a fundamental part of the railway network in any location. The Government is investing in a modernisation programme of the railway infrastructure and is demonstrated in the investment in high profile and value projects such as the Thameslink, CrossRail and High Speed Rail 2 (HS2). However, railway stations by their nature are extremely complex systems which are freely accessible and at times crowded spaces, which make them particularly vulnerable to terrorism and other forms of crime and anti-social behaviour. Consequently, as railway stations are newly built or refurbished, there is a clear need to identify the range of stakeholders and policies that influence the resilience of railway stations to security threats, and to understand and incorporate these perspectives into the legislative and operational requirements of their design.

The railway station has numerous roles, a macro approach can be used to define the function of the railway station 'in terms of node (the connectedness with other places) and place (possible activities around the station)' [1]. Similarly, the spatial 'urban development potentials' [2] can define the role of the railway station as an environment where 'high value activity are recognised as having a positive impact on the city' [3]. The operational complexities of the railway station are intensified with increasing size and importance of the railway station [2]. In terms of providing a public space, railway stations in England are privately owned spaces where the public have apparent free access. Subsequently, they cannot be considered as public spaces; rather they can be described as 'pseudo-public spaces' [4] or a hybrid area [5, 6]. As a consequence of these demands, the complexities, interconnected physical, legal and operational functions of the railway station and together with the concept of resilience to security threats all need to be considered by stakeholders, planners and designers in terms of a 'balance between economic, social and environmental priorities' [7].

It should be noted the emphasis of this paper is on the stakeholders within main railway stations, which are largely Network Rail operated, and not the railway network infrastructure such as tracks, signalling and bridges. Thus mirroring the UK official definition of the railway station under Section 83(1) of the Railways Act 1993

> 'any land or other property which consists of premises used as, or for the purposes of, or otherwise in connection with, a railway passenger station or railway passenger terminal (including any approaches, forecourt, cycle store or car park), whether or not the land or other property is, or the premises are, also used for other purposes' [8].

The aim of the literature and research detailed in this paper through stakeholder analysis is to map and explore the interfaces of the complex range of stakeholders which must be brought together to address the design and operational challenges inherent in both new build and

retrofit schemes for railway stations in England. By using selected examples of legislative and operational complexities collected from semi-structured interviews and public documents, stakeholder understanding of the processes and dynamics which influence and regulate the current and future resilience of the railway to security is increased.

Resilience of the railway station to security threats

The concept of resilience has increasingly 'become embedded within...security and civil contingencies policy' [9] and it has gained prominence in recent years as there has been a growing acknowledgement that 'built assets can neverreally by future-proofed to be totally resistant' [10] against security threats. Therefore, resilience in terms of the railway station can be considered in terms of their 'embedded security and risk management [11] and 'their ability to absorb or recover from a shock or attack' [12]. To increase the resilience of the railway station to security threats, stakeholders and their interfaces, conflicts both actual and potential created by differing agendas and security vulnerabilities need to be highlighted during the (re)development stages of projects and its subsequent operation should be established at an early stage to ensure the effective assimilation of policies and strategies.

Security threats

This paper defines security threats as any human malign action from terrorist activity to low-level crime such as anti-social behaviour. The demarcation between terrorism and crime is extremely contested, given they have very diverse purposes and goals. However, it can be argued that terrorism should be perceived as a crime given both actions 'cannot be morally condoned' [13]. In recent years, the greatest threat railway stations and passenger trains have faced is being the target of a terrorist bombing [14]. Also, it is contended the infrastructure of the railway is less of a target than trains or railway stations [15]. Many larger city and international railway stations, arguably, during the rush hour periods, can be classified as 'Crowded Places. with a transient population often unaware of the unfamiliar environment' [16] and as such they present an appealing target for terrorist attacks [15]. Historically, in the UK when the Irish Republican Army (IRA) targeted railway stations their aims were to cause maximum fiscal and social disturbance, rather than the loss of life [14]. However, contemporary acts of terrorism against the railway station have shown that both nationally and internationally railway infrastructure offers the terrorists the opportunity to inflict mass causalities in crowded places. Therefore, the concept and fitting of resilience and security measures within the station need to be reconsidered and based on 'more proactive' [17] rather than reactive strategies. Consequently, resilience should be a holistic concept which incorporates a 'good design of infrastructure networks, effective emergency response, business continuity planning and recovery arrangements' [18]. Nonetheless, acts of terrorism are not the only threat posed to the railway station. In fact passengers and the public who use the station, are more likely to be the victims of lower level crimes rather than the victim of a terrorist attack [14].

In the past, railway stations have been portrayed by the media as places rife with crime, which strike fear and concern for passengers [19]. More recently, passengers and customers using railway stations are still expressing dissatisfaction with their perceived personal safety within the railway station [20]. The Association of Train Operating Companies (ATOC) states the continued improvement and investment in the security and policing of the railway network is critical to sustain the increase of passenger numbers [21]. Moreover, the public's fear of terrorism and crime can be reduced by 'manipulating the physical environment to improve perceptions of personal safety' [22]. Therefore, the stakeholders of the railway station must undertake initiatives in the design stage to reduce these worries over security threats [19].

Stakeholders

Traditionally stakeholders are defined as 'any group or individual who can affect or is affected by the achievement of the organisation's objectives' [23]. When examining the stakeholders in the railway station, the research advocates a holistic stance which widens an established view of stakeholders beyond their relationships based on contractual and fiscal associations. Thus, stakeholders are also 'moral actors...relationships include social characteristics such as interdependence' [24]. Also, there will be some stakeholders who an organisation will not consider as 'legitimate in the sense they will have vastly different values and agendas' [23]. Therefore, railway stations must acknowledge illegitimate stakeholders such as terrorists and other criminals do have an interest and as such do have a stake in the organisation [23]. Hence, this relationship must be managed through specific actions such as prevention strategies and coordinated multi-agency working.

Methodology

This paper is based upon research conducted as part of a 3 year multidisciplinary project that is studying the future developments in the UK's energy and transport infrastructure and the resilience of these systems to natural and malicious threats and hazards. A state of the art literature and policy review of English railway stations has been conducted and augmented with semi-structured interviews and observational field notes. The qualitative data collected were specific to a main railway station, and provided a mix of stakeholder perspectives on the legal, operational and physical issues which could impact on its resilience to security threats. The 26 expert research participants took part in semi-structured interviews and were gathered by purposive sampling [25], allowing them to be chosen on the premise of their significance to, and knowledge of the research area. As part of a methodological abductive approach, the interview schedules where developed in a cyclical manner, as each interview involved the development of ideas and influenced further data collection [26]. Additionally, an established method of stakeholder analysis [23], which examines the probable contribution from stakeholders in projects and their 'power…and the possibility to influence them' [28], was used to understand the roles and agendas of the pivotal

stakeholders in the railway station, this process can be seen in the following original Stakeholder Map. The map permits the visualisation of stakeholder's authority and impact whether in projects or day to day operations [27, 23]. The below results and discussions are an amalgamation of data collected.

Results and discussion

The data gathered from the interviews was evaluated using thematic analysis, proposals emerged which highlighted vulnerabilities created by the varying stakeholdersresponsible for the resilience of the railway station to security threats. It emerged from the analysis in order to deal the complex challenges that are inherent in addressing railway station's design, operational and legal requirements, it is essential that stakeholders undertake to increase their knowledge of such issues, in order to gain an appreciation of the necessity for a collaborative and integrated resilience strategy against security threats. The below original stakeholder map (Figure 1 Generic London main railway station stakeholder map) and discussion highlight a selection of policy disconnects and communication issues for stakeholders in the railway station, which impact on the resilience of the space to security threats.

Stakeholder map

This original stakeholder map has been generated through stakeholder analysis of the literature and policy reviews. The map established the stakeholders, who are critical to the continued existence of the railway station, and should be used to inform security and operational strategies [23]. The interviews with stakeholders have helped to validate the structure and content of the map and have also established that the map can serve several valid functions; for instance, it visually highlights the magnitude of stakeholders who have an interest in the railway station and how these interconnect and interface with each other. It proved to be a valuable research tool during the interviews as it facilitated discussion points, allowing stakeholders on the map to be categorised as follows: primary stakeholders who are impacted constructively or adversely, by a project or operations; secondary stakeholders have a transitional function and can have a key impact on the project or operations; and external stakeholders do not directly participate, yet can be impacted upon by a project or operations [28]. It should be noted that the map can be altered specifically for individual railway stations projects. Therefore, it can be used as an important visual tool during the design stage of refurbishment or new projects and operational management of railway stations, maximising decision making and ensuring all stakeholder opinions are identified [28].

Discussion

The interview data revealed a potential future impact to the resilience of security threats at the design and construction stage of building or refurbishing the railway station. Participants have contended that there are policy disconnects around section 17 of the Crime and Disorder Act 1998, concerning the involvement of police crime prevention officers at the design stages of building and refurbishment projects. Home Office police forces must be involved from the design stage of building projects, and to work with a range of responsible stakeholders to ensure

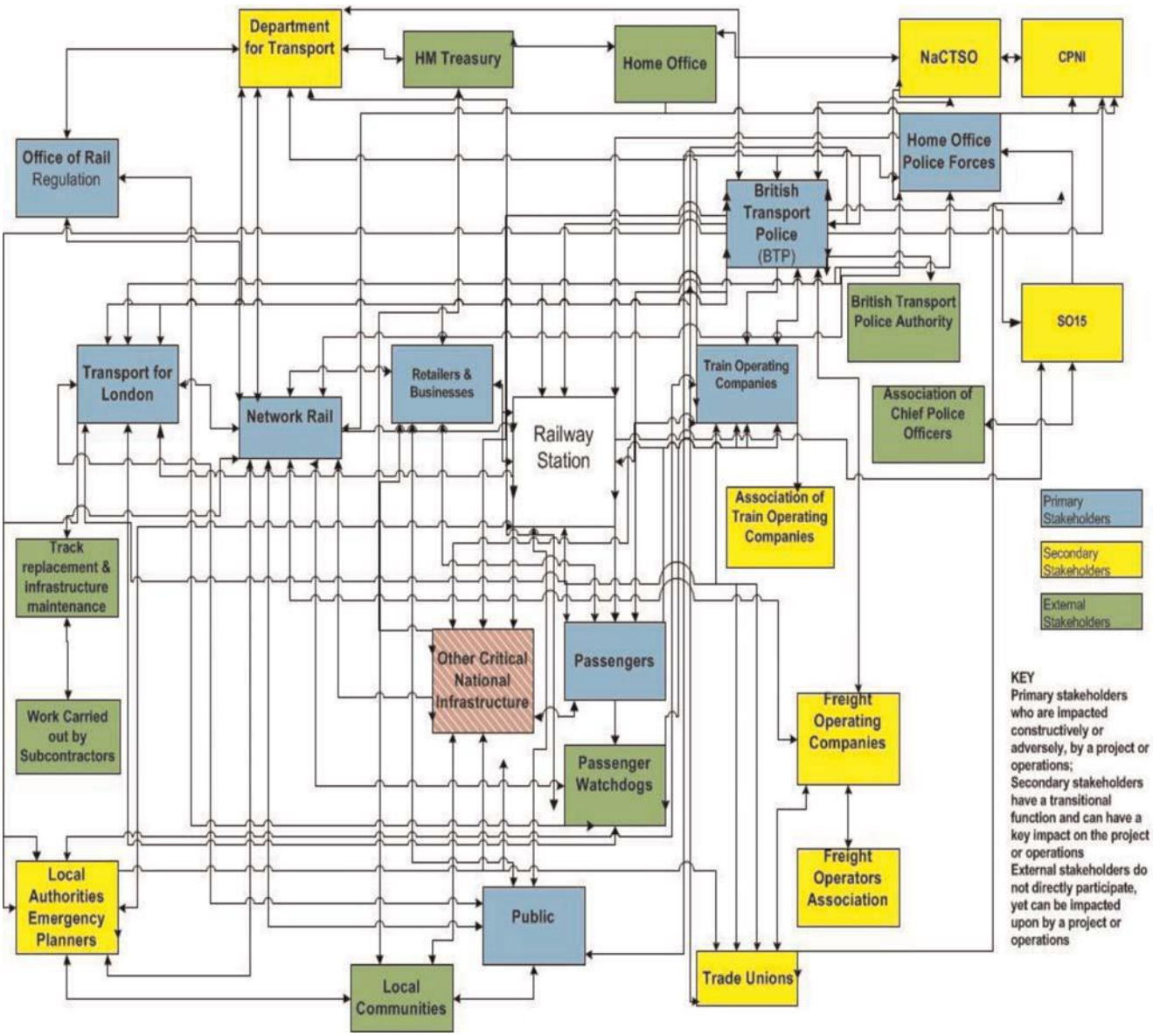

Figure 1 *Generic London main railway station stakeholder map*

crime prevention measures are considered as critical as other legislative duties in the addressing of their design. However, when railway stations are designed or refurbished, the British Transport Police (BTP) are not included in this legislation nor have any other legislation which gives them power to be consulted in the design stage of the building or redesign of such projects. Participants expressed that BTP Counter Terrorism Security Advisers (CTSA) and Principal Architectural Liaison officers (ALO) have to either rely on an informal network of industry contacts to inform them of when projects are upcoming or have to wait to be consulted by the designers. One participant stated if the BTP CTSA's/ALO's 'are asked for involvement once the first brick has been laid, then they have been involved too late on the project'. This voluntary relationship between the BTP and designers and the lack of regulation is seen to be one of hardest to manage and even harder to maintain, with security measures being perceived as an afterthought or a grudge purchase. Given the economic pressures which drive the financial costs of projects, it was felt it inevitable that there will be trade-offs around security measures, yet if inappropriate measures are fitted during the build, they will have to be retrofitted at a later date, thus having future financial implications. However, the Department for Transport (DfT) in 2012 released the 'Security In Design Of Stations' (SIDOS) guidance, to ensure security measures are designed in and the BTP are involved from the earliest stages of projects. SIDOS does make recommendations to address the issues raised above, yet participants have expressed concerns that although the document advises that CTSA/ALOs are involved at the early stages of projects, it is not a statutory requirement and therefore does not guarantee their involvement.

One area of legislation which requires adherence to and the clear communication of are the security policies and standards in the railway station. The DfT specify the security on the railway and security standards are established and imposed through the National Railways Security Programme (NRSP), a closed access document. This document sets the day-to-day obligatory and recommended security standards for Network Rail (NR) and the Train Operating Companies (TOCs) to adhere to. NR takes the DfT's directives and communicated to their employees, which is then cascaded down to tenants. The security requirements for tenancy in main railway stations are stringent, due to their significant locations, function and capacity.

This type of railway station operates to the highest level of the NRSP. It is part of the tenancy agreement that tenants will have in place a security strategy which conforms to the requirements of the NRSP, conflicts can arise when this requirement has to be dovetailed into their corporate policies, and cascaded to their employees on site. Operational participants agreed NR should manage security briefings to tenant's staff, given that the interpretation of security strategies can be watered down by managers, whether intentionally or not, and concurred corporate priorities can affect the implementation of security measures. Furthermore, the BTP frequently work with the tenants, DfT Land Security and NR to support security and awareness strategies in the station. However, many of the communications and meetings, which are held in the station, are discretionary and are instigated by individuals who are trying to improve the complexities of stakeholder interfaces and to improve the communication of security strategies. An example of a voluntary interface between stakeholders is the Police and Communities Together (PACT) meetings. These are held frequently in the station, with NR, BTP, tenants, TOCs and the public to raise awareness and issues concerning the security of the station and to agree on actions to be taken. A limitation of these meetings is the attendance in some stations is poor. Also one participant suggested these meetings are often used to air disagreements concerning others agendas. However, if there is a common issue, commercial agendas would be put to one side for the greater good of the station. These meetings are seen by NR and the BTP as key to maintain good stakeholder interfaces and communication, but it is up to the individuals involved to maintain the relationship and communications. The BTP and NR could proactively raise awareness and reiterate the relationship building and security benefits for stakeholders participating in voluntary security meetings. However, by incorporating such meetings into the mandatory NRSP it would ensure stakeholders' compulsory attendance and create structured opportunities to improve the communication of security strategies and regulation within the railway station.

A concern which was raised regarding the future resilience of the railway station are the complexities of the stakeholder interfaces and how these impact upon efficient communication between stakeholders in terms of security threats and realities. One participant acknowledged the current operational complexities of the railway station could only worsen in the future, as more stakeholders will become involved and not just those within the physical space of the railway station, but those on the margins who have an impact on the resilience of the space to security threats. Solutions need to be sought now as 'anything we do with technology is just going to be a waste of time unless we sort out the fundamental communication issues'. Therefore, key stakeholders and the Government need to urgently seek and embrace an open process of inclusive communication measures and strategies, which will facilitate the understanding of the complex stakeholder interfaces, which influence the current and future resilience of the railway station to security threats.

Conclusion

The main railway station in England is disparate and complex in its governance, and its current and future resilience is reliant upon an effective association between all tiers of stakeholders This paper has provided illustrations of how within the railway station there can be inconsistent and disparate approach to resilience against security threats. The stakeholder map clearly highlights the multiplicity of stakeholders responsible for the multifaceted operational and legislations of the railway station. It has briefly highlighted some of the vulnerabilities to current and future security threats, which are compounded by the complexities of managing operational interfaces between stakeholders in the railway station. The findings call for the resilience towards security threats to 'be developed in a transdisciplinary way; incorporating a wide range of stakeholders involved with the structural and non-structural approaches' [29]. It is also felt to ensure the involvement of key stakeholders in the planning and design of projects a more regulatory

approach rather than guidance is required. It is too early to say whether the SIDOS guidance will be sufficient to guarantee key stakeholders are involved at the early stages of projects, thereby providing a strategically planned, defined and coordinated approach at the design stages of new build and refurbishment projects. It may be necessary for the guidance to be supported by a resolute and collaborative campaign of awareness raising, which is targeted at key 'decision-makers' illustrated on the stakeholder map. It is also vital the complex stakeholder interfaces in the day to day operations are recognised and understood in the railway station so they do not negatively impact on current and future security strategies and measures. If these issues are tackled now it will help to ensure consistent security strategies are implemented to safeguard the resilience of railway stations against a broad range of security threats for future generations.

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