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Master of Philosophy specialising in Transport Studies

Case study analysis of Integrated Public Transport Networks in five South African cities

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ABSTRACT

In 2007, 13 South African cities embarked on implementing Integrated Public Transport Networks (IPTN's) guided by the Public Transport Strategy and Action Plan (PTSAP) published by the National Department of Transport (NDoT). The PTSAP sought to reform public transport industries across South Africa by 2020 to ward off increasing congestion, passenger dissatisfaction with overcrowding, long travel times, high travel costs, and safety concerns. Of the 13 cities, Nelson Mandela Bay Metropolitan Municipality (NMBM), City of Tshwane (CoT), City of Johannesburg (CoJ), City of Cape Town (CoCT), and George Local Municipality (GLM) had progressed the furthest by the end of 2017. However, all five Cities had experienced delays in achieving their IPTN project objectives. This dissertation investigates the underlying factors causing the delays.

The research was guided by a framework of analysis developed by three core questions – the impact of the minibus-taxi industry negotiations, the impact of government's capacity to implement, and the impact of South Africa's urban form.

The literature review begins with the fundamentals of reform of the three dimensions of the public transport industry: service characteristics, operator business structure, and competition. It then continues with a review of the history of attempts at reform in the minibus-taxi industry and bus industry, and a breakdown of the PTSAP. The literature review concludes with the fundamentals of mass transit use with an emphasis on the influence of urban form.

Data were collected from media sources, government and academic publications, and qualitative semi-structured face-to-face interviews. The data were used to evaluate each IPTN system's outcome and develop a chronology of each project's implementation.

In NMBM, Libhongoletu was delayed due to the strained relationship between the local minibus-taxi industry and the NMBM, and the alleged mismanagement of resources. It was concluded that a lack of political will and a lack of capacity-to-implement were the underlying factors.

In CoT, A Re Yeng was delayed due to difficulty in developing adequate IPTN plans, and lack of foresight on the long-term impact of political decisions. It was concluded that weak planning capacity and poor political decision making were the underlying factors.

In CoJ, Rea Vaya benefitted from the external pressure of hosting the World Cup, as well as strong political leadership in the minibus-taxi industry and CoJ during Phase 1A. However, the project still grappled with animosity between local minibus-taxi associations, the influence of national mother-

bodies on local associations, distrust of government within the minibus-taxi industry, industry transformation compensation benchmarking, and uncertainty following the 2016 local government elections. Therefore, it was concluded that politics within the minibus-taxi industry and government were the underlying factors.

In CoCT, MyCiTi was delayed due to the inappropriate nature of BRT for Cape Town's spatial form, higher than expected industry transition costs, budgetary cycles of government financial planning, and the moderation of services to improve financial sustainability. Therefore, it was concluded that an overall inappropriate solution to the public transport problem, prudent political leadership and adequate capacity-to-implement within the CoCT were the underlying factors.

In GLM, GoGeorge was delayed because of inappropriate design restrictions imposed by the NDoT and changes in political leadership in quick succession at a vital stage of the project. Therefore, it was concluded that a lack of capacity within the NDoT and leadership instability were the underlying factors.

In conclusion, all three core questions were found to be determinants of success or delay, while in addition, political will was also found to be a fundamental factor to success or delay. Analysis of the case-specific causes of delay found that all cases were ultimately delayed due to five fundamental factors: an inappropriately ambitious implementation timeframe, the incongruency between gold-standard BRT design and South African urban form, the difficulty of overcoming the complexity of trust between the minibus-taxi industry and government, political will, and government's lack of capacity to implement a reform programme as complex as the PTSAP.

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ACRONYMS AND TERMS

PTSAP – Public Transport Strategy and Action Plan

IPTN – Integrated Public Transport Network

NDoT – National Department of Transport

NMBM – Nelson Mandela Bay Metropolitan Municipality

CoT – City of Tshwane Municipality

CoJ – City of Johannesburg Municipality

CoCT – City of Cape Town Municipality

GLM – George Local Municipality

DTPW – Western Cape Provincial Department of Transport and Public Works

BRT – Bus Rapid Transit

TDA – Transport and Urban Development Authority

MoU – Memorandum of Understanding

O-D – Origin – Destination Pair

PRASA – Passenger Rail Authority of South Africa

PTISG – Public Transport Infrastructure and System Grant

VOC – Vehicle Operating Company

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“I understood very clearly that the most important topic of our time, more so in our country, was the urban topic. Everything else was temporary. Cities, the way they were made or not made, would determine behaviour in a fundamental way. Because people, to a large extent, behave according to the surrounding environment. Therefore, public spaces such as sidewalks, bike-paths and mass transit systems are examples of the egalitarian society for which we should strive, because in them, we all meet as equals.”

Enrique Penalosa, Mayor of Bogota, Colombia 1998 – 2001; 2016 - 2019

I INTRODUCTION

I.I. BACKGROUND

South African cities have been pursuing the transformation of their public transport industries, through the implementation of Bus Rapid Transit (BRT) for the last eleven years. This dissertation considers the ten years between 2007 and 2017, of that period. Project outcomes have varied between the 13 cities who pursued this objective. In some instances, the cities have not progressed beyond the development of preliminary planning documents. In other cases, cities have managed to begin construction, but bus operations have not materialised. While, in the instances with the most progress, cities have managed to complete whole phases and have been operating since 2009.

This dissertation analyses five of the cities that have been working to reform their public transport industries and have managed to launch services. The analysis seeks to uncover the underlying factors that have caused the project outcomes in the reform attempts being implemented in each of the five cities. The five cities are Nelson Mandela Bay, Tshwane, Johannesburg, Cape Town and George.

This research dissertation hopes to build on stakeholders' understanding of the nuances in the complexity of public transport reform projects. Academic interest in BRT in Sub-Saharan Africa has grown over the last 15 years as African governments have pursued public transport reform using this mode. However, research outputs have been dominated by critical analysis of the risks, challenges and potential successes of BRT, with a focus on the pre-implementation period. A gap exists in analysing BRT reform projects in hindsight post implementation.

An assessment of mobility and access academic literature on Sub-Saharan Africa found at least 50 publications that related to BRT services (Behrens et al, 2015: 13). The bulk of these were published between 2008 and 2014, focussing on supply and demand, reform discourse, contextual constraints, and operational and infrastructure requirements around BRT services. Limited literature was found around organisational arrangements relating to BRT (Behrens et al, 2015: 13). There is a growing interest in the influence of political and socio-economic factors on the outcome of public transport reform projects. In the Sub-Saharan Africa assessment, some literature was found on the inclusion of marginalised stakeholders in decision making (Behrens et al, 2015: 16), but none looking specifically at interactions between mini-bus taxi operators in South Africa and BRT authorities.

This dissertation seeks to contribute to filling the gap in academic literature on post-implementation BRT reform projects. The five cities selected for this case have, at least on paper, had

the opportunity to mature and adapt to the lessons learned from their attempt to implement BRT over the last ten years.

1.2. RESEARCH QUESTIONS

The dissertation seeks to unpack the underlying factors that have caused the project outcomes in the reform attempts being implemented in each of the five cities. Projects are influenced by a range of factors. The factors do not exercise influence to equal degrees and therefore, some factors may have a more dominant role in determining the outcome of projects, than others. The factors influencing the IPTN projects under investigation in this dissertation are people and relationships, legal and financial constraints, organisational capacity within the construction industry, government and public transport operating sectors. The success of a project is determined by how effectively the implementing agents are able to wield the above factors to achieve a desired outcome.

Therefore, throughout the research process the following questions were used to analyse the data to determine the underlying factors that has caused the status-quo of the IPTN projects. The questions are as follows:

1. What impact did the industry engagements and negotiations have on the outcomes of the IPTN projects, and why did this occur;
2. What impact did stakeholder capacity to implement have on the outcomes of the IPTN projects, and why did this occur; and
3. What impact did the original PTSAP, in relation to South African city spatial form, have on the outcomes of the IPTN projects, and why did this occur?

1.3. DOCUMENT LAYOUT

Chapter one begins by providing the rationale for this research and concludes with the detailing the research questions and the rationale used to determine the research questions.

Chapter two unpacks the case study method. It begins with demonstrating its suitability to this research question by considering the method's advantages and risks. This is followed by details of the research design, which aimed to effectively use the advantages of the case study method while guarding against its shortcomings. The chapter concludes with an explanation of the step-by-step method that was followed in the research process.

Chapter three reviews academic literature to develop a knowledge base for the research. The review begins with the theory of public transport reform, which is followed by the history of public

transport reform in South Africa with a specific interest in the minibus-taxi and conventional bus industries. The review unpacks the 2007 Public Transport Strategy and Action Plan that formed the basis for the IPTN projects in South Africa. This is followed by a consideration of the nexus between urban form and transit use. The chapter concludes with brief considerations of the urban form of two South American cities that influenced the South African governments adoption of BRT, as well as a look at the urban form of South African cities.

Chapters four to eight provide the findings of the research. Each chapter begins with an introduction to the case study city, the state of its transport, and the institutional arrangements of the local public transport sector. This is followed with an evaluation of the ‘achieved outcomes’ against the ‘intended outcomes’ of the respective IPTN project. The system outcomes evaluation is followed by a chronology of events and decisions between the project inception and the end of 2017. Thereafter, each chapter concludes with an analysis of the findings to determine the factors that caused the project outcomes at the end of 2017.

Chapter nine begins with comparing the system outcomes evaluations of each IPTN project to determine if there are similarities in the outcomes achieved or those in delay. The chapter ends with determining similarities in the factors from each case study analysis. This process of deeper analysis is carried out to establish whether there are factors that caused the outcomes of IPTN projects, that are fundamental to all five case studies.

Chapter ten concludes the research process by determining whether the research questions were answered and concludes by reflecting on additional propositions and recommendations for further study towards reform of the public transport industry in South Africa.

2 RESEARCH METHODOLOGY

2.1. INTRODUCTION

In this chapter on the research method employed in this research project, the suitability of the multi-case study strategy is considered. Following the argument supported by Flyvbjerg (2006), Schalekamp (2015) and Yin (2014), the chapter covers the design of the research process, including the rationale behind the case selection. Lastly, chapter two concludes with a rigorous description of the method followed for data collection, data analysis and proposition development.

2.2. RESEARCH STRATEGY MOTIVATION

The aim of this research project is to build an in-depth understanding of why the much-lauded and well-funded IPTN plans did not produce the hoped-for results. Bent Flyvbjerg (2006) in his attempt to debunk case study research myths, argues strongly for the ability of case study research to understand complex issues, embedded deep in the context of cases. Flyvbjerg argues that ‘context-dependent’ knowledge is ideal for building the practical understanding that enables expert knowledge (Flyvbjerg, 2006: 303). An objective of this dissertation is to build on the stakeholder’s understanding of the public transport sector. Therefore, building a bank of ‘context-dependent’ knowledge through this research project would be invaluable to the ongoing progress of the public transport sector.

Flyvbjerg (2006) demonstrates the ability of case study research to unearth the interaction between complex deep-rooted power structures in the City of Aalborg and plans to reform their transport sector. His findings have an interesting bearing on this dissertation’s attempt to understand the true underlying factors behind the IPTN project’s reasons for success or delay. Flyvbjerg (2006) argues that, in a democracy, the ultimate outcome of a project is not determined by the rationality of the plan but rather by the wielding of power that the different stakeholders possess. This finding makes a case study research method a compelling selection with which to investigate the research question of this dissertation.

Schalekamp (2015) too founds his doctoral thesis research design upon the arguments of Flyvbjerg’s (2006) assertion for ‘context-dependent’ knowledge. Again, similar to this dissertation, Schalekamp uses the criteria set-out by Yin (2014) to guide his research design. Although Flyvbjerg and Schalekamp provide compelling arguments for the use of case study to investigate social phenomena,

the selection of case study as the research method ultimately fell to the detailed framework that Yin provides (Yin, 2014).

Yin defines case study as an empirical enquiry that “investigates a contemporary phenomenon in-depth and within its real-world context”, where the boundaries between phenomenon and context may not be clear (Yin, 2014: 16).

The dissertation researches contemporary cases during the 10 years between 2007 and end-2017. The IPTN projects, all of which remain active, started shortly after the promulgation of the 2007 PTSAP and in some cases before its promulgation.

Yin defines a range of research strategies, which allow for varying degrees of control on context and isolation of phenomena. In this, he allows for a deliberate consideration of contextual conditions (Yin, 2014: 13). The PTSAP sought to have “maximum inclusion of existing operators” (Department of Transport, 2007: 8). This has exposed the IPTN programmes to the historically strained relationship between existing paratransit operators and government. Making it inevitable that the governing authorities have to navigate the associated political complexities. Therefore, the research process should deliberately include the contextual conditions of surrounding the implementation of the IPTN programmes.

Beyond the importance of allowing context to feature in the research, the researcher in this study had little or no control over the events. The IPTN programmes in each case are products of extensive engagements, that have been ongoing for years, between the national and local governments. The researcher is likely to only have brief contact with a select number of stakeholders. Contact between the researcher and stakeholders is insufficient to influence the outcome of the IPTN programmes.

Yin(2014) also looks to the type of questions that are being asked in the research. Flyvberg asked “why” and “how” questions in his case study of the Aalborg Project, as did Schalekamp in his analysis of paratransit operator involvement in the MyCiTi project. Similarly, the research aim of this dissertation is to understand “how” the five cases reached their disparities between the *intended outcomes* and the *actual outcomes* of the National Public Transport Strategy. Following this is an (implicit) “why” question, as the research attempts to delve deeper into the detail behind each case study.

Given that this dissertation is a contemporary case, with the case study being highly context dependent, while the researcher has little or no control over the events, and that the dissertation asks “how” and “why” research questions, Yin (2014) leads us to select case study as the research strategy.

The case study approach has two weaknesses, pointed out by Yin (2014): the difficulty of differentiating between phenomena and context; and the possibility for the researcher to manipulate the data derived from systematic interviewing. To guard against both weaknesses, Yin states that case study “relies on multiple sources of evidence, with data needing to converge in a triangulating fashion.” (Yin, 2014: 13). Triangulation in this context requires the interview data to be corroborated by other sources. This convergence of information allows for the accurate analysis of phenomena and context to be distilled in the large volumes of information obtained from the various sources. This dissertation relied on published academic papers, news articles, government reports and plans, and face-to-face interviews.

2.3. RESEARCH DESIGN

The dissertation researches the IPTN programmes in Cape Town, Johannesburg, Tshwane, Nelson Mandela Bay and George. Each case provides a rich understanding of the IPTN programme. Four of the cities sought to employ BRT operations as their reform agenda, while George sought to reform its public transport industry using conventional bus operations. In all five cases, ten years after the project initiation in 2007, the actual outcomes are different to the intended outcomes of the projects.

Early on in the IPTN programme Johannesburg, Cape Town, Tshwane and Nelson Mandela Bay had made the most progress (Van Ryneveld, 2008: 53). All four cities set out to reform their public transport services into BRT systems. Over the course of the 10-year period, the four cities have had varied progress providing for interesting individual case studies. Johannesburg and Cape Town have seen the most operational progress in comparison to Tshwane and Nelson Mandela Bay. Tshwane has been plagued by planning delays and has struggled to realise operational outcomes, while having managed to operate an interim service. Nelson Mandela Bay made considerable strides initially, in planning and construction of their BRT system, but besides a one-year pilot programme in 2013, they have failed to operate any buses.

George was selected as a case because, although a public transport reform programme like the other four cities, it is unique as it did not seek to implement a BRT system. George was included as a 13th city to the PTSAP programme after its initiation because of the considerable progress the GLM had made independent of the national government PTSAP. Since its inclusion, the George system has made considerable implementation and operational progress. The case stands out as a comparative success story in the PTSAP. However, the case has not been without delays in their operational and implementation performance, which is expected to be for similar reasons as the other four cases.

Collectively, the five cases under investigation lends itself to a multiple case study research design. The nature of the PTSAP programme provided the opportunity for literal replication (Yin, 2014: 46). Literal replication occurs when case studies ‘predict similar results’. Despite the different operational and implementation outcomes among the five cases and the uniqueness of the case in George, it is predicted that the IPTN programmes in each case is not achieving the intended outcomes for similar underlying factors.

A deeper understanding of the factors behind the successes or delays of the IPTN programme can be understood by considering each City as individual case studies. Therefore, each case will be investigated as an individual unit of analysis. This allowed for each case to be analyzed based on the definition of success and timeline set out by each City. It also allowed the factors of success and delay to be distilled relevant to the context in each City. Lastly, it was decided that treating each case study as an individual unit of analysis allowed for the South African context to be best portrayed in the research. The five case studies will be analyzed to determine the differences and similarities between the projects. This allowed for more accurate propositions as to the underlying factors of success and delay for IPTN implementation in South Africa as a whole.

2.4. RESEARCH METHOD

The research method followed six procedures, beginning with a literature review, which informed an evaluation of the IPTN outcomes. Timeline and thematic analyses were carried out in an iterative fashion as the qualitative interview procedure influenced the data analysis. Lastly, the research method concludes with the development of propositions.

2.4.1. Literature review

The research process began with a review of academic literature. The limited amount of academic research that related to BRT in Sub-Saharan Africa, as described in the introduction, necessitated the sourcing of literature from media articles, in addition. Academic literature was sourced through key-word searches on the Google Scholar search engine, using the University of Cape Town’s Library ‘off-campus log-in’ feature. This allowed for journal articles, published books and chapters, presentations, theses and websites to be accessed. Media articles were sourced through key-word searches using Google’s main search engine. Literature was also sourced from my academic supervisor, A/Prof Roger Behrens.

Government plans that related to the IPTN projects were sourced through key-word searches on Google’s main search engine. Where plans were not accessible via internet searches, plans were sourced from the relevant local government departments. Then National Department of Transport’s

(NDoT) PTSAP documents were accessed from Google. Cape Town's IRPTN plans were sourced from the City's Transport and Urban Development Authority's (TDA) website, from A/Prof Roger Behrens and other academic department colleagues. The City of Cape Town (CoCT) published updated business plans every two years, all of which was considered in the research process. The scoping plan and phase-related business plans for the City of Johannesburg's (CoJ) IRPTN plans were sourced from the City's Transport Department and Google. Nelson Mandela Bay Metropolitan's (NMBM) Comprehensive Integrated Public Transport Network Plan and IRPTN scoping plans were sourced from Google. Scoping plans, preliminary designs and phase related business plans for the City of Tshwane's IRPTN project were sourced from Google and the City's Transport Department. CoT Council resolutions relating to the IPTN project was also sourced from Google and the CoT's official website. The business plan for the George Local Municipality's (GLM) IPTN project was sourced from Google searches.

2.4.2. Iterative thematic analysis

Thematic coding was used to analyze the literature. Coding is the process of separating data from their original context and labelled, using a theme, enabling the data to be retrieved and analyzed further in the context of data with the same theme (Ayres, 2012). The thematic analysis had two objectives: to enable an evaluation of the IPTN project outcomes and to enable a timeline analysis that can unearth the underlying reasons for the outcomes found in the system evaluations. The thematic analysis was carried out using Microsoft Excel. Direct quotes were pulled from the literature and coded into themes that related to planning, construction, funding, political complexities, BRT infrastructure and design, industry transformation, public participation, system performance and propositions for delay. Where possible, a timestamp with as much detail as was available, was given to each quote. An example of the thematic analysis process can be found in Appendix A.

2.4.3. System outcomes evaluation

The thematic analysis explained above was used to determine the categories and criteria by which to evaluate the IPTN projects. The PTSAP drafted by the NDoT was used to determine the categories and criteria by which to evaluate each IPTN project. The categories are as follows: accessibility, service quality, infrastructure and operations. The detailed criteria that fall under each category can be found in each case study - chapters four to eight. In addition to categorizing each IPTN project into the definition determined by the NDoT, each IPTN project was evaluated against the 'intended outcomes' set by each City. Thereby, the state of success, delay or failure for each IPTN project in the case study cities was determined by evaluating the 'achieved outcome' against the 'intended outcome' within the criteria set by the NDoT. Success, delay and failure are defined as follows:

Success is an IPTN project that has achieved the ‘intended outcomes’, within the ‘intended time frames’ which the City had planned in their initial planning documents.

Delay is an IPTN project that has not achieved the ‘intended outcomes’, within the ‘intended time frames’ that the City had planned in their initial planning documents, but the City continues to pursue the implementation of the IPTN project. Delay is also defined as an IPTN project that has achieved the ‘intended outcomes’ in ‘longer-than-intended time frames’ than that which the City had planned in their initial planning documents.

Failure is an IPTN project that has not achieved the ‘intended outcomes’, within the ‘intended time frames’ that the City had planned in their planning documents, and the City is no longer pursuing the implementation of the IPTN project.

Throughout the research process the system outcomes evaluation was carried out on an iterative basis until the accurate record of the ‘achieved outcomes’ were determined.

2.4.4. Iterative timeline analysis

The timestamps associated with the thematic analysis, described above, was used to construct a timeline of key events and decisions over the ten-year period for each case study. The strength of this type of timeline analysis is its ability to identify a variety of variables in potential causal events. The chronological sequencing allowed the impact of individual events and decisions on the status of the IPTN projects, to be understood. This enabled a preliminary narrative to develop to unearth the underlying factors that caused success, delay or failure of the IPTN projects. The preliminary narrative formed the foundation of the interviews held with IPTN stakeholders. The data collected from the interviews, in turn, were used to verify or invalidate the preliminary narratives developed. This led to further investigation both through interviewing more stakeholders and reviewing more literature.

2.4.5. Qualitative semi-structured interviews

Qualitative semi-structured interviews were conducted with 22 stakeholders of the five IPTN case studies. The stakeholders included project consultants, former and current local government officials, transport specialists and local mini-bus taxi industry representatives. The interview process gained ethics approval from the UCT Ethics Committee, a copy of which can be found in Appendix E. The research was deemed to be of medium risk due to the potential impact that the researcher could have on the processes of the IPTN projects. However, the risks were deemed to be adequately mitigated through the cautions undertaken in the research design, detailed in the Informed Consent Form, an example of which can be found in Appendix D.

Interviews were conducted face-to-face in the respective cities under study, as far as possible. The thematic analysis, system outcomes evaluation and timeline analysis informed the interview questions. The interview questions, draft timeline of events and the informed consent form were shared with the interviewees prior to the interview. The aim of the interview process was to check the accuracy of the data gleaned from the literature sources, while also filling any gaps in the gathered data. The interviews were voice recorded and transcribed. The transcriptions underwent thematic analysis.

The interview questions acted as guidelines for the interview. The interviewee was given the freedom to speak as their thoughts guided them, while I loosely directed the interview to ensure that the areas of interest were covered. This method increases the level of comfort of the interviewee and therefore increases the likelihood that the interviewees will speak more candidly about sensitive topics. The tensions between government and the existing mini-bus taxi industry was identified as an area of interest. Corruption allegations (Olver, 2017) was also identified as an area of interest. Given that these are two potentially sensitive topics, where reliable information would most likely be gathered from a candid interview, it became important to structure the interview to encourage this.

Comfort, in the interview, is a result of trust between the interviewee and the interviewer. Trust is best established through a face-to-face interaction. A face-to-face interview allows the interviewer the opportunity to garner non-verbal information which would assist in assessing whether information is being candidly shared. Face-to-face interviews enabled the interviewer to maintain the trust of the interviewee for the full duration of the interview, as it removed the possible break-down of trust through the possible miscommunication as is sometimes the case through telephone calls.

2.4.6. Proposition development

The propositions were developed upon conclusion of the research process. The combination of the literature review and the interview data comprised the final timelines per case study. The iterative timeline analysis considered the events and decisions along the case study timelines that had causal links to the overall delays in the implementation. These causal links were compared to the results of the thematic analysis, which together aimed at developing an understanding of the underlying factors that resulted in the events and decisions identified in the timeline analysis. This process allowed the development of propositions on the factors contributing to success or delay of the IPTN programmes.

2.5. CONCLUSION

This chapter argues that case study is a suitable research strategy to unearth the underlying factors to have caused success or delay of the five IPTN projects in question. It does so by showing that case study is able to understand complex 'context-dependent' reasons for an outcome. It further argues that the

broader purpose of this dissertation is served through case study because it creates the type of knowledge that assists professionals build on their knowledge. It draws heavily on three regularly cited academics – Bent Flyvbjerg, Herrie Schalekamp and Robert Yin, to conduct assess the suitability of case study for the research questions of this dissertation. The chapter expounds on the opportunity for ‘literal replication’ among the cases selected, as well as providing a justification for their selection. Each case is considered as an individual unit of analysis because of the opportunity for a deeper unravelling of the answer to the research question. The chapter concludes with a description of the literature review, the thematic and timeline analyses, the evaluation of each public transport system, the qualitative semi-structured face-to-face interviews and the development of propositions.

3 LITERATURE REVIEW

3.1. INTRODUCTION

Fundamentally, the outcome of a government programme comes down to two factors: first, the ability of the government to implement the programme, and second, the appropriateness of the programme for a given context. This chapter, firstly, seeks to place South Africa's attempt to reform its public transport industry through the PTSAP, within the existing academic literature related to the matter. While, secondly, this chapter begins to build the narrative that will frame the understanding of the underlying factors that have caused the delay or success of the five IPTN projects under question.

The literature review begins to unpack the first of the two fundamental factors that influence the outcome of a government programme, mentioned above, through a dissection of the theory of reform. This is followed by a chronological review of public transport reform attempts in South Africa dating back to 1985. Attention is given to the reform of the minibus-taxi industry and the conventional bus industry. This is followed by a review of the Public Transport Strategy and Action Plan, which is the centre of this dissertation and is the latest public transport reform attempt by government. The final section unpacks the appropriateness of the PTSAP for the South African context, given the urban form of the PTSAP's inspiration – South America, and given the urban form of the South African city.

3.2. THE THEORY OF REFORM

To reform is to intentionally make a change. 'A transition *by design*' as Schalekamp (2015) put it in his doctoral dissertation. Public transport can be deduced to consist of three dimensions, shown in figure 1, below: competition regulation, service characteristics and operator business structure (Schalekamp, 2015: 31). Reform in the public transport arena would require change in one or more of these dimensions. This chapter will detail these dimensions in an attempt to place the 2007 PTSAP in the body of academic literature on public transport reform. By this we will be able to better understand what the fundamental reasons are for the success or delay of the five IPTN programmes. The theory will be dissected by starting with reform by competition, then progressing onto the service dimension and concluding with reform of business structure.

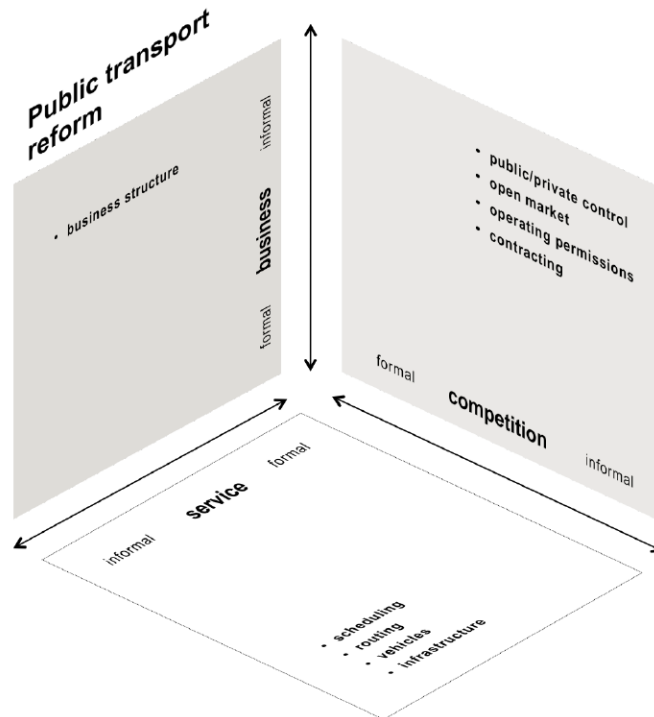


Figure 1: Three dimensions of public transport reform. Source: Schalekamp, 2015: 32.

Where two or more entities exist with the same or similar objective/s, competition will exist. Competition can be beneficial to an environment; in the case of public transport it can drive down fares, improve customer experience and encourage technological developments. However, competition, unregulated, can also be detrimental to an environment; in the case of public transport it can lead to low density services and reckless driving. Public transport is viewed as a public good by many governing authorities. Therefore, in the interest of the public it is desirable to utilise the benefits of competition while controlling the negative consequences.

There are various forms of competition in urban public transport. Competition can be both indirect and direct. Competition that influences urban public transport but is not directly related to its operation can include: support services and supply procurement, competition from private transport and competition between operators for status.

Direct competition can take place in two arenas: service providers can compete *for the market* or they can compete *in the market*. There are a range of types of competition, which overlap at times. These are public monopoly, gross cost service contract, net cost service contract, management contract, franchise, concession, quantity license, quality license and open market.

There are benefits and draw-backs for allowing service providers to compete *for the market* vs *in the market*. Some of the benefits for restricting competition to *for the market* are economies of scale which can be drawn from being the sole operator for a large area or removing the incentive to compete

for passengers. While some of the draw-backs are the potential for fare manipulation or a decrease in service quality. Benefits for restricting competition to *in the market* are that public transport users are able choose between a range of modes that would best suit their budget, operators are also pushed to provide a more attractive service than their competitors. While a drawback would be that competition *in the market* encourages reckless driving to collect passengers before competitors. It also could lead to inconsistent headway for services as operators hold back to allow for sufficient demand to build along a route.

Given the benefits and potential negative consequences of competition in public transport, it is necessary for public transport to be regulated. Reform through regulation of competition is intrinsically intertwined with the service characteristics that the passenger experiences.

Regulation can come in the form of regulating the type of competition that occurs between operators; these options are listed above. A part of the competition regulation could be setting service characteristics for scheduling, routes, vehicles etc. For example, a gross cost service contract would have the operator remunerated for driving a set number of kilometres on agreed routes at set headways. While a quality license would require that vehicles meet a certain standard before being allowed to operate on a route but would not set conditions for head way and kilometres travelled and the operator would be responsible for his/her own remuneration.

In this way, it is possible for a government to reform public transport by changing the type of competition within which operators operate. At the same time, it is possible for a government to reform public transport by changing the service characteristics under which operators provide services. These service characteristics changes may come about by virtue of the principles of the new type of competition or by intentional changes by the government.

Meakin (2004) introduces the consideration of the amount of work that the regulator would have to take on in order to effectively regulate the public transport industry. The composition of the industry and the scope and depth of regulation is considered. Schalekamp uses Meakin's considerations to introduce a third dimension: operator business structure, that influences public transport reform (Schalekamp, 2015: 31). Meakin states that it is necessary to understand whether the industry is made of public or private ownerships, the number of operators or vehicles and the interests/incentives which drive the industry. Schalekamp suggests that these business structure factors can be influenced by the public transport authority and therefore can be used as a tool for reform. Meakin uses the scope and depth of regulation to refer to the second dimension: Service characteristics, detailed above.

The greater the level of complexity of the reform programme, the greater the capacity requirements of the authority implementing the reform programme. Therefore, placing the 2007 PTSAP along each dimension gives us a fundamental footing for the reasons for delay or success of the IPTN programmes in the case studies presented in this dissertation.

3.3. THE HISTORY OF PUBLIC TRANSPORT REFORM IN SOUTH AFRICA

South Africa has had multiple attempts to reform various aspects of its public transport industry. This section will detail these attempts dating from the 1985 White Paper on National Transport Policy to the 2009 National Land Transport Act.

The 1985 White Paper on National Transport Policy (NTP) affirmed the 16-seater minibus to be operated in the passenger transport industry (Khosa, 1998: 23; Walters, 2013: 42). According to Khosa, the 1985 NTP sought to deregulate the passenger transport industry in response to the benefits found in deregulation trend in the USA and UK. Prior to the 1985 NTP, the 1983 Welgemoed Commission sought to have minibus-taxis banned in favour of protecting the bus companies from the unfair competition from the minibus-taxi industry. The Welgemoed Commission was unable to persuade government policy makers and the passenger transport industry was instead deregulated. This allowed minibus-taxis to compete for passengers but it also allowed anyone to enter the minibus-taxi industry contingent on meeting roadworthy and safety requirements (Khosa, 1998: 23).

The political landscape changed significantly in 1990 with the unbanning of anti-apartheid organisations and the initiation of constitutional negotiations to end the apartheid regime. The National Transport Policy Forum (NTPF), launched in 1992, signalled a departure from the previous policy formulation processes (Khosa, 1998: 26). The 1983 Welgemoed Commission was criticised on bias towards the bus industry and government monopoly interests. The 1982 National Transport Policy Study excluded black passenger interests. The 1992 NTPF sought to include interest groups that were previously excluded. The NTPF policy document was published in 1994. The NTPF described transport access as a basic human right, its policy document sought to be people centred and it recognized transport as an instrument for social transformation (Khosa, 1998: 26).

Land transport responsibility was allocated to different spheres of government in the new South African Constitution. National government was to provide broad policy direction. Provinces legislated public transport and created transport policies that would guide local government transport authorities. Local governments were then responsible for transport planning, public transport services, traffic management and roads, all of which had to fall into the local government geographic boundaries (Khosa, 1998:28-29).

The Department of Transport (NDoT) set out to review and revise the national transport policy in 1995. Following a process of sectoral working groups and larger engagement meetings, the 1996 White Paper on Transport Policy was adopted (Khosa, 1998: 27). The 1996 White Paper sought to transition all passenger transport operations to have a commercial orientation. It recommended regulated competition in bus operations, with a transition to tendered subsidised services, based on competition *for* the route (Khosa, 1998: 29; Walters, 2013: 35). The policy document “promised to offer financial and technical assistance to the minibus-taxi industry”. The passenger rail sector was to change from a “deficit financing system” to operations on a concessions basis (Khosa, 1998: 29).

The 1996 White Paper was followed by the 1998 Moving South Africa Strategy which sought to build on the 1996 White Paper and emphasise multi-modal transport. The strategy introduced the focus on corridor densification, using tendering and concessions to create competition to improve operator performance. The conversation to formalise the taxi industry was initiated in this strategy (Walters, 2013: 36).

The National Land Transport Transition Act (NLTTA) was passed in 2000. The NLTTA further defined the various government responsibilities for transport functions, building on the Constitution. The act introduced the concept of transport authorities to manage transport functions and made integrated public transport plans a condition for operator contracts, which was later amended. Legislation was also laid out for competitive tendering however this was later put on hold in favour of negotiated tendering due to complaints raised by organised labour (Walters, 2013: 36).

The taxi recapitalisation programme was initiated in 2006, followed by the 2007 PTSAP. These two reform attempts will be discussed in greater depth in the sections that follow.

The National Land Transport Act (NLTA) was passed in 2009 to replace the NLTTA of 2000. The NLTA placed an emphasis on the devolution of public transport responsibility to the lowest level of government, where appropriate capacity existed. New requirements for integrated public transport plans were outlined and provision was made for negotiated contracts following a tendered contract. This latter addition was not allowed under the NLTTA of 2000 (Walters, 2013: 37).

Shortly before 1994, the attempts to reform the South African transport industry focused on changing the manner in which public transport modes competed with each other. There were attempts to protect the bus industry by regulating the minibus-taxi industry, however in the end the minibus-taxi industry was deregulated in favour of competition which more closely resembled an open market. Since the political transition of the early 1990’s, the authorities have pursued broader reform attempts. Reform attempts have sought to move competition from *on the route* to *for the route* through

tendering processes. Attempts have been made to reform the business structure and vehicle standards of the minibus-taxi industry. Reform was also sought in transport planning, through an emphasis on integrated planning. The responsibility of transport functions has also been an area that the government has attempted to reform through improved outlines of roles and the introduction of devolution.

The following two sections will take a more in-depth study of reform attempts within the minibus-taxi industry and the bus industry.

Reform of the Minibus-taxi industry

The minibus-taxi industry started in early 1980's along with the formation of the South Africa Black Taxi Association (SABTA) (Khosa, 1998: 23; Walters, 2008: 105). Today it is the dominant mode of transport where 69 percent of households nationally used minibus-taxi in 2013 (Statistics South Africa, 2013: 96). The industry grew rapidly when the 1985 White Paper on National Transport Policy affirmed the 16-seater vehicle and deregulated the industry to allow for open market competition (Walters, 2008: 105). The industry did not respond favourably to the 1985 White Paper. SABTA believed that the government "betrayed the taxi industry and that operators should no longer trust the government" (Khosa, 1998: 24). SABTA warned the government that deregulation would lead to violence (Dugard, 2001: 10; Schalekamp, 2015: 66), while it also believed that the government sought to give the "white man" an opportunity to enter an industry which was traditionally run by blacks (Khosa, 1998: 24). Regulation was weak following the legitimizing of the minibus-taxi industry leading to permits being issued with little need to demonstrate vehicle safety standards or passenger demand for a permit (Dugard, 2001: 11), hence the rapid industry growth.

The industry saw the formation of local taxi associations formed by operators which were plying the same routes. The associations regulated loading practices and prices in response to the lack of government regulation (Dugard, 2001: 12). The associations used violence as a means to regulate the industry and to protect their interests; this has escalated into the taxi conflict that is still prevalent in the industry today (Dugard, 2001: 12). Hundreds of local taxi associations exist across South Africa, some of these local associations have transformed into 'mother bodies' or simply large taxi associations to which local taxi associations are aligned (Dugard, 2001: 24).

The multitude of associations made it challenging for the government to engage with the industry (Walters, 2008: 105). In response to the engagement difficulties, the industry violence and the lack of vehicle and operational safety regulations, amongst other issues, the government formed the National Taxi Task Team (NTTT) in 1995. The NTTT, consisting of representatives from the minibus-taxi industry, government officials and specialist advisors, carried out public hearings across

the country. As solutions to the industry problems, the NTTTT recommended the industry be remodelled into more formal cooperatives, increased regulation of the industry and economic assistance. Following the NTTTT, provincial taxi offices were established in all nine provinces and appointed a taxi registrar (Khosa, 1998: 28). The regulation recommendations of the NTTTT included a halt on new permits, the creation of a register of taxis operating legally and an allowance for illegal operators to obtain permits. These regulation attempts by the government was met with violence by some in the minibus-taxi industry as a process of formalisation would disrupt vested industry interests. The NTTTT was eventually discontinued in July 1998 once it had concluded its duty of outlining the parameters for re-regulation (Dugard, 2001: 21).

Following what was considered to be a failed attempt to formalise the industry through re-regulation recommendations of the NTTTT. The government attempted to formalise the industry through a recapitalisation programme, announced in 1999, but set for implementation in early 2001 (Dugard, 2001: 23; Ahmed, 2004: 6). The recapitalisation programme was to initiate a new taxi industry using 18 to 35 seater diesel vehicles, which was regulated from the beginning and using a new body to represent taxi operators – the South African National Taxi Council (SANTACO) (Dugard, 2001: 23).

The industry had established SATACO in response to the government's failure to resolve the industry violence through re-regulation. However, a rival national mother-body – the National Taxi Alliance (NTA) was formed soon after the official recognition of SATACO in 1999. The recapitalisation process was also opposed by the National Taxi Drivers' Organisation (NATDO) through 'highly publicised protest' (Dugard, 2001: 24). To overcome these divisions, the government attempted to form a single national representative body for the minibus-taxi industry. To achieve this, it held a national consultative conference in September 2001 with seven hundred industry leaders and all provincial transport ministers and the national minister present. The South African National Taxi Council (SANTACO) was formed at this conference (Ahmed, 2004: 5; Walters, 2008: 105).

The taxi recapitalisation programme was a slow and lengthy process due to industry opposition and national mother body rivalries. Following the creation of SANTACO and following a lengthy consultative process, the government signed a Memorandum of Understanding (MoU) with SANTACO, in 2004, on the roll-out of the recapitalisation programme (Ahmed, 2004: 7). The programme was eventually launched in 2006 and by May 2007, 2500 taxis had been scrapped (Walters, 2013: 106). The programme set South African Bureau of Standards safety requirements and passenger capacity requirements for the new vehicles. To qualify for the recapitalisation programme, operators had to change their radius-based permits to route-based licenses, ensure employees were paid minimum

wage, regulated driving hours and employee leave conditions, obtained passenger liability insurance as well as obtain a tax clearance certificate to gain the scrapping allowance (Walters, 2013: 44).

The taxi recapitalisation programme was government's attempt to reform the taxi industry's service standards and business practices (Walters, 2008: 106), and thereby improving the quality of the service and make the service more formal.

The taxi recapitalisation programme has been the most significant attempt at reform within the minibus-taxi industry. The government has shown intention to involve the taxi industry in the public transport tender system and to subsidise the taxi industry operations; however, both of these programmes have shown little fruition to date (Walters, 2013: 44).

Reform of the conventional bus industry

The conventional bus industry has its roots set in the first half of the 1900's, however it was the Group Areas Act of 1950 that caused the growth of the bus industry into what we see today (Naude, 1999: 3). The long travel distances between work and home, the poor economic positions of the black working class during Apartheid and the reliance of the state on conventional bus services as the transport system to be used by non-whites, gave rise to the need for subsidization of the bus industry (Khosa, 1998: 20). The majority of operators had permits to operate indefinitely. Operators would claim their subsidies from the NDoT based on the number of tickets sold over a period of time (Walters, 2014: 2). Two criticisms of this period was that it was "extremely difficult" for new entrants to enter the market due to the indefinite permits (Naude, 1999: 167) and the ticket-based subsidy system lacked transparency and was open to abuse (Walters, 2014: 2).

The 1986 White Paper introduced a significant shift in the bus industry: it introduced unregulated 16-seater minibus taxi's and it prescribed that bus services had to be awarded based on competitive tender (Walters, 2014: 2). The attempts at reforming competition in the bus industry from indefinite permits to competitive tender was shelved towards the end of the 1980s, due to a lack of funding. A few 'competitive tender' demonstration projects were initiated in 1987 but these services ended in business failure soon afterwards because operators had bid too low in the tendering process. Government intervention was unable to solve the problems of competitive tendering, hence its conclusion in the 1980's (Walters, 2014: 2). The bus industry began its decline following the effective deregulation of the minibus-taxi industry because the radius-based permits issued to minibus-taxi operators and the lack of their effective regulation gave the minibus-taxi industry more operational freedom than the bus industry (Naude, 1999: 169), allowing the minibus-taxi industry to win more passengers. The status quo of bus operators receiving a ticket-based subsidy without a clear end

continued for some time, with the minibus-taxi industry continuing to grow. With the change in the political dispensation in the early 1990's, government's transport policies were reviewed.

The competitive tender reforms were resurrected when the NDoT affirmed the mechanism by stipulating in the 1996 White Paper that “no service may be subsidised if such service is not competitively tendered” (Walters and Cloete, 2008: 1163).

In response to the 1996 White Paper and in preparation for the legislation of the competitive tender requirements, the NDoT introduced interim contracts in 1997, with the existing subsidised operators (Naude, 1999: 181). The interim contracts were designed to maintain the existing funding arrangement (Naude, 1999: 181), but transition the industry to competitive tendering, with the aim of giving the existing operators a window period to organise their business structures to be able to competitively tender. It was also aimed to give the existing operators a contractual footing so that the agreements could be given a legal end. All interim contract services were only intended to last one to three years and all services were to be finalised by competitive tender by July 2001. (Naude, 1999: 181)

By 1999 this process had begun to run its course with a few interim contract operators completing the competitive tender process. However, the attempts at reforming the competition and regulation of the industry was met with two obstacles. The first, organised labour realised, following the conclusion of a few competitive tenders, the risks posed to workers and therefore, began to oppose the reform attempts. This led to the Tripartite Heads of Agreement (HOA) in 1999, which set conditions to reduce job losses and wage reductions. However, in the ensuing years, labour continued to voice their discontent (Walters and Cloete, 2008: 1164). Secondly, a bus operator took the Western Cape Government to court for failing to meet the planning requirements for competitive tender; the operator won the case. The combination of these two short-comings lead the NDoT to place a moratorium on competitive tenders in 2001 (Walters, 2014: 2).

The NLTTA, enacted in 2000, attempted to resolve this impasse by making provision for operating contracts to be negotiated between the relevant government structure, organised labour and the operating companies, as an alternative to competitive tendering (Walters, 2013: 36). One of the conditions of negotiated contracts was the economic empowerment of small business and previously disadvantaged operators within 24 months of signing the contract (Walters and Cloete, 2008: 1165). Following the NLTTA, a few negotiated contracts had been signed, but 2003 was the last year that any negotiated contracts had been entered into (Walters, 2014: 2). By 2013, any interim, tendered or negotiated contracts that had expired was extended month-to-month with the same conditions as their original contracts. At that stage, the bus industry had been operating on, bar the 13 cities where the 2007 PTSAP was being implemented, short-term extensions for 12 years (Walters, 2014: 3).

Since the last negotiated contracts, entered into in 2003, there had been no reform attempts in the conventional bus industry, until the 2007 PTSAP, covered in the following section, and until the NDoT converted all interim contracts to kilometre-based contracts in 2009. All tendered and negotiated contracts had already been operating on a kilometre-based subsidy system prior to the conversion of interim contracts. The NDoT converted all operators to kilometre contracts to curb subsidy claims. The bus industry had seen significant ridership increases which made it difficult for the NDoT to predict and budget accordingly for the bus industry subsidies. Noteworthy, the NDoT simultaneously fixed the number of kilometres that each operator had to operate, due to the Division of Revenue Act (Walters, 2010: 365), and despite increased passenger demand, the number of kilometres had not been increased between 2001 and 2014 (Walters, 2014: 3).

In summary of the state of the conventional bus industry in the years prior and during the implementation of the 2007 PTSAP, Walters remarks that funding for bus subsidies has been the 'single largest weakness' in the public transport contracting system. Walters continues to state that the government's approach to the bus industry was in direct contradiction to the policies and strategies approved by cabinet, placed financial strain on the bus operators and operational strain on the public transport system due to growing passenger demand (Walters, 2010: 365).

3.4. THE 2007 PUBLIC TRANSPORT STRATEGY AND ACTION PLAN

In the 2007 Public Transport Strategy and Action Plan (PTSAP), the National Department of Transport (NDoT) acknowledged the decline of the public transport sector and predicted its continued decline into the future. The NDoT noted the increase in car ownership between 1995 and 2003 by 33 percent. Over the same period, car use for work-related trips grew by 20 percent while public transport trips for the same purpose only grew by ten percent. This translates into increased congestion in cities across South Africa.

Public transport remained the dominant mode of travel, driven by circumstance rather than choice. The NDoT reported that 38 million citizens still had no access to a private car, making them dependant on public transport or walking all the way to their destinations. Captive public transport users were also dissatisfied with the quality of public transport services. Greater than 50 percent of users raised issue with overcrowding on trains, buses and taxis; as well as the quality of facilities at stops, ranks and stations.

The impetus to reform the public transport sector came from the pressure to provide reliable public transport of a high standard to meet the needs of the impending 2010 FIFA World Cup. With the 2007 PTSAP, the NDoT set out to upgrade public transport modes and simultaneously introduce

a new Integrated Rapid Public Transport Networks (IRPTNs). The NDoT sought to accelerate this reform programme in 12 cities and six districts. The objective was to reform the commuter rail, bus and minibus services into a single integrated system that matched the quality of Bus Rapid Transit systems around the world.

The reform strategy would be implemented in three phases. Phase one was to be implemented between 2007 and 2010 and would include modal upgrades and implementing basic IRPTNs in all candidate cities. Phase two extended from 2010 to 2014 seeking modal upgrades to be complete across all modes, intermediate IRPTNs established and all operators transformed into formalised operators to provide network services. Phase three was due to run from 2014 to 2020 and sought IRPTNs to provide full coverage across all 12 cities and 6 districts, accompanied by demand management techniques for private car users and land use plans to support the public transport networks.

The PTSAP sought to reform all three spheres of public transport reform, simultaneously: Competition, service characteristics and operator business structure. Competition was to be reformed from *on the route* to *for the route*, initially through negotiated 12-year contracts to be followed by tendered contracts. The public transport service characteristics was to be reformed from the unscheduled, low quality services of the minibus-taxi industry and the scheduled but unreliable services of the conventional bus industry into a BRT standard of service. This included pre-board electronic fare collection, integrated schedules, real-time information, universal accessibility and clean and safe stations and vehicles. The NDoT also sought to reform the business structure of the minibus-taxi operators into formal operators with whom local governments could contract to provide services.

3.5. URBAN FORM AND TRANSIT USE

Three dimensions influence modal choice: modal characteristics, user characteristics and urban form. According Cervero, who draws on consumer choice theory, modal choice is made through a comparative evaluation between modal characteristics and the user's characteristics, in terms of the utility derived from the mode (Cervero, 2003:119). Therefore, travel time, affordability, reliability, and ease-of-use characteristics such as universal accessibility, electronic fare payment and real-time information, play a role in determining a user's choice (Johnson, 2003:25).

In a separate paper, Cervero and Seskin evaluate several studies and find that urban form influences modal choice through land-use, density and site design of the origin or destination of the trip (Cervero and Seskin, 1995:25). It was further found that the influence of each urban form characteristic is weak, although positive. The significant influence of urban form on transit use comes from the combination of land-use, density, and site design (Cervero and Seskin, 1995; Kitamura, Mokhtarian and

Laidet, 1997; Johnson, 2003). Three studies, below, demonstrate how urban form impacts on transport use.

Cervero conducted a study of 57 suburban office developments in the United States of America (USA), where a three percent increase in transit and ride-share modes correlated with a ten percent increase in retail floor space in the office developments (Cervero, 2003:129). As one example among many, this demonstrates that a mixture of land uses on a single site increases transit use.

Cervero and Seskin cite a study by Kenworthy and Newman (1989) that found a reduction in fuel consumption per capita with increased density in comparably sized cities in the USA, Europe, and Asia (Cervero and Seskin, 1995: 23). Conversely, this suggests that private vehicle use is higher in dispersed urban forms, while transit and non-motorised transport use is higher in more compact urban forms.

A comparative study, included in Cervero and Seskin's (1995) paper, by Untermann in 1984 of two areas in Houston, USA, found that a ten percent increase in elements such as parks, plazas, benches, sculptures, trees and ample sidewalks, could translate into a 15 percent decrease in private vehicle trips. The same study found that the area with more pedestrian elements boosted NMT, accounting for 30 percent of total trips compared to seven percent found in the area with sparse pedestrian elements (Cervero and Seskin, 1995: 38). These two findings combined to suggest that more people are likely to use transit to, and walk in, an area with attractive pedestrian elements than use private vehicles and park directly at their destination.

Modal choice is a complex topic and it is difficult to isolate one factor to determine its impact on transit use. However, it has been found that mixed land-use, high density cities with attractive sites positively influences transit use. Therefore, urban planning, through land-use, density and attractive site elements, is of consequential importance when implementing new transport solutions to city urban scapes.

Urban form of Bogota, Columbia and Curitiba, Brazil

Bogota, Columbia

Bogota has one of the highest population densities in the world with an average of 21 276 persons per km² in 2010. The city is characterised by a social housing deficit and therefore low-income households have built informal settlements on the urban periphery where the highest densities exist, reaching more than 40 000 persons per km². Higher income households are found toward the north of Bogota, closer to work opportunities. A key characteristic for Bogota is that even where density is comparatively low, it is still greater than approximately 5000 persons per km² (Guzman and Bocarejo, 2017: 4504). Low-

income households spend more income and time on transport and are often limited to public transport services, in comparison to wealthier households who predominantly use private vehicles and spend less time traveling to activities (Bocarejo and Tafur, 2013: 4).

Curitiba, Brazil

Curitiba, the state-capital of Parana in Brazil, saw rapid expansion in its population from approximately 150 000 people in the 1950's to 1.9 million in 2017 (Agencia IBGE, 2017), with a population density of 4 405 persons per km² (City Population, 2018). The result of the rapid expansion was an undesirable city to live in – there was a shortage of electricity, communication connectivity, paved roads, adequate sewerage, and increasing traffic congestion (Mikesh, no date: 1). Faced with these challenges the city sought to create a master plan to guide its urban development, which was approved in 1966. Curitiba created radiating axes from its centre with public transit and high-density mixed land-use zones along the axes, which acted like corridors (Agulhan *et al.*, 2015).

Urban form in South African cities

During the Apartheid era, urban form was characterised by the government's racial hierarchy. White people lived closest to economic opportunities, coloured and Indian people next closest, and black people, who formed the majority people group, lived on the urban periphery. All people groups lived predominantly in suburban residential areas and travelled to their jobs in the economic centres. Very few people lived where they worked or vice versa (Naude, 1999: 3; Khosa, 1998: 20). The Apartheid government again allowed a hierarchy of transport modes to develop. Significant investment was put into highway networks that encouraged private car use, while mass transit for lower racial classes was provided through sub-standard conventional bus and urban rail systems (Hitge, G and Vanderschuren, M, 2015: 36). This meant that the private car developed as the most convenient mode of travel. In addition to a system that encouraged private car use, the minibus-taxi industry birthed out of the inadequate provision of bus and rail mass transit (Sauti, 2006: xvii).

Since 1994, the post-Apartheid government has struggled to implement its policies that sought to encourage urban densification, diversification of land-uses, and improve the quality of public transport (SACN, 2016: 49)

This has meant that much of the urban designs that characterised the South African city during Apartheid continue to define the South African city today - urban spread, low density, single purpose land use, and limited site design that actively encourages NMT and transit use. The private motor vehicle remains the most convenient form of transport, public transport remains of sub-standard

quality, and the majority of citizens still have to travel long distances to reach economic centres, now with increasing congestion.

3.6. CONCLUSION

The literature review unpacks the three framework questions – complexity of reform as it impacts on the capacity to implement the PTSAP, the history of reform in the bus and minibus-taxi industry as it impacts on the influence of industry transition negotiations, and urban form as the PTSAP was inspired by BRT designs from South America.

Public transport reform can be viewed along three dimensions – competition, operator business structure, and service characteristics. Each dimension can be reformed along a spectrum of formality. Competition between operators can be unregulated and *in-the-market*, or it can be highly regulated and *for-the-market*. Operator business structures can be small where a vehicle owner informally picks up passengers for a fare, or it can be large with strict corporate controls. Service characteristics can be a simple passenger experience where case fares are determined ad-hoc upon boarding and user information is informally shared, or it can be a highly convenient passenger experience with high levels of automation and user information is formally provided. To reform all three dimensions from informality to formality simultaneously, as the PTSAP intended, requires a highly capable state.

Since 1990 reform in the transport industry has focused on increasing public transport use, increasing modal integration, devolving planning, implementation and management functions to local government, and curbing escalating operator subsidy costs carried by the NDoT. Reform in the minibus-taxi industry has pursued formality and has been characterised by increasing levels of stakeholder consultation. While reform in the conventional bus industry has pursued *for-the-route* contracts but has been characterised by stagnated progress. The minibus-taxi industry's relationship with government has seen improvement through the increased consultation, however the conventional bus industry's relationship with government has deteriorated as the industry has come under strain from operating subsidies. The difficulty with reforming the transport industry has left the user experiencing overcrowding, increasingly unaffordable fares, disorderly operator practices, and congestion.

The combination of high density, mixed land use and attractive site design encourages transit use. South Africa drew its inspiration for the PTSAP from South American cities that were characterised by one or more of these elements. South African cities, on the other hand, are characterised by urban spread, low density, largely single-purposed land uses, and limited site design that actively encourages NMT and transit use. This, together with infrastructure that promotes private car use, has left

questions as to the appropriateness of the 'gold-standard' BRT employed in the PTSAP for the South African urban form.

4 CASE ONE: NELSON MANDELA BAY METROPOLITAN MUNICIPALITY

4.1. INTRODUCTION

This chapter presents the first case study in this dissertation. It begins with an overview of Nelson Mandela Bay Metropolitan Municipality (NMBM) prior to the initiation of the IPTN programme. It provides insights into the city's population, unemployment, GDP growth, car ownership and a brief description of the layout of the city. All contributors to increasing congestion in urban environments. It continues to give a detailed break-down of transport modal choices, affordability of public transport, the dominant issues that users have with transport and the dominant factors that influence modal choice, as found in the 2013 National Household Travel Survey (NHTS). The section concludes with an overview of the institutional arrangements that preceded the transformation efforts of the IPTN programme.

The overview is followed by an evaluation of the outcomes of the city's IPTN project. The 'achieved outcomes' are evaluated against the 'intended outcomes' by the NMBM, as defined by IPTN design parameters set by the NDoT in the PTSAP.

This is followed by a detailed timeline of events and decisions taken on the IPTN project between 2007 and 2015. All the above sections are analysed and discussed in the concluding section which details the proposed factors to have caused the status of the IPTN project as at the end of 2017.

4.2. CITY OVERVIEW

NMBM first displayed an interest in reforming public transport in 2007. Around the time, the city had a population of 1.15 million residents, an unemployment rate of 23.6 percent and GDP growth sat at a high of 6.2 percent (Eastern Cape Socio Economic Consultative Council, 2017). Car ownership across the Eastern Cape had steadily been increasing from 13.9 percent in 1996 to 15.5 percent in 2003 (Lombard *et al.*, 2007) and continued to increase to reach 17.4 percent by 2013 (Statistics South Africa, 2013). The number of households having access to a car increased from 33.8 percent in 2003 (Lombard *et al.*, 2007) to 38.3 percent in 2013 (Statistics South Africa, 2013). The metropole consists of Port Elizabeth and its surrounding suburbs, as well as the outlying urban nodes of Uitenhage, Kwanobuhle, Despatch and Motherwell (SSI Engineers and Environmental Consultants, 2011).

The state of transport

According to the 2013 NHTS, households, for any transport needs, travel predominantly by minibus-taxi with 38.1 percent of households using the mode; while private car use makes up 30.6 percent. This is followed by 19.1 percent of households walking, 9.1 percent of households opting to use a bus, and 0.9 percent opting for rail. It should be noted that the city has a limited urban rail network which only serves a small portion of the metropole.

In the Eastern Cape, the majority of public transport users, 39.6 percent, spend less than 10 percent of their household income on public transport; while 28.5 percent spend more than 20 percent of their household income.

The study found that 7.2 percent and 12.6 percent of residents found minibus-taxis to be too expensive and the drivers to drive recklessly, respectively. For transport by public bus, the most significant issues were the unavailability of buses at specific times and that users would have to walk long distances to reach a bus stop. The same issue was raised with trains in terms of the length needed to be travelled to reach the station, while no trains being available was the second most important issue. In general, the largest percentage of respondents, 21.7 percent, cited that there were no transport problems. And fewer than ten percent of respondents cited poor road conditions, rude drivers and overloading as issues.

The three largest factors that influence the transport choice are cost, time and safety from crashes with 21.6, 19.8 and 18.0 percent of households citing these factors, respectively.

Institutional arrangements of the local public transport sector

Conventional bus services are operated by Algoa Bus Company (ABC), the only government-subsidised bus operator, who operated a fleet of 408 vehicles in 2011 (SSI Engineers and Environmental Consultants, 2011). Hundreds of minibus-taxi operators operate 2118 minibus-taxi's in the minibus-taxi industry. The industry is governed by ten minibus-taxi associations, namely: Port Elizabeth and District Taxi Association, Uncedo Service Taxi Association, Uitenhage and District Taxi Association, Algoa Taxi Association, Northern Areas Taxi Association, Eastern Cape Long Distance Taxi Association, Western Suburbs Taxi Association and Norwich Long Distance Taxi Association (SSI Engineers and Environmental Consultants, 2011).

Commuter rail services are provided by the Passenger Rail Agency of South Africa (PRASA) between Uitenhage and Port Elizabeth. Limited train services are provided and ridership in 2010 averaged 7344 passengers per day (SSI Engineers and Environmental Consultants, 2011).

The population were reliant on public transport and made their modal choice based on cost, travel time and safety. These three aspects are some of the key advantages presented by the BRT model.

4.3. SYSTEM OUTCOMES EVALUATION

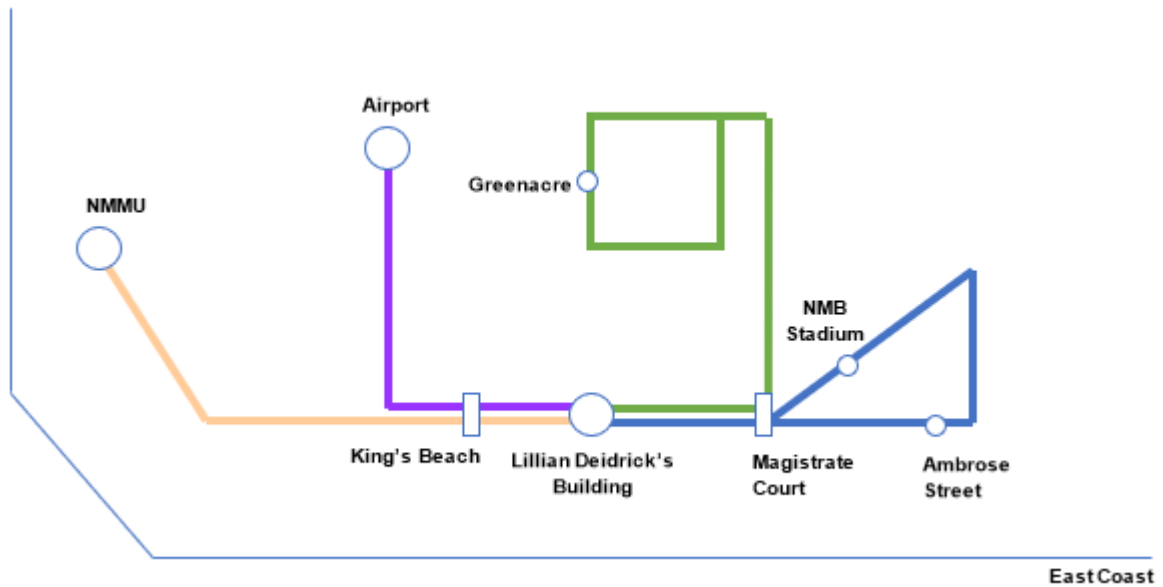


Figure 2: Pilot phase IPTN layout (Source: Compilation of literature review and interview data)

The NMBM launched a IPTN pilot phase in 2013 and had operated for ten months before being terminated (Former Algoa Bus Company [ABC] employee, personal interview, 2017, August 17; Laph'umilanga official, personal interview, 2017, August 17; NMBM official, 2017). Figure 2 above, shows the four routes that ran during the pilot phase. Following the termination in November 2013 no other IPTN services were run by the end of 2017. Therefore, the outcomes on having achieved the intended criteria was evaluated against the pilot phase operations. Despite the lack of IPTN operations since November 2013, the NMBM continued to pursue the implementation of the IPTN. Therefore, the project is considered to be in a state of delay.

The NMBM published the Public Transport Plan in 2006, which was the first plan hoping to transform the public transport sector. This plan was followed by study tours, further business plans and eventually culminated into the 2011 Comprehensive Integrated Transport Plan (CITP). The IPTN design criteria listed on the following page was found in the CITP.

Table 1: Comparison between intended outcomes and achieved outcomes of the NMBM IPTN project.

	Criteria	Intended outcome	Achieved outcome
Accessibility	Walking distance to trunk/feeder stop	400m ¹	Delayed due to partial project roll-out ³
	Headway	High frequency ¹	Achieved during pilot phase ²
	Daily operational hours	16-24 hours	15 hours a day during pilot phase ²
	Weekly operational days	7 days	Achieved during pilot phase ²
	Percentage of population within walking distance of trunk/feeder	“all citizens” ¹	Delayed due to partial project roll-out ³
Service quality	Vehicle and station/interchange experience	Safe, clean, modern and universally accessible stations and vehicles. Maps, timelines and real-time information. ¹	Achieved during pilot phase. But no real-time information displayed ³
	User service experience	Scheduled, reliable, affordable, and integrated schedules, fares and routes. ¹	Achieved during pilot phase ³
Infrastructure	Roads	High speed, dedicated, median lanes ¹	Partially achieved on pilot phase trunk route ³
	Vehicles	Articulated buses with multiple doors on both sides, low floor. ¹	Achieved ⁴
	Fare system	Pre-board electronic fare payment ¹	Paper ticket fare system ⁵
	Stations	Centralised median lane platforms and kerbside stops. ¹	Achieved on some sections of pilot phase trunk route ^{3,1}
Operations	Predicted passenger trips per day	450 000 ¹	51 868 ⁶
	Predicted fare revenue per annum	R1 billion ¹	R0.00 (2016/17) ⁷
	Intended first operations date	July 2011 ⁸	February 2013 (terminated Nov 2013) ⁴
	Intended all operations date	January 2014 ¹	None (2016/17) ⁴

¹ SSI Engineers and Environmental Consultants, 2011

² Nelson Mandela Bay Tourism, 2012

³ Nelson Mandela Bay Municipal Official, personal interview, 2017

⁴ Adewumi and Allopi, 2014

⁵ Former Algoa Bus Company Public Transport Specialist, personal interview, 2017

⁶ Laph’umilanga Transport Services, personal interview, 2017

⁷ Nelson Mandela Bay Municipality, 2017

⁸ Gauthier and Weinstock, 2010

NMBM set the objective for all residents to be within 400m of an IPTN bus stop or station. This was only partially achieved because the pilot phase operated on routes, which did not cover the entire metropolitan (NMBM official, personal interview, 2017, August 21). The CIPP stated no time objective for the desired headways on trunk or feeder routes, however it was stated that the services should be 'high frequency'. This was considered to be achieved as the pilot phase operated on head ways ranging from 10mins to 30mins in the peak, depending on the route (Nelson Mandela Bay Tourism, 2012). The pilot phase also operated on seven days a week but only ran for 15 hours a day (Nelson Mandela Bay Tourism, 2012), which was short of the 16-24 hours intended for the IPTN design. User experience of vehicles, stations and services were satisfactory during the pilot phase (NMBM official, personal interview, 2017, August 21). This outcome was based on an interview with an NMBM official, which may exhibit bias, and no user satisfaction assessment has ever been completed. No real-time information was given to passengers on bus arrival and departure times.

The IPTN services ran on dedicated lanes in the CBD of Port Elizabeth and ran in mixed traffic on the remainder of the routes (NMBM official, personal interview, 2017, August 21) therefore the intended roads infrastructure criteria was only partially achieved. NMBM achieved the intended vehicle criteria when modern articulated buses arrived in time for the 2010 World Cup (Adewumi and Allopi, 2014). There were conflicting reports as to whether or not the buses had the doors on the wrong side or whether the vehicles were too large for the dedicated lanes (Sell off the IPTS buses and pay back taxpayers: Afriforum Port Elizabeth, 2015; Sesant, 2016). However, despite the uncertainty on the suitability of the buses, the vehicles are within the bounds of the intended criteria and therefore the criterion is deemed to have been achieved.

Pre-board electronic ticketing was supposed to be implemented but would have taken eight to ten months, which was an unrealistic timeframe to be achieved for the pilot phase. Therefore, the NMBM opted for an interim paper-based ticket system. However, with the termination of the pilot phase in November 2013, the electronic ticket system was never realised (Former ABC employee, personal interview, 2017, August 17). Median boarding and alighting is implemented in the CBD of Port Elizabeth, but in others areas the buses dock on the kerbside (Adewumi and Allopi, 2014; NMBM official, personal interview, 2017, August 21).

The pilot phase reached a high of 51 868 passengers for the month of October 2013. During the pilot phase, the system carried an average of 730 passengers per day (Former ABC employee, personal interview, 2017, August 17; Laph'umilanga official, personal interview, 2017, August 17. It is significantly short of the 450 000 passengers per day and the associated R1 billion fare revenue predicted for the first year of full operations. By the end of the financial year 2016/17, the City reported no fare

revenue from the IPTN (Nelson Mandela Bay Municipality, 2017). The IPTN services started two years later than planned and terminated after ten months of operations, which by the end of 2017, was yet to be relaunched. However, the City continued to pursue the implementation of the IPTN project which allows the evaluation that the system is delayed

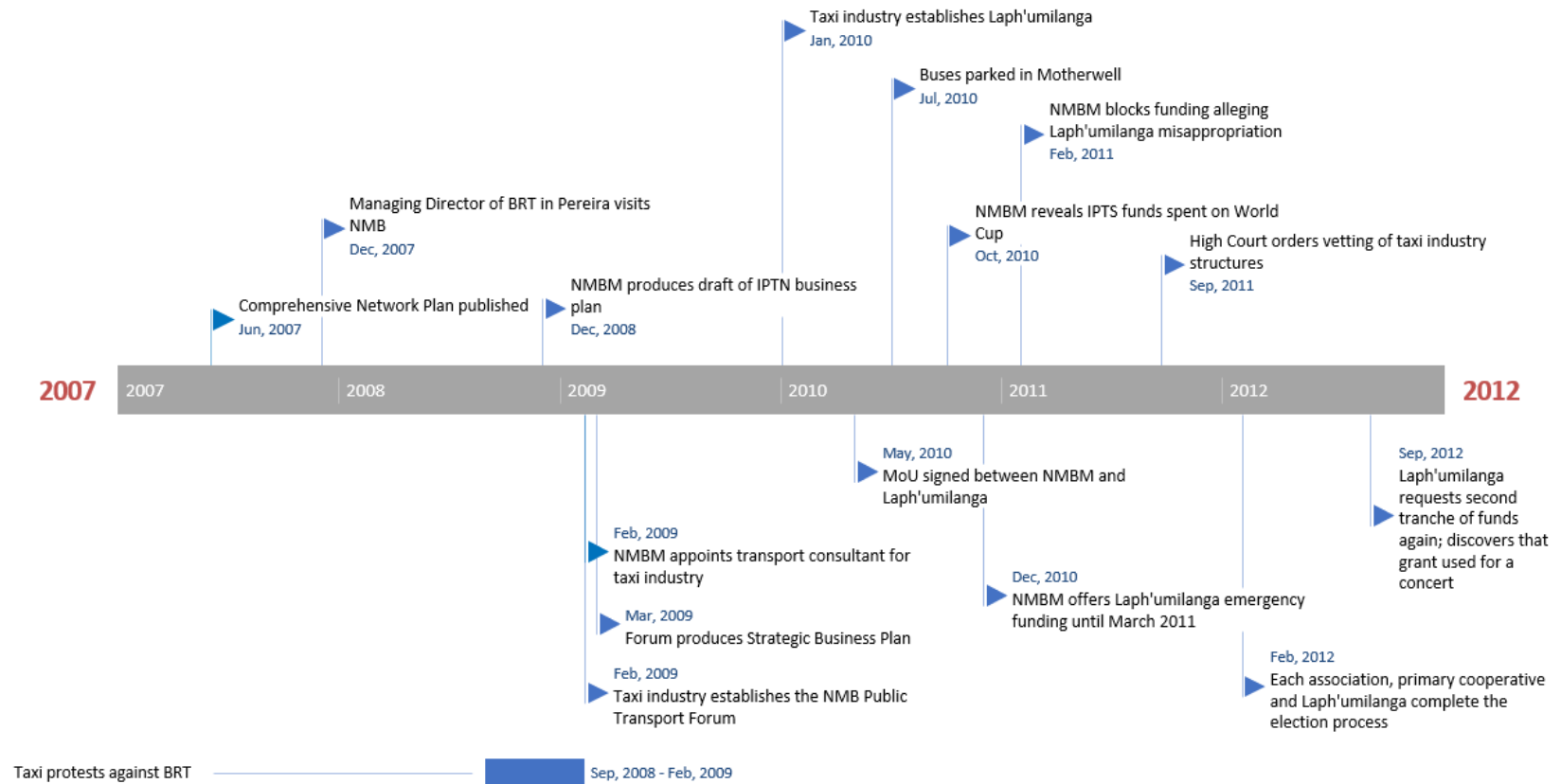


Figure 3: Timeline of events between 2007 and 2012 relating to the early years of the IPTN project and The World Cup.

4.1. PROJECT TIMELINE

The following section details events and decisions along the project timeline in figure three, below from inception to the end of 2017. The causal links in the chronological narrative help to unearth the underlying factors that have caused the delayed state of the NMBM's IPTN project.

The NMBM began to show an interest in BRT in 2007. City officials and taxi industry stakeholders travelled to Bogota and Pereira on a study tour of their BRT systems in 2007, funded by The Institute for Transportation and Development Policy (ITDP) (Wood, 2014a). This visit was reciprocated by the Managing Director of Pereira's BRT with a visit to Nelson Mandela Bay in December 2007 (Wood, 2014a). As a result of these exchanges, the initial Nelson Mandela Bay BRT system was based on the BRT system in Pereira (Siyongwana and Binza, 2012). KPMG were commissioned by the NMBM to prepare a business plan for the public transport operational plan. The draft of the business plan was published in December 2008 (Nelson Mandela Bay Transport Forum, 2009).

The mini-bus taxi industry rejected the draft business plan for two reasons. Firstly, the industry cited a lack of consultation in the preparation of the business plan or the NMBM's operational plan. Secondly, the industry believed that the NMBM did not factor in the transition costs of transforming the existing industry stakeholders into bus operators, as the PTSAP required (Laph'umilanga official, personal interview, 2017, August 17). The opposition to the business plan in the boardroom was followed by protests on the city streets in January and February 2009 (Schalekamp and Behrens, 2010; Siyongwana and Binza, 2012; Laph'umilanga official, personal interview, 2017, August 17). The NMBM conceded to the taxi industry, leading to the creation of the Nelson Mandela Bay Transport Forum (The Forum) in February 2009. The Forum consisted of representatives from each of the ten mini-bus taxi associations in the NMBM area. The NMBM also procured and funded a transport consultant to assist The Forum with its transition (Siyongwana and Binza, 2012; Laph'umilanga official, personal interview, 2017, August 17).

Ironically, despite the commitment from the NMBM to include the existing public transport industry in the planning of the BRT system, it was found that by early 2009, the NMBM was at a "reasonably advanced planning stage" (Van Ryneveld, 2008; Siyongwana and Binza, 2012) having already procured 24 low-floor vehicles for the BRT operations (Adewumi and Allopi, 2014).

The Forum published a Strategic Business Plan in March 2009 (Laph'umilanga official, personal interview, 2017, August 17). The Strategic Business Plan led to the creation of five primary cooperatives, comprising of the ten taxi associations. Board members, from the primary cooperatives, were elected to

the secondary cooperative, Laph'umilanga, which was mandated to negotiate with government on behalf of the ten taxi associations (Laph'umilanga official, personal interview, 2017, August 17). The creation of the cooperatives was a drawn-out process, and as a result, negotiations started later than anticipated and the first MoU was only signed in May 2010 (Laph'umilanga official, personal interview, 2017, August 17).

“To get to that stage of having the cooperative established and having everyone elected was significant for our industry” (Laph'umilanga official, personal interview, 2017, August 17).

“One of the achievements was that the City was able to unite the industry under one negotiating body” (NMBM official, personal interview, 2017, August 21).

The World Cup

Following the signing of the Memorandum of Understanding (MoU), the first tranche of funds was released. Laph'umilanga made a point of disclosing that the NMBM released the funds to the transport specialist, not to the secondary cooperative. This suggested a sentiment of distrust between the two parties. These funds enabled Laph'umilanga to procure offices, equipment and drivers in preparation for the World Cup operations (Laph'umilanga official, personal interview, 2017, August 17; Independent transport specialist, personal interview, 2018a, November 20). The public transport services were run smoothly during the World Cup, but confusion on the continuation of the services followed soon after the tournament's conclusion.

Negotiations for the continuation of the services – the IPTN services, were to continue following the signing of the MoU, during the World Cup (NMBM official, personal interview, 2017, August 21; Independent transport specialist, personal interview, 2018a, November 20). However, “due to power struggles, this did not happen” (NMBM official, personal interview, 2017, August 21). As a result, by July 2010, the 24 buses procured for the IPTN services were parked at an old fresh produce market in Motherwell (Siyongwana and Binza, 2012). Negotiations for the IPTN services continued after the world cup.

There was also confusion on the intended purpose of the first tranche of funds. Laph'umilanga believed the MoU encompassed both the World Cup services and the IPTN services. Therefore, the first tranche of funds was used to cover their set-up costs for office rental, equipment, employees etc. that would be needed for both the World Cup and IPTN services. However, the NMBM intended for the first tranche of funds to only be used for the operations of the World Cup services. The independent transport specialist agreed with the NMBM's view that the World Cup services and the IPTN services were two distinctly different agreements.

“The World Cup services was a one-off, it was not part of the IPTN services. We should have been negotiating about how things were going to start off” (Independent Transport Specialist, personal interview, November 20)

The NMBM promised a second tranche of funds at the start of the IPTN services, which would include funding to cover set-up costs. However, the IPTN services did not start following the World Cup which contributed to the confusion.

Faced with needing to maintain their office set-up, Laph’umilanga requested the second tranche of funds upon conclusion of the World Cup. These funds were delayed. Laph’umilanga subsequently used the profit from the World Cup services to cover their costs beyond July 2010. In October 2010, Laph’umilanga again requested the second tranche of funds. This time, they were informed that the NMBM did not have the second tranche of funds because it had been spent on the World Cup. The NMBM promised that Laph’umilanga would receive the funds at a later date and requested that a Memorandum of Agreement is negotiated for the funding to be released. This was followed, in December 2010, with an emergency figure to help Laph’umilanga to cover their cost until March 2011, at which point the balance of the funds would be released. Following this agreement, the NMBM paid Laph’umilanga five tranches of R400 000.00, effectively back paying Laph’umilanga from August 2010. These funds were used to pay director fees, rent and other liabilities (Laph’umilanga official, personal interview, 2017, August 17). However, in January 2011, the NMBM accused Laph’umilanga of misallocating funding which results in the remainder of their funding being blocked in February 2011. (Laph’umilanga official, personal interview, 2017, August 17). This stalled negotiations and led to a court case where the High Court, on 21 September 2011, instructed that the entire industry membership and election process be vetted. This was to verify the validity of Laph’umilanga’s mandate to represent the NMB mini-bus taxi industry. This process was led by Adv Max Boqwana (Independent transport specialist, personal interview, 2017, November 20). The vetting process concluded with the election of the boards of the Primary Cooperatives in January 2012 and the board of Laph’umilanga, in February 2012. (Laph’umilanga official, personal interview, 2017, August 17). Following this vetting process, Laph’umilanga again requested the second tranche of funds. At this point Laph’umilanga discovered that their grant was used for to pay consultants for a concert that never happened (Laph’umilanga official, personal interview, 2017, August 17).

This discovery leads to the unfolding of the corruption narrative. Before we cover that section of the narrative, we will first go back to unpack the timeline of events relating to the Pilot Project.

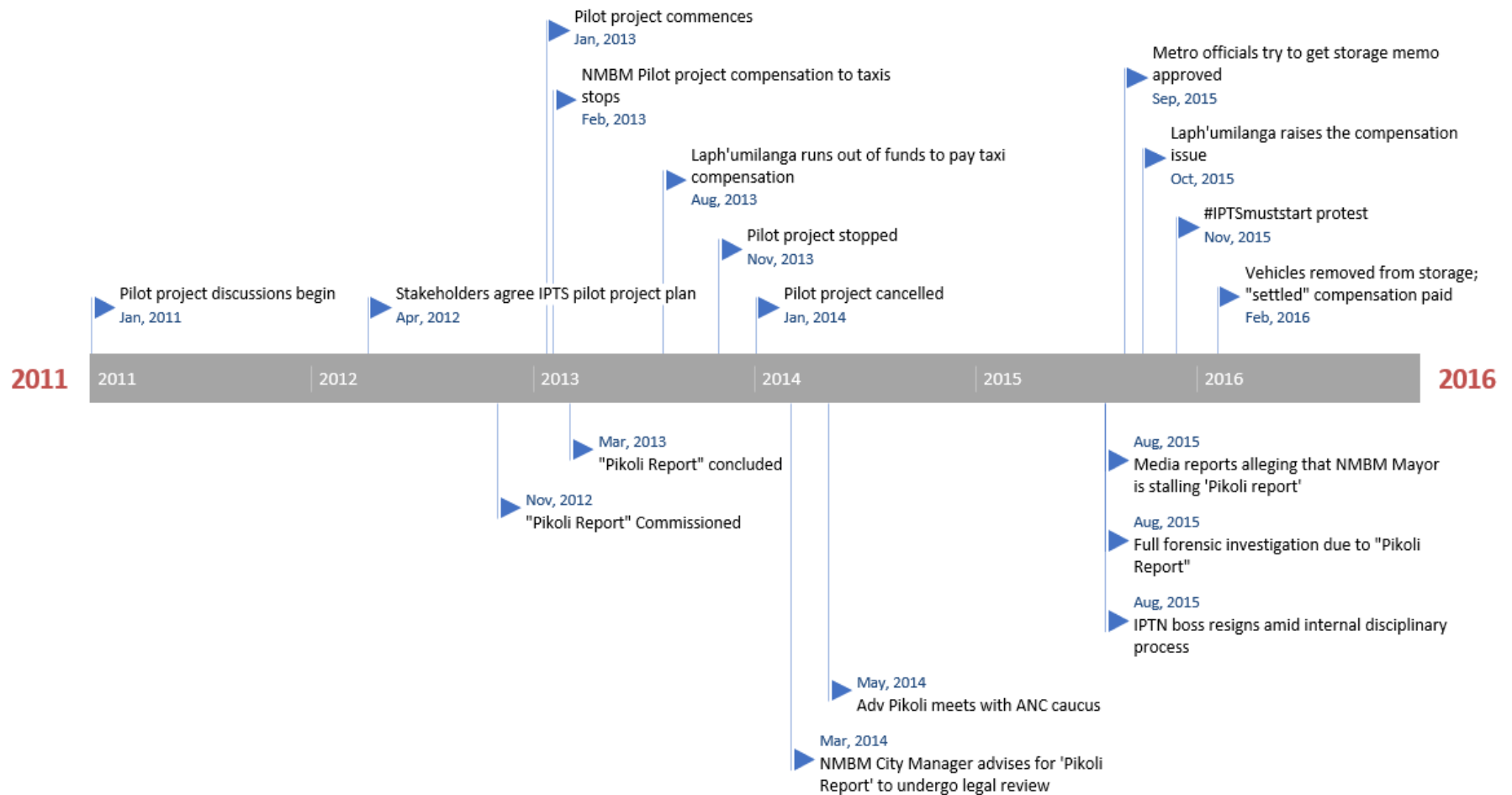


Figure 4: Timeline of events between 2011 and 2016, relating to the Pilot Project and corruption allegations.

The Pilot Project

Discussion around how to utilise the 25 buses began in 2011 because of pressure from the NDoT and National Treasury on the NMBM to produce results that justified the grant allocations (Former ABC employee, personal interview, 2017, August 17; NMBM official, personal interview, 2017, August 21). These discussion culminated in Laph'umilanga, Algoa Bus Company (ABC), and the NMBM agreeing to the pilot project plan (Laph'umilanga official, personal interview, 2017, August 17) in April 2012. The three stakeholders worked together to plan, implement and operate the pilot project.

The first bus began operations on 20 January 2013. The agreement saw the taxi industry remove 60 vehicles from the routes and ABC remove their vehicles. The Pilot Project was operated in a joint venture between ABC and Laph'umilanga ((Former ABC employee, personal interview, 2017, August 17; Laph'umilanga official, personal interview, 2017, August 17). ABC agreed to train the taxi operators on operating a bus operating company. In exchange, ABC received payment for the pilot project bus operations and the taxi industry received compensation for removing their vehicles. The pilot project ran on four routes. Interestingly, one of the conditions set by the NMBM was that the pilot project should not run in direct competition with any other existing public transport route (Former ABC employee, personal interview, 2017, August 17; Laph'umilanga official, personal interview, 2017, August 17). The aim of the pilot project was to let the people see that something is happening (Former ABC employee, personal interview, 2017, August 17; Laph'umilanga official, personal interview, 2017, August 17; NMBM official, personal interview, 2017, August 21).

The relationships between all three stakeholders took strain through the pilot project. It seemed to ABC that the taxi industry was largely not interested in learning. ABC ended up running the busses. As a result of this working relationship, ABC vowed that they would never work with the taxi industry again (Former ABC employee, personal interview, 2017, August 17). ABC also claimed that the sixty vehicles that the taxi industry removed from the roads were not necessarily originally operating on the routes that were included in the pilot project.

“The taxis did not remove their vehicles from the university route. We had a count of 10 000 people on that route per day before we started. The pilot project took something like 600 passengers per day. What happened to the other 9500 passengers? They were being transported by taxis. They were being paid R6500.00 per taxi that was parked off, but they were never on that [the university] route.”
(Former ABC employee, personal interview, 2017, August 17).

The relationship between ABC and Laph'umilanga took strain due to the events described above, while both Laph'umilanga's and ABC's individual relationships with the NMBM took strain due to compensation issues. The cause of strain between Laph'umilanga and the NMBM related to vehicle compensation and started after the first month of the pilot project operations (Laph'umilanga official,

personal interview, 2017, August 17). While, ABCs compensation problems started upon conclusion of the Pilot project and related to vehicle operations (Former ABC employee, personal interview, 2017, August 17).

Laph'umilanga received vehicle compensation, from the NMBM, for the 60 vehicles in storage. However, after the first month of the pilot project the payments stopped. Eventually, after negotiations, Laph'umilanga and the NMBM agreed for Laph'umilanga to use their surplus grant funding to pay the vehicle compensation of the 60 operators. The NMBM would reimburse Laph'umilanga for these funds. This agreement was to last until the NMBM was able to solve its compensation problems. However, by August 2013, Laph'umilanga had run out of grant funding to use for operator compensation (Laph'umilanga official, personal interview, 2017, August 17). At this point the operators stopped receiving compensation for their stored vehicles.

Later that year, in November 2013, the Pilot Project was cancelled to the surprise of Laph'umilanga. The NMBM decided to end the operations because the routes were running along main routes and were not connecting residential areas to activity nodes. "There were no O - D's" (NMBM official, personal interview, 2017, August 21). The NMBM decided that it would be more fruitful to end the services and enter discussions around operating from residential areas to the CBD. The NMBM told Laph'umilanga that the services were going to restart in 2014 and therefore wanted the mini-bus taxi vehicles to remain in storage. But in January 2014, Laph'umilanga received a letter stating that the IPTN operations were closing down (Laph'umilanga official, personal interview, 2017, August 17). At this point an ongoing postponement ensued.

"They insisted on shutting it down, but they said that we will start again in three months with a full starter service. And that was three months three months, negotiations, they always said three months, three months." (Laph'umilanga official, personal interview, 2017, August 17).

But the services never actually started again. As a result, the vehicles were kept in storage through 2014 and 2015. Laph'umilanga placed the blame for the continued storage of the taxi vehicles on the NMBM. But Crispian Olver (2017) found a different reason for the stored taxis which he details in his book, 'How to steal a city'.

'Even though the pilot project had ended in January 2014, the taxis continued to demand their ongoing compensation payment, claiming that their taxis were being held in storage by the municipality. But, when I looked into this in August 2015, I found that the taxi operators were in fact refusing to take their vehicles back' (Olver, 2017).

Olver also found that there were only 59 vehicles being stored, while the NMBM were paying compensation for 60 vehicles. Furthermore, "most of the vehicles were dilapidated and only 12 of the 59 were repairable.", which possibly amounted to fraud. Olver states that a company called Axios had

been appointed by the metro to take-in the vehicles and certify that they were road worthy and that the vehicles were licensed to operate along the pilot routes. According to the claims of ABC, not all of the taxis were removed from the pilot routes (Former ABC employee, personal interview, 2017, August 17). Axios failed to record that only 59 vehicles were being stored, that majority of the vehicles weren't road worthy and that allegedly the vehicles in storage were not all from the pilot routes. According to Olver, the head of infrastructure and engineering had stated that a criminal case of misrepresentation and fraud had been opened (Olver, 2017).

In September 2015, metro officials tried to push a memorandum through council that sought to authorise the compensation to taxi operators of R6.2 million. This was for the storage of their vehicles for the period of September to December 2014. It did not account for the 2015 period: January to September 2015. The memorandum furthermore tried to get authorisation for the NMBM to repair the vehicles. The memorandum failed to state that the compensation was not budgeted for and was not within the bounds of the original pilot project agreement (Olver, 2017).

Olver believes that Axios may have colluded with the taxi owners, and the NMBM had, at best, turned a blind eye to the truth (Olver, 2017). Considering this memorandum, it appears the NMBM might have been involved in the collusion themselves.

In October 2015, Laph'umilanga again raised the issue of the vehicle compensation with the NMBM (Laph'umilanga official, personal interview, 2017, August 17; Olver, 2017). The Mayor at the time said that the matter had been referred to the Council's Transport Committee. The difficulty faced by the Transport Committee was that they were repeatedly failing to make quorum (Olver, 2017). Following this meeting between Laph'umilanga and the Mayor of the NMB, Laph'umilanga wrote a letter on 20 November 2015, setting an ultimatum to "resolve all IPTS matter" within seven days or there would be consequences. As a fulfilment of the threat of consequences, on 25 November 2015, the industry blockaded the city centre and demanded that the IPTS must start now (Laph'umilanga official, personal interview, 2017, August 17; Olver, 2017).

Following this protest, Laph'umilanga and the NMBM managed to negotiate a settlement. The industry claimed R12 million for vehicle compensation related to the vehicles in storage. However, the NMBM offered R5.5 million on condition that the vehicles were first collected from storage. Laph'umilanga agreed and this concluded the Laph'umilanga compensation issue with the NMBM (Olver, 2017). The agreed settlement compensation for the whole of 2014 and 2015 was paid in February 2016 (Laph'umilanga official, personal interview, 2017, August 17).

ABC was not immune to the struggles of getting compensation out of the municipality. The NMBM were unsatisfied that the buses were not carrying the passenger numbers that they had expected, laying the blame at the feet of ABC. It appeared as though the NMBM did not want to pay ABC their due compensation for operating the vehicles because the NMBM “did not make very much money” from the Pilot Project. ABC responded to these claims by stating that they were instructed by the NMBM to design the Pilot project routes not to run in competition to existing routes (Former ABC employee, personal interview, 2017, August 17). As stated earlier, the NMBM official shared that the routes did not have any O-Ds, and for this reason, the NMBM decided to end the pilot project. It is reasonable to deduce therefore that the NMBM were aware of the unlikelihood of the pilot project making significant financial returns on the pilot operations. The issue was resolved after a few months of discussion, with the NMBM agreeing to pay ABC for the pilot project trips for which they were claiming compensation (Former ABC employee, personal interview, 2017, August 17).

Corruption allegations

Vital to the accurate narrative of the NMB IPTS are the corruption allegations aimed at both the minibus-taxi industry and the NMBM. Tracking back to February 2012, in the earlier section relating to The World Cup, Laph’umilanga questioned why the grant allocated for the IPTN was used for another purpose. Laph’umilanga believed that the grant vote had been used to pay a Cape Town based entertainment company for a concert that never happened (Laph’umilanga official, personal interview, 2017, August 17).

Laph’umilanga believes that this questioning and political pushing resulted in the “Pikoli Report”. In November 2012, Vusi Pikoli was hired by law firm Brown Braude & Vlok to conduct a preliminary investigation into irregularities identified in the IPTN project (de Kock, 2014). The investigation took five months, finishing in March 2013 and was commissioned by the Deputy Mayor of NMBM (Kimberly, Makunga and de Kock, 2013). Among the findings of the Pikoli report was money spent on a music festival that did not take place and on an events organiser (de Kock, 2014), possibly corroborating the allegations made by Laph’umilanga. The Pikoli report also suggested that there was evidence that Laph’umilanga spent excessive amounts on inflated salaries, bonuses, unauthorised loans and donations (Kimberly, Makunga and de Kock, 2013).

In August 2013, it was stated that Mayor Ben Fihla was yet to table the report before the NMBM Council (Kimberly, Makunga and de Kock, 2013) and in March 2014, it was reported that the city manager advised that the report should go under legal review before it can be adopted (de Kock, 2014). In May 2014, Vusi Pikoli had a meeting with the ANC caucus supposedly to defend the findings in his report (Kock, 2014).

In an August 2015 article, the then Mayor of NMBM, Dani Jordaan stated that the NMBM had established a forensic investigation into the IPTS because of the “Pikoli Report”. He also confirmed that “some of the individuals identified during the investigation” had already been disciplined, in collaboration with the Hawks and other law enforcement agencies. In another report, it was confirmed that the IPTS boss at the time had resigned in August 2015, ahead of internal disciplinary action (Rnews, 2015a)

Allegations of corruption seemed to come from multiple areas related to the IPTN project. Security, software systems, legal work, facilities management, vehicle storage and the automated fare system are all areas where corruption allegations were mounted (Asmal, 2015; Rnews, 2015b; (Former ABC employee, personal interview, 2017, August 17; Laph’umilanga official, personal interview, 2017, August 17; Olver, 2017).

Crispian Olver provides a concise overview of the alleged corruption in the NMBM. Olver states that through his research he found a “festering nest of corruption, with sections of the metro administration having been captured by criminal interests that pulled the strings of a complex machinery designed to bleed the metro dry. The political and business operators behind this had captured much of the metro’s formal systems around the project through a combination of ruthless intimidation and corruption, while political structures provided political cover in exchange for some of the spoils” (Former ABC employee, personal interview, 2017, August 17; Olver, 2017).

4.2. ANALYSIS OF THE CASE STUDY FINDINGS

The Nelson Mandela Bay Municipality had good intentions when they published the first IPTN business plan in December 2008. Increasing car ownership since 1996 increased the likelihood of congestion and the risk of the associated negative economic consequences. The majority of residents still used minibus-taxis as their main mode of transport but were dissatisfied with reckless driving and found the service to be too expensive. Almost 30 percent of households spent more than 20 percent on public transport a month and cost was the biggest driver for modal choice.

BRT promised to be a break away from public transport as experienced in NMB – unreliable, expensive and dominated by minibus-taxis. BRT was to be a scheduled, safe, clean and modern public transport system. It also posed an attractive solution to the NMBM to overcome the challenges of governing the informal paratransit minibus-taxi industry. During their study tours to Pereira and Bogota in 2007, the political leaders and City officials learnt that it was possible to integrate the minibus-taxi industry into formal bus operations, via a transformative project like BRT.

Therefore, through the 2008 IPTN business plan, the NMBM undertook a complex transport project that sought to alter all three dimensions of public transport reform, as outlined in Chapter three.

Based on the accessibility, service quality, infrastructure and operations objectives that the NMBM set for itself, it only managed to partially achieve its outcomes. Most significantly, the system only operated during an eleven-month pilot phase stint, during which it did not reach its intended ridership figures. The system was supposed to be fully implemented by January 2014 with a fare revenue of R1 billion per annum. In the 2016/17 financial year, no fare revenue had been collected as reported in the 2017 NMBM Annual Report.

This section proposes that there are three dominant reasons the IPTN project did not fulfil NMBM's expectations and that at the end of 2017, the project was found in a state of delay. These three factors are a breakdown in trust between Laph'umilanga and the NMBM, a lack of political will within the NMBM to implement the IPTN and financial mismanagement and perceived corruption on both the parts of the NMBM and the minibus-taxi industry.

Factor one: Breakdown in trust between Laph'umilanga and the NMBM

Three excerpts from the narrative are indicative of eroding trust between the minibus-taxi industry and the NMBM over the ten-year period reported in this case study. The first is found in the beginning of the project relating to planning, the second is linked the clarity of funding following the World Cup and the third is about compensation for minibus-taxis removed for the pilot phase.

First excerpt comes from the onset of the project, the minibus-taxi industry and NMBM had to work to restore a working relationship. The minibus-taxi industry rejected the first draft IPTN business plan citing a lack of consultation. Yet, despite the opposition both through formal engagements and protests by the minibus-taxi industry, the NMBM continued with planning and procured IPTN vehicles. This continuation of IPTN planning cultivated the belief in Laph'umilanga that the minibus-taxi industry was just being informed of IPTN plans, rather than engaged for input into the plans (Siyongwana and Binza, 2012). Following this period, the NMBM procured and funded an independent transport specialist to assist the minibus-taxi industry, as an outcome of industry transition engagements. This improved the level of trust between the minibus-taxi industry and the NMBM.

Soon after this improvement in trust between the parties, the second excerpt demonstrates further eroding of trust. Confusion ensued as to the intended purpose of the first tranche of funds and when Laph'umilanga was to receive the second tranche of funds. This placed fresh strain on the relationship between the two parties. From these series of events, it is apparent that Laph'umilanga had

potentially overstretched themselves financially on the expectation that negotiations would conclude shortly. Turning to the NMBM for the funds, Laph'umilanga believed due to it, they experienced a few unexpected obstacles. The NMBM First denied Laph'umilanga's request for the funding, then revealed that the funds had been spent. This was followed by new conditions for the transfer of the funds being set. The funds were released after the conditions were met, but the NMBM finally reversed their decision alleging financial mismanagement by Laph'umilanga. This, yet again, eroded the trust between Laph'umilanga and the NMBM.

The final excerpt that displayed the erosion of trust between the NMBM and Laph'umilanga related to the pilot phase. The evidence suggests that both Laph'umilanga and the NMBM flouted the rules. The series of events spans nearly three years but eventually concludes with a negotiated compensation agreement. The excerpt taken from Crispian Olver's book, *How to Steal a City*, summarises the state of trust between the parties.

“As for the compensation payment, the matter has been referred to the Council’s Transport Committee, chaired by Babalwa Lobishe,” he added. Rockman was not happy. ‘Councillor Lobishe is failing you, Mr Mayor. You must fire her, just like you have done with your officials,’ he said. Babalwa, unable to keep her cool, yelled back at him. A vicious shouting match ensued, and the meeting ended on a sour note. ...The taxi industry was fast losing patience. On 20 November, Rockman wrote a letter to Danny and Bicks, giving them an ultimatum. ‘We hereby request that you resolve all matters within seven days of receipt of this letter,’ he wrote, threatening some undetermined action if we failed to do so.” (Olver, 2018)

The undetermined action turned out to be protests that demanded the immediate start of the IPTN services.

The three excerpts from the timeline demonstrated interactions that lacked trust. An antagonist relationship ensues between the minibus-taxi industry and the NMBM in 2008, 2010 and again in 2013 through to 2015. In each case, after months of disagreement, the NMBM eventually compromised to the demands of Laph'umilanga. The demands of Laph'umilanga appear to also possibly be founded on questionable motives through the course of the narrative. This leaves questions on whether the parties involved had malicious intent to abuse IPTN resources, with no intention to build a trusting relationship, which is vital for successful industry transformation. Even with an overwhelming amount of qualitative evidence of possible malicious intent found by this dissertation, it is difficult to conclude that all parties involved, in fact, behaved with malicious intent, because none of the allegations have been tried in a court of law.

An alternatively proposal on the evident mistrust between the stakeholders is the strained history between government authorities, the minibus-taxi industry and the conventional bus industry. An environment where there is deep-seated mistrust could tempt stakeholders to act in their own interests

vehemently, and perhaps even maliciously. It is possible that the state of the relationship between the minibus-taxi industry and the NMBM prior to the IPTN programme was so strained that it required a highly skilled negotiation team. Perhaps the NMBM, as the necessary leaders of the transition process, lacked the capacity to effectively navigate the complexities of the industry transition. Furthermore, perhaps the NMBM lacked the capacity to even identify the skills needed by the negotiation team to overcome the potentially deep-seated mistrust. Therefore, I propose that because the allegations of corruption are untested this dissertation cannot determine whether the NMB IPTN is delayed because of malicious intent by the stakeholders. Rather, this dissertation proposed that the NMBM lacked the capacity within its negotiation team to overcome the deep-seated mistrust formed through the governments reformation attempts of the public transport sector from 1984 to date. Furthermore, this dissertation proposes that the NMBM also lacked the capacity to be able to identify and execute suitable solutions to the challenges being experienced by the IPTN negotiation team.

Factor two: Lack of political will

Three excerpts from the timeline demonstrate a lack political will to see the IPTN project implemented.

The first excerpt is the fact that the industry negotiations for the IPTN services was supposed to take place during the World Cup. The NMBM official, who appeared uncomfortable throughout the interview, simply stated that “power struggles” was the reason for the lack of negotiations, with a reluctance to share any information beyond this. These stalled negotiations had detrimental effects on the NMBM’s ability to implement the IPTN services. There appeared to be a lack of urgency to resolve this impasse, which was apparent from placing the IPTN busses in storage and the drawn-out negotiations to the point which required intervention from the NDoT and National Treasury.

The second excerpt which demonstrated a lack of political will was the pilot project. All three interviewees shared that the pilot project was put forward as a marketing exercise. This had the biggest impact on the route selections, where instructions were given for pilot routes to not run in direct competition with existing routes. All three interviewees also shared that the routes were chosen knowing that they did not have adequate O-D pair, indicating that the ridership figures should have been expected to be low. Which proves the decision to terminate the pilot project citing poor ridership figures to be counter-intuitive. These series of decisions bring into the question the seriousness with which the NMBM approached the pilot project. Following the conclusion of the pilot routes the IPTN project entered three years of seemingly perpetual delay with the NMBM periodically promising a restart, which is the third excerpt.

A contributing factor to the continued delay was the lack of consensus between Laph’umilanga and the NMBM on the compensation for stored vehicles. From the NMBM’s side, the

Transport Committee repeatedly failed to reach quorum, making it impossible for the NMBM to make decisions on compensation amongst other decisions. This contributed to the strain between the NMBM and Laph'umilanga and is indicative of political leadership within the NMBM that was not serious about seeing IPTN issues being resolved.

The excerpts above all could have been resolved if the political leadership had insisted on its resolution. This factor could demonstrate a capacity on the part of the political leadership to enforce its will. Alternatively, it could demonstrate a political leadership to whom the perpetual delays enabled an alternative motive.

Factor three: Financial mismanagement and corruption allegations

The suggestion of an alternative motive is plausible, given the overwhelming amount of corruption allegations. Three excerpts from the timeline demonstrate how allegations between the minibus-taxi operators and the NMBM delayed the implementation of the IPTN services.

The first excerpt comes from late 2010; following the World Cup the NMBM revealed that the funds allocated to the IPTN project had been spent. This event transpired after a few months of negotiations after the World Cup. The NMBM promised to release the funds requested by Laph'umilanga pending a second Memorandum of Action, which took another three months to reach agreement.

The second excerpt is taken from December 2010 to early 2012. Upon the release of the promised funding in December 2010, the NMBM accused Laph'umilanga of financial mismanagement. This was followed by court proceedings and an audit on Laph'umilanga which, delaying the IPTN further, lasted until early 2012.

The third excerpt follows from the conclusion of the vetting process which culminated from the court proceedings. Once Laph'umilanga had validated their mandate to represent the minibus-taxi industry, it requested their promised funding. The NMBM revealed at this stage that they had used the grant funding allocated for IPTN services to pay for consultants for a fundraising concert for the IPTN. This resulted in the preliminary investigation by Adv Pikoli. The report found financial mismanagement and alleges corruption in both Laph'umilanga and the NMBM. There was a three-year delay before any action was taken on the report until late 2015, further delaying the implementation of the IPTN.

Financial mismanagement was alleged from as early as 2010 and again alleged in 2012, causing delays that repeatedly pushed implementation back by years.

4.3. CONCLUSION

In conclusion, the three sections above demonstrate that the IPTN project was hampered by the state of the relationship between the minibus-taxi industry and the NMBM and by the alleged widespread mismanagement of resources. Both these issues could have been resolved if there had been sufficient political will and skill within the administration to ensure no resources were abused, allegedly, a productive relationship between the minibus-taxi industry and the NMBM was developed and that, where avoidable, time delays were minimised. With an apparent lack of these two key components, the NMBM never managed to implement anything of significance.

5 CASE TWO: CITY OF TSHWANE

5.1. INTRODUCTION

This chapter begins with a city overview of the City of Tshwane (CoT) prior to the IPTN programme. The overview details population, unemployment, GDP growth, car ownership and brief description of the layout of the city. It details modal choice statistics, public transport affordability, dominant user issues that influences modal choice, as found in the 2013 National Household Travel Survey. The section concludes with an overview of the institutional arrangements that preceded the transformation efforts of the IPTN programme.

The city overview is followed by an evaluation of the IPTN programme. The achieved outcomes are evaluated against the outcomes intended by the CoT, as defined by IPTN design parameters as set out in the PTSAP.

This is followed by a timeline analysis of events and decisions taken on the IPTN project between 2008 and 2017. All the above sections are analysed and discussed in the concluding section which details the proposed factors which have caused the outcomes of the IPTN project as at the end of 2017.

5.2. CITY OVERVIEW

The CoT first showed an interest in transforming the public transport sector using BRT in 2007. At the time the population was estimated to be 2.3 million residents (City Planning, 2008), with an unemployment rate of 23.5 percent in 2008 (Office of the Executive Mayor, 2016) and GDP growth of 5.9 percent in the 2007/8 financial year (City of Tshwane, 2008). Car ownership across Gauteng decreased from above 40 percent in 1996 to below 35 percent in 2003 (Lombard *et al.*, 2007), even though the number of new car-owning households increased by 120 000 households. The increased number of cars on the road occurred concurrently with a significant population growth due to inter-province migration (Lombard *et al.*, 2007). Therefore, the data does not reflect the probable increase in congestion over the 1996-2003 period. By 2013, household car ownership in the province had increased to 38.5 percent (Statistics South Africa, 2014a)

In Tshwane the number of households having access to a car increased from 33.0 percent in 2003 (Lombard *et al.*, 2007) to 51.1 percent in 2013 (Statistics South Africa, 2013). The statistics for the CoT seem significantly out of proportion with the figures reported for Gauteng and South Africa in

the same study conducted by Statistics South Africa. Therefore, even though the figures are reported, they should be considered with caution. Tshwane consists of Hammanskraal and Soshanguve in the North, Atteridgeville in the West, Centurion in the South and Bronkhorstspuit in the East, amongst other suburbs.

The state of transport

Minibus-taxi use in Tshwane was marginally the dominant mode of all travel, at 33.9 percent, over the use of private cars, at 33.5 percent. This is followed by 12.8 percent of households walking as the preferred mode for all travel. While other forms of public transport followed with 9.5 percent of households opting for transport by bus and 8.0 percent opting for transport by rail.

In the province of Gauteng, 32.4 percent of households spent more than 20 percent of their household income on public transport in 2013. While, the majority of households, 38.3 percent, spent less than 10 percent on public transport.

The most important transport related problems expressed in the 2013 NHTS was reckless driving by taxi drivers, 10.7 percent of households experienced this problem, while 9.5 percent and 9.4 percent of households expressed a problem with taxis being too expensive, and traffic congestion being unbearable, respectively. Modal choice in Tshwane is determined most significantly by travel time, travel cost and safety from accidents with 41.2 percent, 26.2 percent and 8.5 percent of households citing these factors respectively.

Institutional arrangements of the local public transport sector

Subsidised, conventional bus services in Tshwane are operated by PUTCO, North West Star, Atteridgeville Bus Service and Pretoria City Transport (City of Tshwane, 2012a). Thousands of minibus-taxi operators operate approximately 6500 vehicle trips in the AM and PM peaks, on 462 routes across the city (City of Tshwane, 2012a).

Commuter rail services are run by PRASA along four corridors: Mabopane to Pretoria CBD, Rayton to Pretoria CBD, Saulsville to Pretoria CBD, and Eerster Frabrieke to Hercules. Rail ridership in the morning peaks of 2008, ranged from an average of 3000 passengers on some routes and reached highs of 9000 passengers on others (City of Tshwane, 2012a).

5.3. SYSTEM OUTCOMES EVALUATION

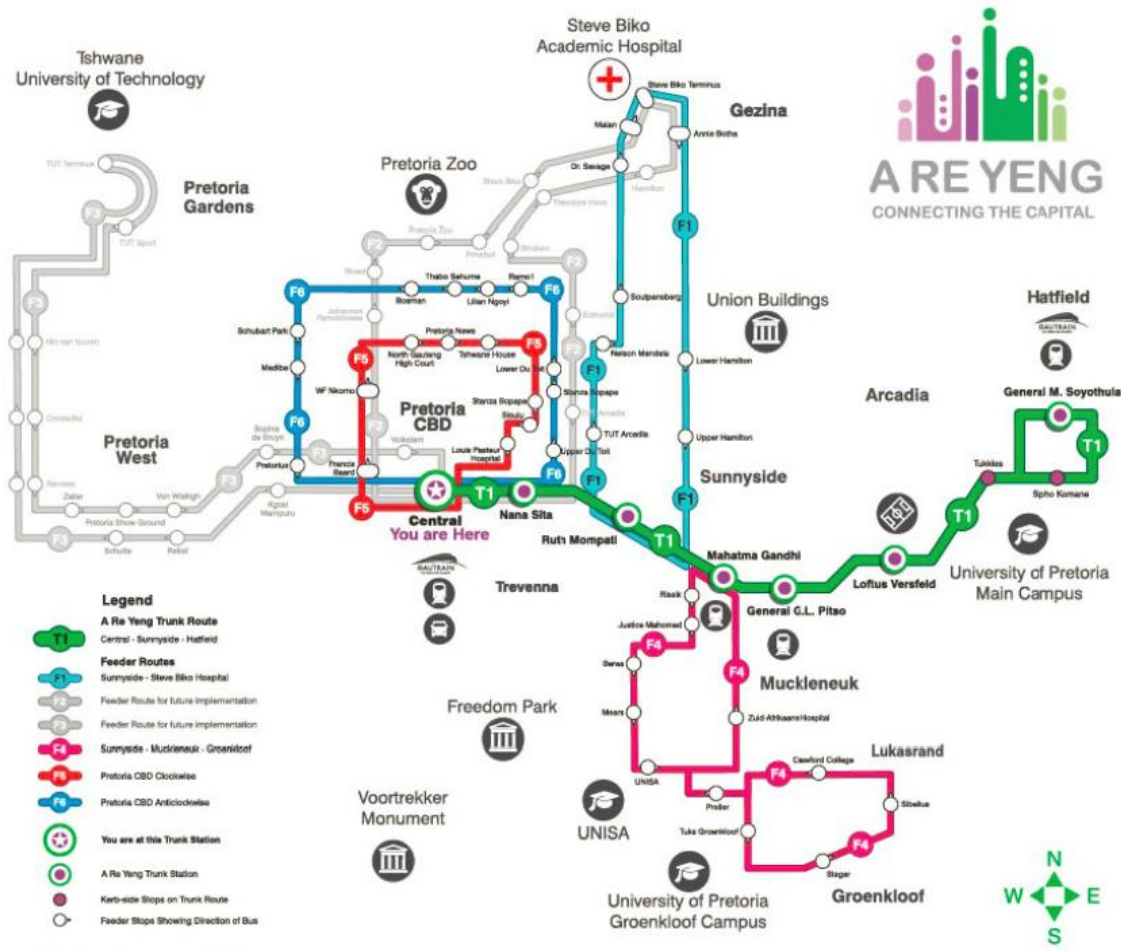


Figure 5: A Re Yeng layout of implemented routes (Source: A Re Yeng website)

The promises of BRT, as seen in South American cities such as Bogota, gave the CoT the opportunity to overcome the three dominant passenger satisfaction issues – reckless taxi drivers, high cost of traveling by taxi and increasing traffic congestion. BRT also presented the opportunity to reduce travel time, reduce travel costs and improve safety from accidents. Tshwane put their first BRT-orientated IPTN plan together in 2007, which was subsequently reviewed and rejected by National Treasury. A new plan was developed by A-M Consulting Engineers (AMCE) and approved in 2012. The ‘Intended outcomes’ in the table below were taken from the Phase 1 Operational Plan developed by AMCE in 2012.

CoT started with a 7km route between Pretoria CBD and Hatfield, expanding the services towards Wonderboom in the North, on an interim basis (Knopjes, 2016; A Re Yeng consultant, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16). The CoT

continues to pursue the implementation of the IPTN project; therefore, it is evaluated to be in a state of delay.

The CoT intended to have ‘most residents’ within a walking distance of less than one kilometre to a trunk station or feeder stop. Given the partial roll-out of line 2A and line 1A, this outcome is delayed until the entire system is implemented. The trunk route was to run with headways of between three to five-minutes, and 15-minute headways on the feeder routes. On the implemented lines thus far, the trunk routes run at headways of between seven and ten minutes, while the feeder runs at headways of between ten and twenty minutes. The objective to run services for a minimum of 15 hours a day, seven days a week, was achieved.

The CoT set out to provide public transport that is safe, clean, modern, universally accessible, and providing real-time information. This was achieved, along with the service being scheduled, affordable, reliable and with integrated routes and fares. The roads, vehicle, ticketing and station infrastructure objectives was achieved on the implemented lines.

The first phase was supposed to begin by April 2014 with full implementation by June 2017. It anticipated a full first phase ridership of 127 000 passenger trips per day and a fare revenue of R254 million. However, pilot services were only launched in November 2014 and the remaining phases are yet to be fully implemented. The partial implementation of phase one, to date, led to lower than expected ridership figures of 4500 passenger trips per day and an associated lower fare revenue of R5 952 293.00 per annum. In summary, A Re Yeng is operating although short of CoT’s intended outcomes, the CoT also continues to implement the project and therefore is evaluated to be delayed.

Table 2: Comparison between intended outcomes and achieved outcomes for all components of IPTN design

	Criteria	Intended outcome	Achieved outcome
Accessibility	Walking distance to trunk/feeder stop	Less than 1km ¹	Delayed due to partial project roll-out ²
	Headway	Trunk: 3-5mins; Feeder: 15mins ¹	Trunk: 7-10mins; Feeder: 10-20mins ²
	Daily operational hours	15 hours ¹	Achieved ²
	Weekly operational days	7 days ¹	7 days ²
	Percentage of population within walking distance of trunk/feeder	“most residents” ³	Delayed due to partial project roll-out ²
Service quality	Vehicle and station/interchange experience	Safe, clean, modern and universally accessible stations and vehicles. Maps and real-time information. ²	Safe, clean, modern and universally accessible stations and vehicles. Maps and real-time information. ²
	User service experience	Scheduled, reliable, affordable, and integrated schedules, fares and routes. ²	Scheduled, reliable, affordable, and integrated schedules, fares and routes. ²
Infrastructure	Roads	Trunk: Dedicated, median lanes, priority at intersections. Feeder/complimentary routes: Mixed traffic - some priority. ²	Trunk: Dedicated, median lanes, priority at intersections. Feeder/complimentary routes: Mixed traffic-some priority. ⁴
	Vehicles	Low floor buses with level boarding. 18m articulated bus and 12m rigid bus. ²	Low floor buses with level boarding. 18m articulated bus and 12m rigid bus. ²
	Fare system	Pre-board electronic fare payment ²	Pre-board electronic fare payment ²
	Stations	Enclosed, attractive design and side walk bus stops ²	Enclosed, attractive design with side walk bus stops. ²
Operations	Passenger trips per day	Phase 1: 127 000 ²	4500 ⁵
	Fare revenue per annum	Upon completion of phase 1: R254 million ²	R5 952 293.00 (2016/17) ⁶
	First operations date	April 2014 ¹	November 2014 ⁷
	All operations date	Completed phase 1: June 2017 ²	Phase 1 partially implemented ²

¹ Odendaal, 2012

² A Re Yeng, 2015

³ City of Tshwane, 2012

⁴ City of Tshwane Official, personal interview, 2017

⁵ National Treasury, 2017

⁶ City of Tshwane, 2017

⁷ Mudzuli, 2014

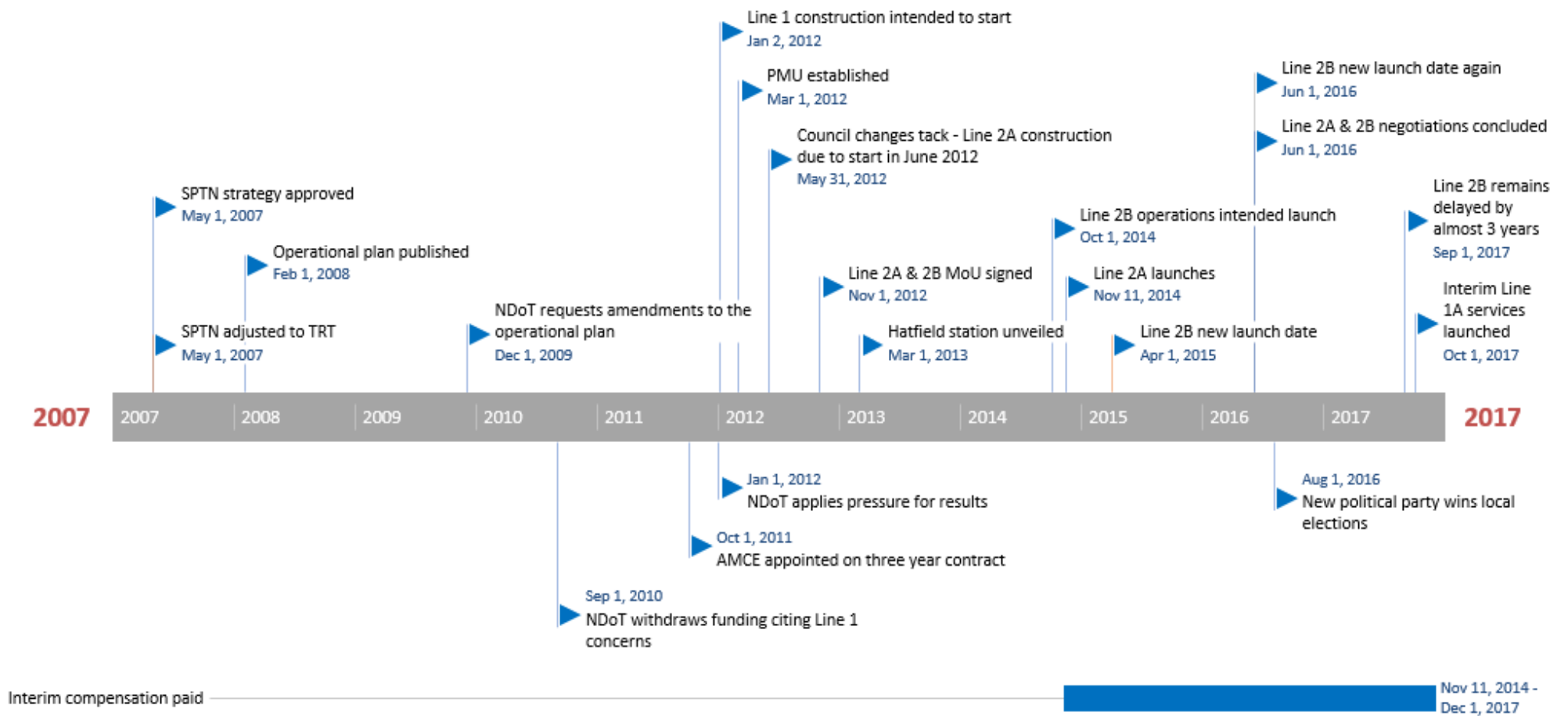


Figure 6: Timeline of events between 2007 and 2017, in relation to the initial plan to the launch of interim line 1A services

5.4. PROJECT TIMELINE

Starting and re-starting

The CoT already had a strategy approved, in January 2007, to reform public transport through the Strategic Public Transport Network (SPTN). This was changed to become the Tshwane Rapid Transit plan, in May 2007, to include BRT (Mclachlan, 2008; Van Ryneveld, 2008; City of Tshwane, 2012a). The initial 2008 Operational Plan for A Re Yeng was designed by Advanced Logistics Group, a group of international and local consultants (Gauthier and Weinstock, 2010; City of Tshwane, 2012a; Former AMCE consultant, personal interview, 2018, July 10) and was adopted by Council in 2009 (City of Tshwane, 2012b), followed by the completion of the preliminary design and environmental approval of line one (City of Tshwane, 2012a).

The BRT system was supposed to be running by the World Cup (A Re Yeng consultant, personal interview, 2017, November 23; CoT official, personal interview, 2017, November 23) however, national government raised concerns about the preliminary design towards the end of 2009 (City of Tshwane, 2012b; CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, personal interview, 2018, July 10) and later withdrew the PTISG funding in September 2010. The funding was withdrawn for the following reasons: Line one directly competed with the Mabopane to Tshwane Priority Rail Corridor; inaccessible stations along the R80 highway; high project cost; and the absence of a full IPTN plan (Council of City of Tshwane, 2012; CoT senior official, personal interview, 2018, July 16). A new consultant was appointed towards the end of 2011, and together with officials from the CoT Transport and Development Department made up the Project Management Unit (PMU) established in March 2012 (A Re Yeng consultant, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, personal interview, 2018, July 10). Auswell Mashaba Consulting Engineers (AMCE) were the appointed consultants for six years through two three-year contracts, with the intention of building the internal CoT capacity by the end of the six-year period (Former AMCE consultant, personal interview, 2018, July 10). However, upon investigation in 2018, it was found that limited capacity transfer had taken place by the time that the PMU consultants had stopped working on the project. Very few of the original project stakeholders were still involved and two project stakeholders, who had been involved in the project since 2009 and 2011, respectively, expressed concern over the amount of A Re Yeng institutional memory that has remained in the CoT (CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, personal interview, 2018, July 10).

“The plan was that the PMU would be run by AMCE but towards to the end of the second PMU period, it would morph into the IPTN unit and the CoT would take over and AMCE would

disappear into the sunset. But the problem was the continuity of staff and experienced staff on the CoT's side who actually have the public transport experience.” (Former AMCE consultant, personal interview, 2018, July 10)

The PMU reviewed and re-routed line one and produced a new operational plan, with the intention to start line one construction in 2012 (A Re Yeng consultant, personal interview, 2017, November 23; CoT official, personal interview, 2017, November 23). The NDoT started to apply pressure again in early 2012 to begin to see construction progress. The revised plan involved constructing line one first, followed by Line 2, but the timeline for line one construction was too long to satisfy the political pressures (A Re Yeng consultant, personal interview, 2017, November 23; Former AMCE consultant, personal interview, 2018, July 10; CoT senior official, personal interview, 2018, July 16).

“Because there were a lot of commitments on the part of the CoT, but nothing was happening. Treasury threatened to direct the funds to other cities so that is why they decided just to do something short just for operational purposes just so that they can see that something is happening.” (CoT official, personal interview, 2017, November 23)

Hence the decision was taken to begin with Line 2, starting in the CBD to Menlyn, via Hatfield, with the CBD-Hatfield segment as the starter-service (A Re Yeng consultant, personal interview, 2017, November 23; Former AMCE consultant, personal interview, 2018, July 10).

Line 2A: CBD to Hatfield ‘starter’ service

It was originally envisaged that a trunk service would run on dedicated lanes from the CBD to Menlyn. Hatfield would be reached using a complementary service, which would operate on the same dedicated lanes as the trunk service, but would turn off the trunk service to run a loop in mixed traffic through Hatfield and then re-enter the dedicated lanes to connect to Menlyn (A Re Yeng consultant, personal interview, 2017, November 23; Former AMCE consultant, personal interview, 2018, July 10). However, two factors changed this original design. First, the Mayor of Tshwane wanted to have an official unveiling of the state-of-the-art A Re Yeng stations (A Re Yeng consultant, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, personal interview, 2018, July 10). And second, the planners realised that passengers connecting to the Gautrain would prefer that the A Re Yeng service would run directly to the station as opposed to walking seven blocks between the two services (Former AMCE consultant, personal interview, 2018, July 10). This change of design necessitated that the original kerbside stop envisaged for Hatfield be redesigned to a median station. The CoT Council were informed of, and agreed to this design change in May 2012, and sought to have construction start in the second week of June 2012 with a showcasing event scheduled for 28 June 2012 (Council of City of Tshwane, 2012).

However, the Hatfield station sod-turning took place in, and construction only started, in July 2012 (Odendaal, 2012; Barrabas, 2016). The station unveiling took place in March 2013 (Venter, 2013; Former AMCE consultant, personal interview, 2018, July 10) with the first buses running on Line 2A by 11 November 2014, seven months later than intended (City of Tshwane, 2012b; Mudzuli, 2014). This ‘forced route’ has had significant impacts on the overall project costs, ridership and NDoT funding allocations (CoT official, personal interview, 2017, November 23).

This decision increased the project costs because it affected the industry transition negotiations and it required more expensive infrastructure. A median station is more expensive to build than a kerbside station, and construction costs in the CBD and in Hatfield proved to be higher than expected, due to unmapped underground utility services. However, the increased construction costs could have been avoided in Hatfield had the route not changed from mixed traffic to trunk and had the station not changed from a kerbside stop to a median station.

When the decision was made in 2012 to implement a starter service from the CBD to Hatfield, the PMU was aware that that section didn’t have the required demand to meet the ridership expectations (A Re Yeng consultant, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, personal interview, 2018, July 10).

“...that is why we don’t have the passenger numbers because no one is travelling from Hatfield to the CBD.” (A Re Yeng consultant, Personal interview, 2017, November 23)

“This inception system would only run from Hatfield to the CBD, its only 7km. It was known that it would run at very low passenger volumes. We knew that and the model told us that that it would run with 3500 trips a day but the planning at that stage as that it would not run for too long before line 1 came on stream and line 2B down to Menlyn came onstream.” (Former AMCE consultant, personal interview, 2018, July 10)

The demand for the CBD to Hatfield route was going to be low because most passengers travelled from Menlyn directly to the CBD and vice versa. The CBD to Hatfield trunk route breaks up a natural Origin – Destination (O-D) pair established by the taxi industry: CBD to Menlyn (A Re Yeng consultant, personal interview, 2017, November 23; CoT official, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, personal interview, 2018, July 10). It was anticipated that six months later Line 2B and Line 1A services would come on board which would improve ridership. However, Line 2B and Line 1A took longer than anticipated to come on-board. By November 2017, Line 2B had not yet materialised (A Re Yeng consultant, personal interview, 2017, November 23) and services had only been launched on Line 1A in October 2017 (Moatshe, 2017a).

The last factor that was impacted by the decision to implement the Hatfield-CBD trunk service was industry transition. This decision to run trunk services between the CBD and Hatfield received opposition from the minibus-taxi industry (CoT official, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16).

“And this I must say has created a lot of problems that we are still sitting with, even now, in terms of industry transition. Because ideally, we were going to negotiate for an O-D which is CBD to Menlyn and before we even formally start negotiations there was this pressure to roll-out this [CBD to Hatfield] which is not even an O-D.” (CoT Official, personal interview, November 23)

Initially, the minibus-taxi industry had opposed the Phase 1A implementation date – April 2014, on the grounds that they believed that the negotiations would not be complete in time (A Re Yeng consultant, personal interview, 2017, November 23; CoT official, personal interview, 2017, November 23). The first consultation for pre-negotiations was expected to take place in June 2012 (CoT, 2012c). The minibus-taxi industry was concerned that introducing a Hatfield – CBD service would cause the minibus-taxi industry to lose market share. This would weaken their negotiating position and they could lose out on the compensation that they were owed (CoT official, personal interview, 2017, November 23). Even though the industry disagreed on rolling out Phase 1A before negotiations were complete, their commitment did not waiver. They were willing to remove their vehicles and operate the services and signed an MoU to this end in November 2012. At the outset of negotiations, the taxi industry made it clear that they were not happy about the fact that they would be losing out financially (CoT official, personal interview, 2017, November 23).

Interim compensation

In response to the concerns of the minibus-taxi industry, the CoT introduced ‘interim compensation’. Interim compensation was designed to allow the CoT to operate the CBD to Hatfield BRT services in parallel to the existing public transport services in the area (CoT official, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, 2018). The Menlyn-CBD route is traditionally operated by the Menlyn Taxi Association, Pretoria Central Association and Alarus Park Association. It was agreed that each operator would remove, and receive compensation for, one vehicle. These vehicles would stop operating between the CBD and Hatfield, Line 2A, but would continue to operate from Hatfield to Menlyn. When the Hatfield to Menlyn section, Line 2B, was ready for roll-out all minibus-taxi operations would be removed from the route. The operators would then receive compensation for all their vehicles, according to the ‘per-vehicle’ value agreed from the interim compensation negotiations (CoT official, personal interview, 2017, November 23).

The CoT viewed this as a suitable solution because it expected the interim period to only last for six months (CoT official, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, personal interview, 2018, July 10). However, that did not turn out to be the case. Following the interim compensation agreement, negotiations for full industry transition, along Line 2A and 2B, continued. An MoU was signed between the CoT and the minibus-taxi industry in November 2012 (CoT official, personal interview, 2017, November 23), and an MoA was signed in June 2013 (Tshwane BRT system ‘will benefit taxi industry’, 2013; CoT official, personal interview, 2017, November 23). The negotiations for Line 2A and 2B were only concluded in June 2016, while Line 2A operations started two years earlier in November 2014.

At this stage, the CoT had already been paying interim compensation for two years, which was already longer than anticipated. The CoT had hoped to conclude interim compensation at the launch of Line 2B, which was expected to be completed by March 2016 (City of Tshwane, 2012b; Barrabas, 2016), which would have coincided with the conclusion of the full industry transition negotiations in June 2016 (CoT official, personal interview, 2017, November 23). However, that had not happened and public opposition to the proposed Menlyn to Hatfield design stymied construction progress. The stalled Line 2B construction resulted in the affected minibus-taxi operators still receiving interim compensation until as late as November 2017 (CoT official, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16).

With delays on Line 2B, the CoT shifted their focus to Line 1A. The minibus-taxi industry approved this decision on condition that Line 2A interim compensation would not be compromised and that it would not alter the final compensation agreement for Line 2A and 2B (CoT official, personal interview, 2017, November 23). The on-going delay of Line 2B construction and the resulting continuous interim compensation for Line 2A ballooned the project cost (A Re Yeng consultant, 2017; CoT official, personal interview, 2017, November 23; Former AMCE consultant, 2018).

“If you put the interim conversation plus the compensation together then it [the total compensation cost for Line 2A and Line 2B] is a lot higher than was expected.” (CoT official, personal interview, 2017, November 23)

Line 2B: Hatfield to Menlyn

Line 2B connects the CBD to Hatfield trunk route to Menlyn, via Lynwood Road and Atterbury Road, both dual lane carriageways. The initial Line 2B design was to construct an additional lane and expropriate land along Lynwood and Atterbury Roads. However, the quotes received for this work was more than double what the CoT had previously been quoted for construction per kilometre of the BRT corridor (A Re Yeng consultant, personal interview, 2017, November 23; CoT senior official, personal

interview, 2018, July 16). This option was unaffordable for the CoT, who instead opted to reduce the number lanes along Lynwood and Atterbury Road from two lanes for general traffic to one lane for general traffic with one dedicated lane for A Re Yeng (CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, 2018). Significant public opposition stemmed from this decision, causing delays in implementing Line 2B (A Re Yeng consultant, personal interview, 2017, November 23; Moatshe, 2017b; Former AMCE consultant, personal interview, 2018, July 10).

Opposition for the lane reduction for Line 2B came from within the CoT as well as from external stakeholders. The PMU was of the opinion that if the CoT was serious about BRT, then it would have to take away private car space (CoT senior official, personal interview, 2018, July 16; Former AMCE consultant, personal interview, 2018, July 10). A consultant from AMCE spoke to how the Roads and Traffic department with the CoT disagreed with this sentiment.

“There were contributions from the CoT’s Roads and Traffic Department, they were not part of the PMU, but we would interface where designs affected the traffic etc. The roads guys quite frankly put up obstacles all the time. They stymied the project because they were really against taking away road space for public transport.” (Former AMCE consultant, personal interview, 2018, July 10)

The public opposed the lane reduction, as well as four independent traffic engineers, who believed that the CoT did not correctly gauge the morning peak hour demands at the intersections along Lynwood Road (Moatshe, 2017b). Line 2B was originally planned to begin operations in April 2015 (CoT, 2012b) but this was later extended to March 2016 (Barrabas, 2016). However, following the change in local government after the local elections in August 2016, the CoT conducted an economic impact assessment which further delayed the project (A Re Yeng consultant, personal interview, 2017, November 23; Moatshe, 2017b). In November 2017, these design alternations were still being considered and no progress on planning or construction was found (A Re Yeng consultant, personal interview, 2017, November 23; CoT senior official, personal interview, 2018, July 16)

5.5. ANALYSIS OF CASE STUDY FINDINGS

The CoT started considering public transport reform through BRT at a time of positive economic growth, increased car ownership and the dominance of public transport by the minibus-taxi industry. The well-intended objectives of the IPTN plan that saw BRT being implemented proved to be more challenging than expected. The analysis of the case finds that A Re Yeng is delayed due to two factors namely, weak planning and a misalignment between political objectives and planning conditions.

Factor one: Weak planning

The impact of weak planning within the IPTN project resulted both in time overruns and cost overruns. Two excerpts from the case provide the evidence.

Operational plans had been completed in 2008 but concerns raised about the basic principles of BRT design by national government led to funding being withdrawn. The subsequent process of appointing new project consultants and producing a new planning document delayed the project until 2012.

“From the City’s side a new project manager was appointed, who had no real experience in BRT planning, in fact I think that is one of the great weaknesses of A Re Yeng. In general, the authorities side had a great weakness in their planning ability and I still believe that it is the same as today” (Former AMCE consultant, personal interview, 2018, July 10)

This sentiment was concurred by a CoT official, who explained that the administration had a very small team of people overseeing the project. The individuals were mostly seconded from other departments and often entire responsibilities like industry transition, stakeholder engagement and systems planning only had one or two staff members. The team grew as the project grew but it still left a significant reliance on external consultants. The efforts made to bolster the CoT’s transport planning capacity was not sustained, as today most of the institutional knowledge has been lost with almost a complete change of IPTN project staff.

The second example of weak planning causing time delays and cost overruns comes two years later in 2014. The plan to restore the natural O-D pair of the CBD to Menlyn within six months of launching Line 2B failed to materialise. The initial plan to expropriate land for additional lanes proved to be too expensive, while the adjusted plan of reducing general traffic to one lane and dedicating one existing lane to A Re Yeng received significant opposition both from the public and within the CoT. By the end of 2017, this impasse on Line 2A was still not solved. The impact of this drawn out planning process has seen the minibus-taxi operators receive interim compensation for nearly three years longer than originally expected. It has also prevented A Re Yeng from reaching ridership figures beyond the 4 500 passengers that is currently being achieved.

Besides the small staff compliment, the plan developed in 2008 displayed a lack of capacity to apply the principles of BRT design to Tshwane’s context. While the lack of adequate design in consideration of public opinion and cost factors is evidenced in the fact that it has been four years since Line 2A began to experience its challenges.

Factor two: Misaligned political objectives and planning conditions

It is critical to recognise that A Re Yeng does not find itself with low ridership figures solely due to poor planning. Political leadership played a critical role in causing the outcomes of the IPTN project to be delayed.

Pressure from the NDoT in 2012 saw the CoT political leadership make the decision to implement Line 2B, despite the planners being aware that the route between the CBD and Hatfield would only reach 3 500 trips a day. Line 2B was chosen because it was quickly implementable, which allowed the CoT to satisfy the concerns of the NDoT. Furthermore, the Mayor's push for the route to be used as the unveiling of A Re Yeng's state-of-the-art stations changed the project plan and increased cost. This political factor as well as the realisation by planners of the need to align with the Gautrain services led to the mixed traffic 'complementary' route being changed to a dedicated trunk route in the median.

This political decision caused the introduction of 'interim compensation'. A concept which the CoT continues to pay to the minibus-taxi operators ballooning project costs and with a weak ability to ensure that the taxi industry is adhering to the agreement.

"And I remember one of the guys from the finance workstream, saying that I [can] go stand on Lynwood road at the university and a taxi comes past; I don't know where he has come from, he could be competing with the BRT, he has just made a short detour around Hatfield, but I don't know where he has come from, it could be from Menlyn but I don't know [where the taxi has come from]." (Former AMCE consultant, personal interview, 2018, July 10).

5.6. CONCLUSION

In conclusion, A Re Yeng is delayed due to both weak planning capacity and poor political decision making. The planning team lacked both an adequately sized team, with a reliance on consultants, as well as lacked the ability to plan according to the principles of BRT design. The planning function within the administration's IPTN team also seemed to lack the ability to critically engage with the designs produced by the consultants. Poor political capacity is also evident in the planning function because the transport political head should have pre-empted the public push-back on the designs.

The political decision to implement Line 2B bordered on political interference because the decision was made despite the knowledge that it would be detrimental to the project in the long term. Implementing Line 2B solved a short-term political problem of justifying expenditure to the National Treasury. However, the same political drive was not present when problems with Line 2A started to hamper the project's ability to improve its ridership figures. As a result, towards the end of 2017 the CoT was again faced with the pressure from National Treasury to justify its need for funding.

6 CASE THREE: CITY OF JOHANNESBURG

6.1. INTRODUCTION

This chapter begins with an overview of the city of Johannesburg (CoJ) prior to the initiation of the IPTN programme. The overview details population, unemployment, GDP growth, car ownership and a brief description of the layout of the city. This is followed by a detailed break-down of transport modal choice, affordability of public transport, the dominant issues that users have with transport and the dominant factors that influence modal choice, as found in the 2013 National Household Travel Survey. The section concludes with an overview of the institutional arrangements that preceded the industry transformation efforts of the IPTN programme.

The overview follows with a section evaluating the outcomes of the IPTN programme. The achieved outcomes are assessed against the outcomes intended by the CoJ, as defined by IPTN design parameters as set out in the PTSAP.

This is followed by a detailed timeline analysis of events and decisions taken on the IPTN project between 2003 and 2017. The data in all the sections are analysed and discussed in the concluding section which details the proposed factors to have caused the outcome of the IPTN project as at the end of 2017.

6.2. CITY OVERVIEW

In 2006, the CoJ was already in the full swing of transforming the city's public transport through a plan called the Spatial Public Transport Network (SPTN). On the verge of implementation of the SPTN, BRT was introduced. At the time the population was estimated to be 3.7 million residents (Human Sciences Research Council, 2013), with an unemployment rate of 23.6 percent in 2004 (South African Cities Network, 2006). Gauteng recorded GDP growth of 6.1 percent in 2006 (Statistics South Africa, 2006). As mentioned in the previous Chapter, car ownership in the province of Gauteng was not representative of the increased congestion on the roads of Gauteng between 1996 and 2003.

In Johannesburg the number of households having access to a car increased from 32.1 percent in 2003 (Lombard *et al.*, 2007) to 41.5 percent in 2013 (Statistics South Africa, 2013). Johannesburg is made up of Soweto in the west; Fourways, Midrand and Sandton toward the north and the CBD in the south east.

The state of transport

Minibus-taxi use is the dominant mode of travel for households in Johannesburg, at 39.2 percent, followed by private car use at 26.5 percent, accounting for all household trips. Thereafter, 15.7 percent of households walk all the way to work, eight percent use trains and 7.2 percent travel by bus.

In the province of Gauteng, 32.4 percent of households spent more than 20 percent of their household income on public transport in 2013. The majority of households, 38.3 percent, spent less than 10 percent on public transport in 2013.

The most important transport related problems expressed in the 2013 NHTS were reckless driving by taxi drivers, 12.3 percent of respondents expressed this dissatisfaction. The second biggest concern was no busses being available, with 11.8 percent of households raising this issue; followed by taxis being too expensive, 9.6 percent of households noted this dissatisfaction. Modal choice in Johannesburg is determined most significantly by travel time, travel cost and flexibility with 36.6 percent, 27.2 percent and 10.4 percent of households citing these factors, respectively.

Institutional arrangements in the local public transport sector

Subsidised, conventional bus services in Johannesburg are operated by PUTCO, Metrobus and other smaller operators who are collectively represented by the South African Bus Association of Operators (SABOA) (City of Johannesburg [CoJ], 2018). Thousands of taxis operate on a semi-informal basis with membership to taxi associations such as Top Six Taxi Association, the Greater Johannesburg Taxi Associations and other smaller bodies. Urban commuter rail services are provided by PRASA on an extensive network of routes.

6.3. SYSTEM OUTCOMES EVALUATION

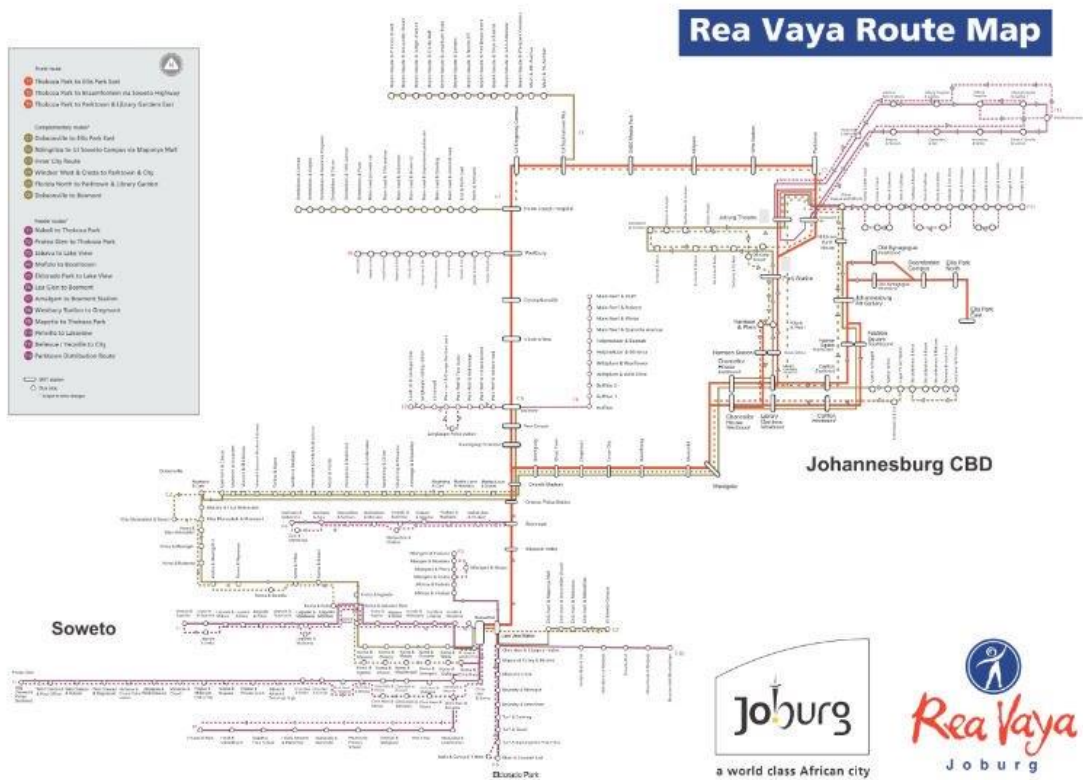


Figure 7: Rea Vaya layout of implemented routes (Source: City of Johannesburg Twitter account)

BRT presented an attractive upgrade to the SPTN that simultaneously transformed the minibus-taxi industry and promised to attract car users to public transport. The BRT design was viewed as a minor departure from the existing SPTN plan. A scoping study was completed by the CoJ, together with international consultants - the Institute for Transportation and Development Policy (ITDP) and VIVA Cities, in November 2006. The intended outcomes for the design criteria of BRT is drawn from that scoping study.

Table 3: Comparison between intended outcomes and achieved outcomes for all components of IPTN design

	Criteria	Intended outcome	Achieved outcome
Accessibility	Walking distance to trunk/feeder stop	Within 500 meters of trunk/feeder corridor ¹	Delayed due to partial project roll-out ¹⁰
	Headway	Peak: 1 – 3 mins headway; off-peak: 10 mins ¹	Peak: 5 mins headway Off-peak: 15 mins headway ²
	Daily operational hours	19 hours ¹	16 hours ³
	Weekly operational days	7 days ¹	7 days ³
	Percentage of population within walking distance of trunk/feeder	85 percent ¹	Delayed due to partial project roll-out ²
Service quality	Vehicle and station/interchange experience	Safe, clean, modern and universally accessible stations and vehicles. Maps and real-time information. ¹	Unclean, no real-time information, maps missing, partial universal accessibility
	User service experience	Scheduled, reliable, affordable, and integrated schedules, fares and routes. ¹	Scheduled, reliable, affordable, integrated schedules, fares and routes
Infrastructure	Roads	Dedicated median busways and mixed traffic lanes ¹	Trunk: Dedicated median bus ways. Feeder: mixed traffic ³
	Vehicles	High floor buses with level boarding. 18m articulated and 12m rigid vehicles ⁴	High floor buses with level boarding. 18m articulated and 12m rigid vehicles. ⁵
	Fare system	Pre-board electronic fare payment ¹	Started with paper-ticket system; upgraded to electronic payment ⁴
	Stations	Enclosed, attractive design and side walk bus stops ¹	Enclosed, attractive design and side walk bus stops ⁴
Operations	Passenger trips per day	Full phase 1: 434 000 ⁶ Phase 1A&1B: 80 000 ⁷	51 389 ⁸
	Fare revenue per annum	Unpublished	R126 million ⁸
	First operations date	April 2009 ¹	August 2009 ⁹
	All operations date	Phase 1: September 2017	Phase 1C yet to be completed ⁵

¹ City of Johannesburg, 2006

² Rea Vaya, 2018

³ Walters, 2013

⁴ City of Johannesburg, 2012

⁵ Mccaul and Ntuli, 2011

⁶ Gauthier and Weinstock, 2010

⁷ City of Johannesburg, 2012

⁸ City of Johannesburg, 2017

⁹ Wood, 2014

¹⁰ CoJ official, personal interview, 2017, November 24

¹¹ Former CoJ MMC for Transport, personal interview, 2018, June 28

¹² CoJ senior official, personal interview, 2018, July 16

The CoJ implemented Rea Vaya Phase 1A in three years, with the launch date marginally delayed. The real delays in implementation came in Phase 1B and persist with Phase 1C, which is currently delayed by more than a year. However, construction and minibus-taxi industry negotiations are on-going and therefore, the IPTN project is evaluated to be delayed.

The CoJ intended for 85 percent of the population to be within 500 metres of a trunk station or feeder stop. However, due to the partial completion of Phase 1C and pending announcements on future phases, this is yet to be achieved. The system was supposed to operate for 19 hours a day, seven days a week, at headways of one to three minutes in the peak, and ten minutes in the off-peak. This was partially achieved with the system operating for seven days a week, but only for 16 hours a day. The headways achieved are five minutes in the peak and 15 minutes in the off-peak.

The CoJ has managed to achieve a scheduled, reliable, affordable and integrated service. Even though the stations and vehicles do not meet the quality standards set out by the CoJ in the original scoping study, they do meet the intended infrastructure outcomes. Stations are enclosed, attractive and side-walk bus stops are present. The vehicles are 18-meter articulated buses or 12-meter rigid buses. The trunk routes operate with dedicated median lanes and the feeders operate in mixed traffic. The fare collection system started out as a paper-ticket system in 2009 but has subsequently been upgraded to a pre-board electronic payment system.

The intended operations outcomes for Rea Vaya are also yet to be met. Full phase one was initially expected to reach a total of 434 000 passenger trips per day when fully operational, with phase 1A and 1B expected to reach 80 000 passenger trips per day, collectively. Passenger trips on Phase 1A and 1B have been climbing steadily over time and averaged at 51 389 passenger trips per day, for the 2016/17 financial year. The revenue for the same period totalled R126 million. Initial operations were launched four months late, in August 2009 and all operations for Rea Vaya are yet to be launched, with full Phase one intending to be have been launched by September 2017.

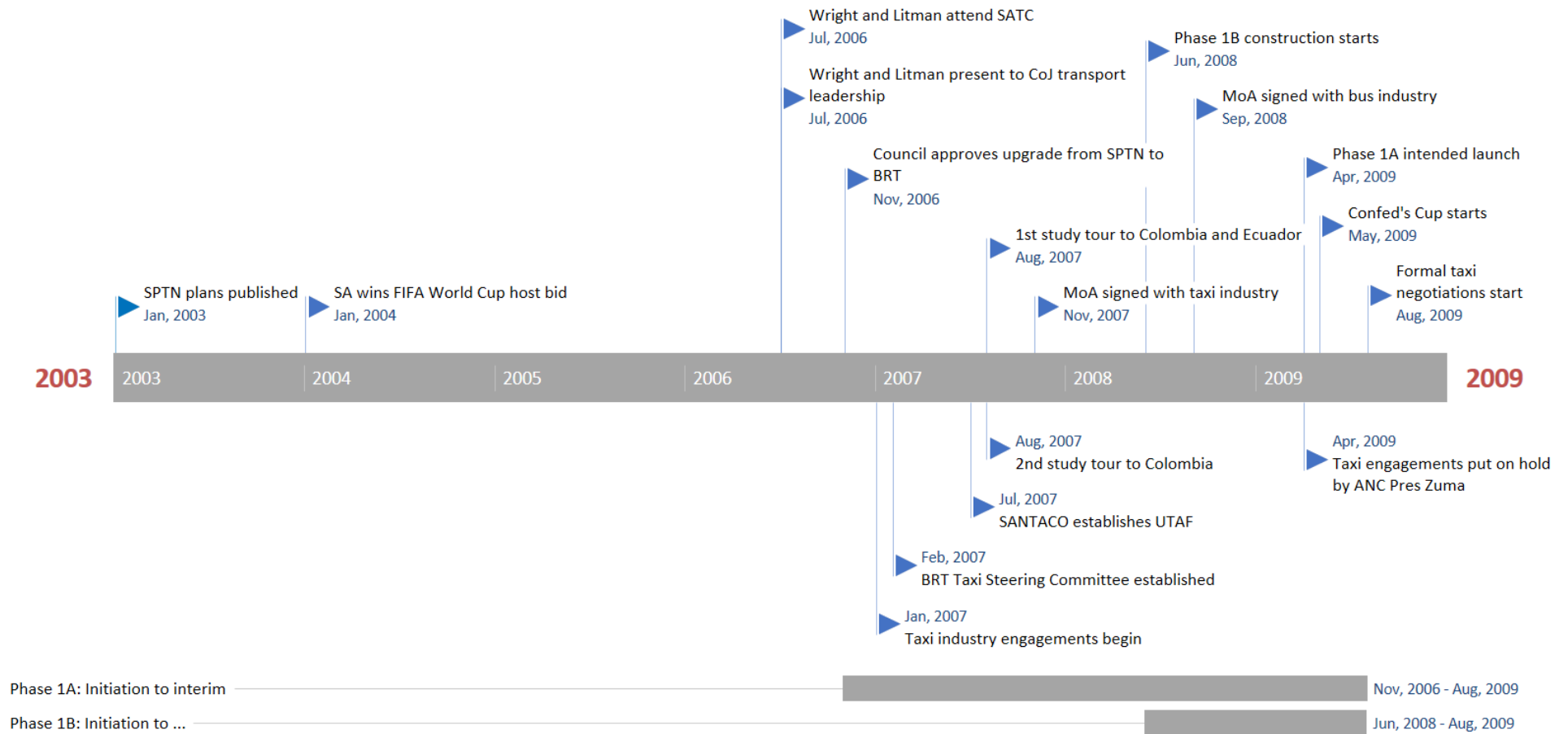


Figure 8: Timeline of events between 2003 and 2009, in relation to the birth of BRT in SA to the start of formal Phase 1A industry negotiations.

6.4. PROJECT TIMELINE

From SPTN to BRT

Before the euphoria around the promises of BRT engulfed South Africa, the CoJ was already implementing an Integrated Transport Plan (ITP). Johannesburg's ITP was drawn up in 2003 and had resulted in the development of the Strategic Public Transport Network (SPTN) (CoJ, 2011). The SPTN formed part of the Spatial Development Framework which championed urban densification of nodes along particular corridors, which are connected by the SPTN (CoJ, 2011). The SPTN was already called Rea Vaya and consisted of modest priorities for taxis and buses and kerb-side stops (Former CoJ MMC for Transport, personal interview, 2018, June 28; Former CoJ official, personal communication, 2018, June 26). In 2004, when South Africa won the right to host the 2010 FIFA World Cup, it came with a renewed imperative both from the CoJ and the NDoT to improve the quality of public transport. It became apparent that the SPTN was not a suitable solution for the passenger demands of the World Cup period (CoJ, 2011). Faced with no suitable alternative, the CoJ pursued the SPTN project. By 2006, the routing had been chosen, taxi operators were being taken on tours across Johannesburg to view the coming alterations and construction had already started along the route (Former CoJ MMC for Transport, personal interview, 2018, June 28).

At this stage BRT was introduced to South Africa. International consultants, Lloyd Wright and Todd Litman, were invited to attend the Southern African Transport Conference in July 2006 (CoJ senior official, personal interview, 2018, July 16; Former CoJ MMC for Transport, personal interview, 2018, June 28). This was followed by a meeting with the newly elected CoJ MMC for Transport, Rehana Moosajee (Wood, 2014b; CoJ senior official, personal interview, 2018, July 16; Former CoJ MMC for Transport, personal interview, 2018, June 28). While being faced with the pressure to improve public transport for the World Cup, the CoJ were also faced with a recently failed attempt to introduce Metro Bus into Soweto (CoJ, 2011; Former CoJ MMC for Transport, personal interview, 2018, June 28).

"I became very interested in BRT because it was apparent that it was not an either-or decision for dignified accessible public transport to the people of Soweto [and removing the taxis]. That there potential to bring these two things together in a new way which would also address the subsidy issue and even the subsidy playing field." (Former CoJ MMC for Transport, personal interview, 2018, June 28)

The CoJ had embarked on a project to surface all gravel roads in Soweto with asphalt from 2000 to 2006 ('Soweto roads tarred by 2005', 2004; Former CoJ MMC for Transport, personal interview, 2018, June 28); at which point, Metrobus started running services from Sunninghill to Soweto. This was met with significant resistance by the minibus-taxi industry, based on the complaint that it was the

minibus-taxi industry that had created the routes through Soweto and the CoJ was unfairly taking away their market share, by introducing Metrobus without including the minibus-taxi industry (Former CoJ MMC for Transport, personal interview, 2018, June 28).

The case studies of incorporating the paratransit industry of South American cities into their BRT systems presented an attractive option for the CoJ. Following the meeting between Todd Litman, Lloyd Wright and the CoJ Department of Transport, the Mayoral Committee decided to send MMC for transport, Rehana Moosajee, World Cup CoJ Executive Director, Sibongile Mazibuko and Executive Director for Transport, Bob Stanway, on a study tour to Bogota, Columbia and Guayaquil, Ecuador in late August 2006. The decision was also taken to include public transport representatives from Metrobus, PUTCO, the Top Six Taxi Management (Top six) and the Greater Johannesburg Regional Taxi Council (GJRC) on the study tour (CoJ, 2006, 2011; Wood, 2014a; Former CoJ MMC for Transport, personal interview, 2018, June 28).

Upon return to Johannesburg, the regional minibus-taxi bodies committed to working with the CoJ on investigating the possibility of implementing a BRT system in the city (CoJ, 2011; Former CoJ MMC for Transport, personal interview, 2018, June 28). However, the representatives made it clear that they did not have a mandate from their organisations to commit to the project (Former CoJ MMC for Transport, personal interview, 2018, June 28). By November 2006, in a full Council sitting and with representatives from the minibus-taxi industry in attendance in the public gallery, the BRT Phase One Scoping Study was presented. In this sitting the CoJ approved the upgrade of the SPTN to a full BRT network (CoJ, 2006, 2011; Wood, 2014a; Former CoJ MMC for Transport, personal interview, 2018, June 28). Phase one was split into Phase 1A and 1B to ensure that the public transport capacity of the CoJ was improved for the World Cup. Phase 1A linked Soweto to the World Cup stadia. Phase 1B linked schools, hospitals, universities and other sections of the city (CoJ official, personal interview, 2017, November 24). Construction on Phase 1A started in October 2007 with a sod turning by then-Mayor Amos Maseko at Charlton Terrace (CoJ, 2011, 2018).

Expanding industry buy-in

The CoJ began in-depth discussions with the minibus-taxi industry in January 2007. It was identified that Phase 1A would affect 10 Top Six associations and eight GJRC associations, 18 associations in total (CoJ, 2011). This was a complex time where the operators had to grapple with the concept of Rea Vaya. After a month of engagements, the two regional minibus-taxi bodies agreed to represent the industry in a BRT Taxi Steering Committee, comprising of the executives of both organisations (CoJ, 2011). This was a significant milestone for the minibus-taxi industry as the two regional bodies were traditionally opposed to each other. The opposition stems from the political landscape of the national bodies to

which GJRC and Top Six align. GJRC is aligned to SANTACO which had been given formal recognition by the national government, while Top Six were aligned to the National Taxi Alliance which, although acknowledged, were not formally recognised (Wood, 2014b; Former CoJ MMC for Transport, personal interview, 2018, June 28; Independent transport specialist, personal communication, 2018b, July 13).

“These associations have a history of animosity amongst themselves. Now you told us that we must work with this association and with that association...they killed our people. You are mad. There is no way.” (Independent transport specialist, personal communication, 2018b, July 13)

Below the steering committee, the industry set-up three levels of structures which comprised of Chairpersons, Executive Committee Members and all taxi operators from the 18 associations (CoJ, 2011). The structures allowed for input on industry-political matters, technical issues and allowing for all minibus-taxi operators to air their grievances.

Conditional to the industry’s engagement was the appointment of technical advisors to assist the minibus-taxi industry. The CoJ agreed to this and what followed was a procurement process which allowed the CoJ to appoint and fund technical advisors for the industry (McCaul and Ntuli, 2011; Former CoJ MMC for Transport, personal interview, 2018, June 28; Independent transport specialist, personal communication, 2018b, July 13). Initially LTE Consulting Engineers were appointed, followed by Future of Transport Consulting (CoJ, 2011).

During these initial engagements, the industry requested that a larger grouping of the 18 affected associations should go on a study tour (McCaul and Ntuli, 2011; Wood, 2014a; Former CoJ MMC for Transport, personal interview, 2018, June 28; Independent transport specialist, personal communication, 2018b, July 13). The second study tour was to Bogota and Pereira, Columbia in August 2007; attended by twenty taxi industry operators, from 17 of the affected associations, and the then-Mayor of Johannesburg (Wood, 2014a; Former CoJ MMC for Transport, personal interview, 2018, June 28). Upon returning from the study tour, the CoJ signed an MoA in October 2007 with Top Six and in November 2007 with GJRC, outlining the mechanisms for further negotiations, albeit cautiously, without giving their full support as yet (CoJ, 2011; Venter. C, 2013; Former CoJ MMC for Transport, personal interview, 2018, June 28). A MoA was signed between the CoJ and Metrobus and PUTCO in September 2008 (CoJ, 2011; Allen, 2013)

This engagement period and the ensuing negotiations was not an easy time for the minibus-taxi industry. The process was fraught with disruptions that took various forms from protest action and setting buses alight to board room disagreements and stalling tactics (Gauthier and Weinstock, 2010; Schalekamp and Behrens, 2010; Venter. C, 2013; CoJ senior official, personal interview, 2018, July 16;

Former CoJ MMC for Transport, personal interview, 2018, June 28; Former CoJ official, personal communication, 2018, June 26; Independent transport specialist, personal communication, 2018b, July 13). Throughout the timeline, there were numerous stories shared by stakeholders of resistance from the minibus-taxi industry as it grappled with the transformation of its industry. The stories signify the political complexities of the Rea Vaya project and the political impact that the Rea Vaya project had on the minibus-taxi industry.

The period from November 2007 to April 2009 was characterised by hundreds of meetings, workshops, road shows and conferences (CoJ, 2011; Former CoJ MMC for Transport, personal interview, 2018, June 28). Resolutions in support of negotiations with the CoJ and to protect the industry's interests were taken in May, July and October 2008 (CoJ, 2011). Discussions to agree on the negotiation process began in February 2009 (McCaul and Ntuli, 2011). However, the engagement process stalled in April 2009, on the eve of the national government elections when SANTACO called a meeting between taxi operators and ANC political leadership (Schalekamp and Behrens, 2010; CoJ official, 2017; Former CoJ MMC for Transport, personal interview, 2018, June 28). SANTACO were unhappy about being left out of the negotiations process and threatened national strike action (Venter. C, 2013) and to not transport voters to the polls in the impending national government elections (Former CoJ MMC for Transport, personal interview, 2018, June 28).

“Two days before the elections a meeting is called at Gallagher Estate with ANC President Jacob Zuma. I was meant to do the welcome. The hall is entirely full of taxi operators from across the country. People at the back were just saying war talk war talk and stuff like that and there was no opportunity to do the welcome. President Zuma comes onto the stage after receiving a briefing on the BRT issue; he says that it looks like government has done a very bad job on consultation on the project. I think that what we should do is just hold horses on the project for now.” (Former CoJ MMC for Transport, personal interview, 2018, June 28)

This decision by the President of the ANC put the project on-hold a month before the Confederations Cup which were due to start in May 2009. Rea Vaya's first phase was due to start in April 2009, in time for the Confederations Cup (CoJ, 2006; Van Ryneveld, 2008). Following the April national government elections, Minister Sibusiso Ndebele was appointed as the Minister for Transport, replacing Minister Jeff Radebe. Minister Ndebele set up the National Joint Working Group which in essence expanded the BRT negotiations to include national interests by briefing SANTACO on the developments (Schalekamp and Behrens, 2010; Former CoJ MMC for Transport, personal interview, 2018, June 28). This allowed the engagement process with the minibus-taxi industry to continue, which eventually concluded when the formal negotiations for Phase 1A affected operators opened in August 2009 (CoJ, 2011; McCaul and Ntuli, 2011; Venter. C, 2013).

At the end of August 2009, Phase 1A started running on a starter service. The start of the interim service also saw factions within the minibus-taxi industry attempt to prevent Rea Vaya from becoming a reality. Four days before the launch of Phase 1A, the United Taxi Association Forum (UTAF) laid an unsuccessful court application to stop the launch of Rea Vaya (“Taxi forum in court to halt BRT”, 2009; Venter. C, 2013; Independent transport specialist, personal communication, 2018b, July 13). The UTAF was formed in 2007, prior to the second study tour to Columbia as a Johannesburg regional body, aligned to SANTACO, and in opposition to BRT (Bathembu, 2009; Former CoJ MMC for Transport, personal interview, 2018, June 28; Independent transport specialist, personal communication, 2018b, July 13).

“Increasingly, there was nervousness at the level of SANTACO [GJTC was aligned to SANTACO], NTA less-so because some of the NTA [National] leadership were in Top Six. The SANTACO national leaders were increasingly saying that why are these decisions being taken on behalf of our members without us being consulted. And the CoJ responded to say that national government was the correct sphere which SANTACO should engage. The CoJ will stick to engaging the sphere concurrent with the sphere of City government. And that essentially gave rise to UTAF, which essentially was a wing of SANTACO. SANTACO had very much pushed for the formation of UTAF.” (Former CoJ MMC for Transport, personal interview, 2018, June 28).

The unsuccessful court bid was not the only attempt to stop Rea Vaya. In the days following the opening of Phase 1A, a night time Rea Vaya bus was shot-at in Soweto, while passing Nancefield hostel. This elicited a strong reaction from the CoJ, where the army and police carried out raids of the area and the army and police were stationed on buses and stations for months following the attack (“Rea Vaya rocked by shooting, 2009; Venter. C, 2013; Independent transport specialist, personal communication, 2018b, July 13)

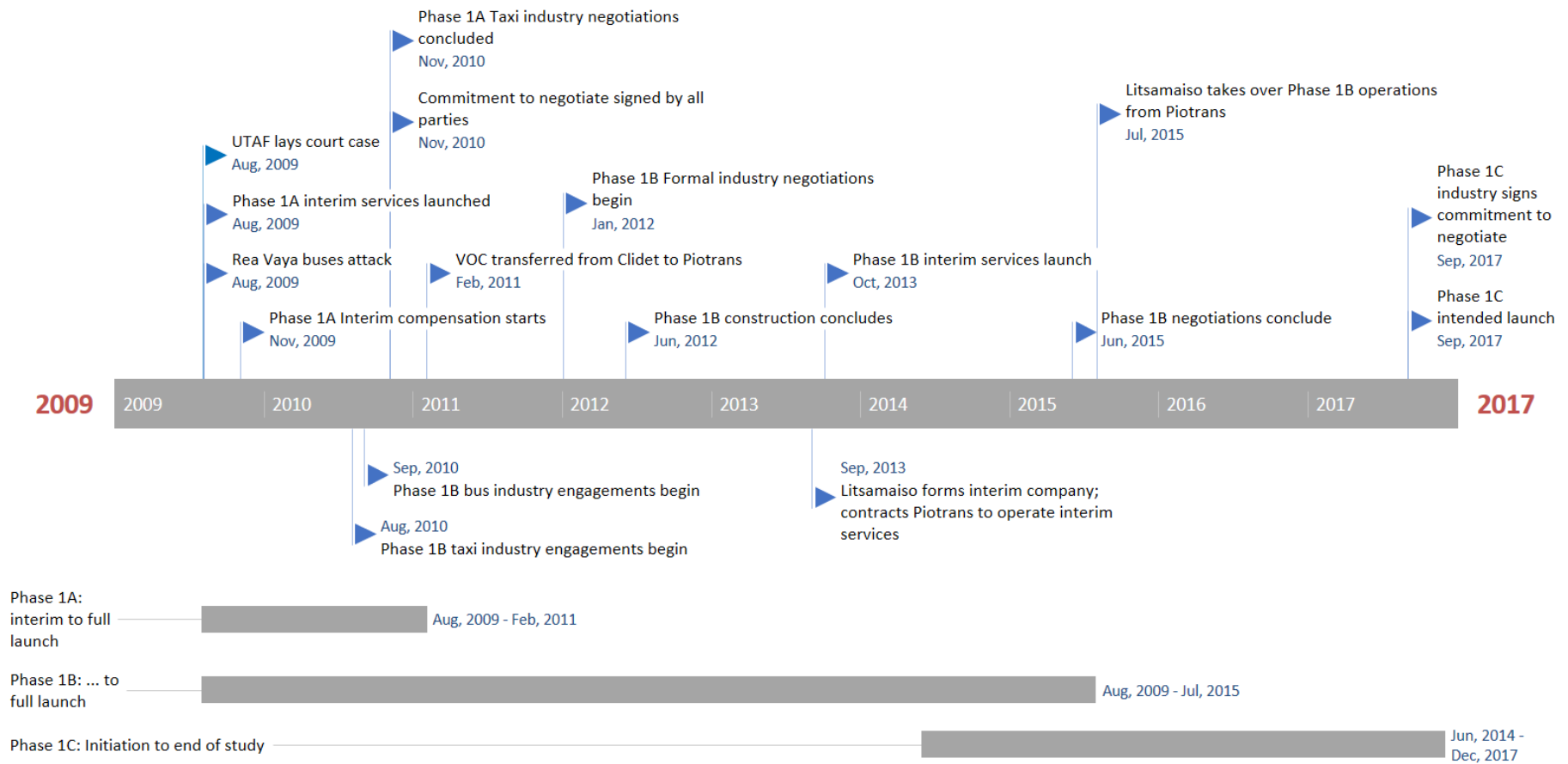


Figure 9: Timeline of events between 2009 and 2017, in relation to Phase 1A interim service launch to the end of the research period.

Phase 1A: From interim to full scale operations

By the time that Phase 1A construction was complete, the industry negotiations had only just formally started. Therefore, it was necessary to establish an interim Vehicle Operating Company (VOC) so that the project would not be further delayed, while waiting for negotiations to conclude (CoJ, 2011). The starter-service launched five months later than initially projected due to delays in the construction and upgrade of major roads along the route (CoJ, 2011). The interim service ran from Thokoza Park in Soweto to Ellis Park in Bertrams. The patronage started on a high of 16 800 passengers for the first day (Venter, 2009; Adewumi and Allopi, 2014), spiked by the a city-wide strike by minibus-taxi operators. The average ridership, by the end of the month, had settled to 11 800 passengers per day (CoJ, 2011).

The services were operated on an interim basis because the industry transition negotiations were not yet complete (CoJ, 2011; McCaul and Ntuli, 2011; Walters, 2013). The CoJ agreed to an interim vehicle operating agreement for a period of 12 years with Clidet (CoJ, 2011; McCaul and Ntuli, 2011), a company owned by the BRT Systems Trust (Walters, 2013). Metrobus was in-turn contracted by Clidet to manage the VOC (Walters, 2013; Former CoJ MMC for Transport, personal interview, 2018, June 28). The interim VOC was needed to facilitate the purchase of buses from Scania, a Brazilian-based bus manufacturing company (CoJ, 2011; McCaul and Ntuli, 2011). Funding for the vehicles was provided by the Brazilian export credit agency, Banco National Desenvolvimento Economico Social. The buses were delivered from April 2009 (CoJ, 2011; Former CoJ MMC for Transport, personal interview, 2018, June 28).

The interim services required the CoJ to pay interim compensation to the affected minibus-taxi operators. The operators affected by the Phase 1A starter service, placed their vehicles in storage from November 2009. With Phase 1A expansions in April 2010, a second tranche of operators received interim compensation and the remaining operators affected by Phase 1A received interim compensation from June 2010. The interim compensation agreements in each case were effective from the date signed until the operators began to receive profit from their shares in the VOC (CoJ, 2011; McCaul and Ntuli, 2011).

While Phase 1A was being rolled out, negotiations with the minibus-taxi industry continued. Twenty plenary meetings and more than 120 smaller meetings were held (CoJ, 2011). The deliberations during these meetings enabled the operators to transition from the minibus-taxi industry to the formal bus operating industry. The agreements reached during the negotiations ranged from the fee per kilometre to employment agreements to the value-chain agreements for Phase 1A (CoJ, 2011; McCaul and Ntuli, 2011; Former CoJ MMC for Transport, personal interview, 2018, June 28). Negotiations with the industry was concluded in September 2010 and the handover of the VOC from Clidet to Piotrans

was finalised on 1 February 2011 (CoJ, 2011; McCaul and Ntuli, 2011). Piotrans (Pty) Ltd was the first fully-minibus-taxi-owned VOC to manage BRT services for Phase 1A (McCaul and Ntuli, 2011). This transition also signified the change from interim Rea Vaya operations to full-scale Phase 1A services.

In the implementation of Phase 1A a total 585 minibus-taxi vehicles were removed from the roads of Johannesburg, these were scrapped or sold, and in exchange the owners became shareholders in Piotrans. The value for a vehicle was determined to be R54 000, which each operator could then invest into Piotrans to buy a share into the company and contribute to the company's working capital. A total of 313 shareholders own Piotrans through nine Taxi Operator Investment Companies (TOICs) (CoJ, 2011; McCaul and Ntuli, 2011; Independent transport specialist, personal communication, 2018b, July 13).

Phase 1B and 1C: Beyond the World Cup buzz

Phase 1B also began with interim services, operated by Piotrans. The interim management arrangement was necessary because the industry transition negotiations were not yet complete by the intended launch date. The engagements with the minibus-taxi industry started in August 2010 and followed a similar process to the Phase 1A industry transition – a period of engagements, an agreement to negotiate, industry technical support financed by the CoJ and a negotiation process facilitated by an independent facilitator.

Drawing from the Phase 1A lessons and the increased awareness of the Rea Vaya project, the CoJ had hoped that the Phase 1B industry transition would be concluded quicker than Phase 1A. However, industry transition negotiations took significantly longer than anticipated (Dayimani, 2013; CoJ official, personal interview, 2017, November 24).

“We had anticipated ourselves that we would finish very quick(sic). Because we had the experience of 1A. It was not to be. The taxis needed more time to understand BRT. We had to do the same as we did in 1A. Take them in smaller groups, win the leadership to be confident, appoint a technical committee and pay for them and then gradually they started wanting to hear about BRT.” (CoJ official, personal interview, 2017, November 24)

“One agreement can take three months. So, we don't want to push them because then the agreement will collapse. They are so sensitive, they will tell us that we don't want to be killed by our members. If we are going to agree with you here, we are going to be seen as selling out. So that is why we had to be very patient when we deal(sic) with them. Sometimes they will ask us for a caucus during the meeting and after two hours of caucusing, they will call you and they will say no, we've agreed not to continue today. We want a sleep over workshop for three days.” (CoJ official, personal interview, 2017, November 24)

Engagements with the minibus-taxi industry started a month before approaching bus industry stakeholders. PUTCO, Metrobus and small bus operators under SABOA began engagements with the CoJ in September 2010 (CoJ, 2011; CoJ official, personal interview, 2017, November 24). A Commitment

to Negotiate was signed by all parties in November 2010 (City of Johannesburg, 2010; CoJ, 2011; CoJ official, personal interview, 2017, November 24). The engagements period was only expected to run for two months with contract negotiations concluded by 2012 (City of Johannesburg, 2010; CoJ official, personal interview, 2017, November 24). But pre-negotiation engagements drew out until December 2011, with negotiations only starting in earnest in 2012 (CoJ official, personal interview, 2017, November 24). The first two years of negotiations were dominated by discussions on the structure of the VOC, the degree of affectedness of the different industry stakeholders and how the industry stakeholders should participate in the VOC (CoJ official, personal interview, 2017, November 24).

Having agreed on the structure of the VOC, Litsamaiso (Pty) Ltd was able to be set-up as an interim organisation and was incorporated in September 2013 (City of Johannesburg, 2015; Litsamaiso, 2016). Litsamaiso is 75 percent owned by taxi operators and 25 percent owned by PUTCO (City of Johannesburg, 2015). By 2012, construction was nearing completion, having started in 2008 (Walters, 2013). Negotiations were yet to be completed, therefore, the phase 1B services, which launched in October 2013 (Ngcobo, 2016; Bhiman, 2017) with an interim management agreement with Piotrans (Dayimani, 2013; City of Johannesburg, 2015).

By June 2015, negotiations had concluded with the signing of a vehicle operating agreement between the CoJ and Litsamaiso on 29 June 2015 (City of Johannesburg, 2015; "SA taxi bosses paid R830, 2016). Litsamaiso took over the phase 1B operations a month later from Piotrans (City of Johannesburg, 2015). This signified the fulfilment of full implementation of Rea Vaya Phase 1B, just more than three years after the intended completion deadline (City of Johannesburg, 2010).

Construction started on Phase 1C in 2014 (Venter, 2016), along with engagements with the minibus-taxi and bus operators affected by 1C (CoJ official, personal interview, 2017, November 24). Initially, all services were anticipated to be operational by September 2017 (City of Johannesburg, 2014). However, by September 2017, the CoJ had signed their first agreement with the affected minibus-taxi associations and bus operators to enter into negotiations (CoJ official, personal interview, 2017, November 24; Cox, 2017; Dlamini, 2017).

"In 1C, we spend time fighting about allowances, about three day workshops, about furniture for their [minibus-taxi industry's] project office, about payment and number of hours that BRT planning data collectors are going to get... we've hardly had one substantive fight on the negotiations" (CoJ senior official, personal interview, 2018, July 16)

"When we started they would negotiate each and everything line by line. If you've got an argument, a sentence will be debated for 30mins. Its slow. I must tell you, frustratingly slow. But we got them to sign this year [2017] with the Mayor." (CoJ official, personal interview, 2017, November 24)

Phase 1C continues to be delayed as at July 2018 (CoJ senior official, personal interview, 2018, July 16; Hosford, 2018).

6.5. ANALYSIS OF CASE STUDY FINDINGS

Rea Vaya was implemented in under three years and ridership has steadily increased since Phase 1A. However, the implementation was not without difficulties and delays. This section will unpack the reasons behind the delays. It is proposed that, broadly, politics is the most significant underlying factor to have caused the delay of Rea Vaya. The influence of politics found in this case study was both positive and negative and are further broken down into five factors. These are political complexities within the minibus-taxi industry, distrust between the minibus-taxi industry and government, political leadership of the CoJ and the minibus-taxi industry, influence of other IPTN projects around South Africa, and the role of external political pressures.

Factor one: Political complexities within the minibus-taxi industry

Every interviewee spoke to the challenges of getting the associations to work together. Hundreds of meetings, workshops, roadshows and conferences were held in the first two years of the negotiations. An industry technical advisor summed up the difficulty between the associations with this description of the early engagement discussions.

“Associations are formed as voluntary bodies that are not thoroughly regulated but now we have to form companies and work together. These associations have a history of animosity amongst themselves. Now we must work with this association with that association - they killed our people. You are mad. There is no way.” (Independent transport specialist, personal communication, 2018b, July 13).

In addition to the difficulty of the political complexities between minibus-taxi associations; national and regional minibus-taxi bodies demonstrated considerable influence over the IPTN implementation process. The first example of SANTACO’s influence is the creation of UTAF who openly opposed BRT during negotiations and eventually filed a court case to stop the launch of Rea Vaya, shortly before the launch of Phase 1A. The second example of SANTACO’s influence was when the IPTN engagements were brought to a halt just before the 2009 national government elections. SANTACO openly complained of their lack of involvement in the BRT projects and complained of a usurping of their authority.

Factor two: Distrust between the minibus-taxi industry and government

Getting political buy-in took an estimated three years. The first excerpt is the interaction between the minibus-taxi industry and the CoJ during the introduction of Metrobus in Soweto, created a strained environment shortly before BRT was about to gain traction with the CoJ. This fuelled the distrust that

the minibus-taxi industry held toward the government. A second excerpt from the interview with the independent industry advisor describes how the attitude of the taxi operators changed over the two-year period between initial engagements and formal negotiations.

“In the beginning, they asked questions like why does the government not subsidise us, but they subsidise the buses? Why [do they want to subsidise us] because we are doing this thing [public transport] on our own. Initially, we did not have help. Why are they changing? They did not believe that if they became structured now, then they would get subsidies. They would say: “No...you are lying...you must go.” We want to see something written that says we are going to get subsidies. And the meeting flops.” (Independent transport specialist, personal communication, 2018b, July 13)

Towards the end of the three-year engagement phase, the tone of the minibus-taxi industry changed, but reaching the point of formal negotiations was still a slow process.

“You see you can gauge when they are beginning to trust you. They begin to ask questions like: “Do you trust government? or do you think that they are telling the truth?” As a social engineer you know when people are beginning to open up at a different level. I then show them the presentation. You show them and then they say no, we need to go discuss it alone. “Are you sure that they will pay us for 12 years?” No, how can you have something for twelve years and lose it. No, you are lying. And then you will lose six months then.” (Independent transport specialist, personal communication, 2018b, July 13)

Factor three: Political leadership of the CoJ and the minibus-taxi industry

The success of the transformation and inclusion of the minibus-taxi operators is attributed to the political will of the senior leadership of the CoJ and the regional taxi associations. The two study tours played a significant role in allowing the respective leaders to engage across industry-government political differences; facilitating buy-in at the senior level. The political leadership of the transport department received a strong mandate from the Mayor. The Mayor made transport a stand-alone department following the 2006 Local Government Elections and lead the second study tour with representatives from the minibus-taxi industry.

“During the first study tour, we flew via Madrid and there were inordinate amounts of waiting time so there was lots of opportunity to build relationship and have discussions etc.” (Former CoJ MMC for Transport, personal interview, 2018, June 28)

However, Phase 1C continues to be delayed, and Phase 1B also had longer delays than anticipated. The minibus-taxi industry negotiations took longer than anticipated in Phase 1B and continue to take longer than anticipated in Phase 1C. The CoJ believed that the delayed implementation when comparing Phase 1A, and Phase 1B and 1C, came down to the political leadership of the Phase 1B associations.

Phase 1B negotiations were characterised by a lack of centralised leadership within the minibus-taxi associations. The minibus-taxi associations drove the Phase 1A negotiations through a steering

committee with sub-committees and reporting lines, which allowed minibus-taxi operators the opportunity to air their grievances. In Phase 1B, the committee directly responsible for negotiating with the CoJ grew in size and this made the negotiations less productive.

“You also have a problem of no centralised leadership where too many associations leaders want to have a say. Unlike when we started with 1A.” (CoJ official, personal interview, 2017, November 24)

Factor four: Influence of other IPTN projects around South Africa

The compensation agreements for the later phases had also proven to be more expensive than in Phase 1A. The minibus-taxi operators and technical support staff were now able to access information on previous compensation agreements. By 2014, when Rea Vaya was negotiating Phase 1B industry transition, Cape Town, Tshwane and George had all completed operator license compensation agreements. This drove the initial compensation demands up, resulting in an increased cost of implementing Phase 1B.

“The taxi people also began to check how much was being paid in Cape Town and other places and would use those figures to determine what their vehicles and licenses were worth.” (CoJ official, personal interview, 2017, November 24)

Factor five: The role of external political pressures

Phases 1B and 1C were comparatively less urgent than Phase 1A. All the interviewees spoke to the importance of the World Cup for the success of Phase 1A. The World Cup provided the political pressure needed to motivate political leaders at all levels of government to improve the quality of public transport in Johannesburg. Upon the conclusion of the World Cup, this pressure was removed. Acknowledging the importance of external driving forces in politics, the former MMC for Transport, who led the formation of Rea Vaya, gave crucial advice to her successor, Cllr Christine Walters, providing crucial political stability to ensure the successful implementation of phase 1B.

“Make sure that you put a date in the sand for the launch of Phase 1B because if you don’t, it’s never going to happen”. (Former CoJ MMC for Transport, personal interview, 2018, June 28)

The external pressure that the World Cup provided and the impact of the momentum of Phase 1A on Phase 1B was lost by the time that Phase 1C negotiations began. This loss of external political pressure was coupled with new political uncertainty. A senior City official reflected, during our interview, on the topic of the political change that came with the 2016 Local Government Elections.

“In 1C, we spend time fighting about allowances, about three-day workshops, about furniture for their project office, about payment and number of hours that these planning data collectors are going to get, we have hardly had one substantive fight on the negotiations. It’s because fundamentally, there is a lack of credibility of government to delivery. The advantage of 1A is that we delivered on 1A, so those guys of 1B knew that we were going to deliver. But with 1C, new political leadership, the taxi industry has no guarantee that we are going to deliver so there they are pushed

on by the people who can only eat from the process. So they delay the process because they don't know if they have an incentive to conclude the negotiations.” (CoJ senior official, personal interview, 2018, July 16)

6.6. CONCLUSION

In conclusion, the full implementation of Rea Vaya phase 1 has been delayed due to five underlying factors, all political influences: internal politics in the minibus-taxi industry, the relationship between the minibus-taxi industry, the influence of political leadership, the influence of other IPTN projects around South Africa, and the role of external political pressures.

The industry negotiations had to overcome the history of animosity between associations, as well as the political influence of the minibus-taxi industry's national structures on local issues. The CoJ had to overcome the distrust of government within the minibus-taxi industry, engrained from decades of disagreement. Delay was also evident through higher than expected costs, where Phases 1B and 1C proved to be more expensive than Phase 1A because the minibus-taxi industry could benchmark their compensation packages against agreements in other South African cities. Phase 1A of Rea Vaya benefitted from strong political leadership, both within the CoJ and the regional minibus-taxi industry, and from external political pressures. While, Phases 1B and 1C experienced the consequences of less decisive political leadership within the minibus-taxi industry, and the absence of political certainty following the 2016 local government elections.

7 CASE FOUR: CITY OF CAPE TOWN

7.1. INTRODUCTION

This chapter begins with an overview of city of Cape Town prior to the initiation of the IPTN project. The overview provides details on population, unemployment, GDP growth, car ownership and a brief description of the layout of the city. It gives a detailed break-down of transport modal choices, affordability of public transport, the dominant issues that users have with transport and the dominant factors that influence modal choice, as found in the 2013 NHTS. The section concludes with an overview of the public transport institutional arrangements that preceded the transformation efforts of the IPTN project.

The overview follows with a section evaluating the success or delay of the IPTN project. The achieved outcomes are evaluated against the outcomes intended by the City of Cape Town (CoCT), as defined by IPTN design parameters as set by the NDoT in the PTSAP.

This is followed by a detailed timeline analysis of events and decisions taken on the IPTN project between 2006 and 2015. All the above sections are analysed and discussed in the concluding section which details the proposed factors to have caused the outcome of the IPTN project as at the end of 2017.

7.2. CITY OVERVIEW

The CoCT first showed an interest in BRT in 2003, but the real impetus to transform the public transport industry came in 2007. The population in 2006 was estimated to be 3 239 million people (Western Cape Provincial Government, 2006) with an unemployment rate of 24.5 percent in 2007 (Western Cape Provincial Treasury, 2012). GDP growth averaged at five percent between 2000 and 2007 (Western Cape Provincial Treasury, 2012).

In the Cape Town metropole household access to a private vehicle increased from 49.1 percent in 2003 to 50.5 percent in 2013 (Hunter Van Ryneveld, 2014). Cape Town consists of Atlantis and Bloubergstrand to the north, Hout Bay and Clifton to the west, Somerset West and Belville to the east and Simon's Town to the south.

The state of transport

Minibus-taxi use is the dominate public transport mode of travel for all household trips in Cape Town, at 25.9 percent, followed by private car, with 36.7 percent of households travelling by car either as a

driver or a passenger. 14.3 percent of households travel by train, 12.5 percent 'walk all the way' to their destinations and bus has the smallest mode share of nine percent.

In the Western Cape, 20.3 percent of households spent more than 20 percent of their household income on public transport in 2013. While, the majority of households, 56.7 percent, spent less than 10 percent on public transport in 2013.

The most important transport problem in Cape Town was reckless driving by taxi drivers, 12.0 percent of respondents expressed this dissatisfaction. The second biggest problem was crime, with 10.6 percent of households raising this issue; followed by congestion, 8.1 percent of households noted this dissatisfaction. Modal choice in Cape Town is determined most significantly by travel cost, travel time and flexibility with 30 percent, 22.7 percent and 12.6 percent of households citing these factors respectively.

Institutional arrangements of the local public transport sector

Conventional bus services are provided by Golden Arrow Bus Services who run a fleet of 1021 vehicles, while rail is provided by Metrorail Western Cape, a division of PRASA. Minibus-taxi services are provided by approximately 10 000 to 12 000 licensed minibus-taxis on approximately 1 018 to 1350 routes across the city (City of Cape Town, 2017: 82, Coetzee, Krogscheepers & Spotten, 2018: 792). The number of illegal operators is unknown. The minibus-taxi owners are governed by 119 associations, which in-turn are governed by six regional bodies (City of Cape Town, 2017: 82).

7.3. SYSTEM OUTCOMES EVALUATION

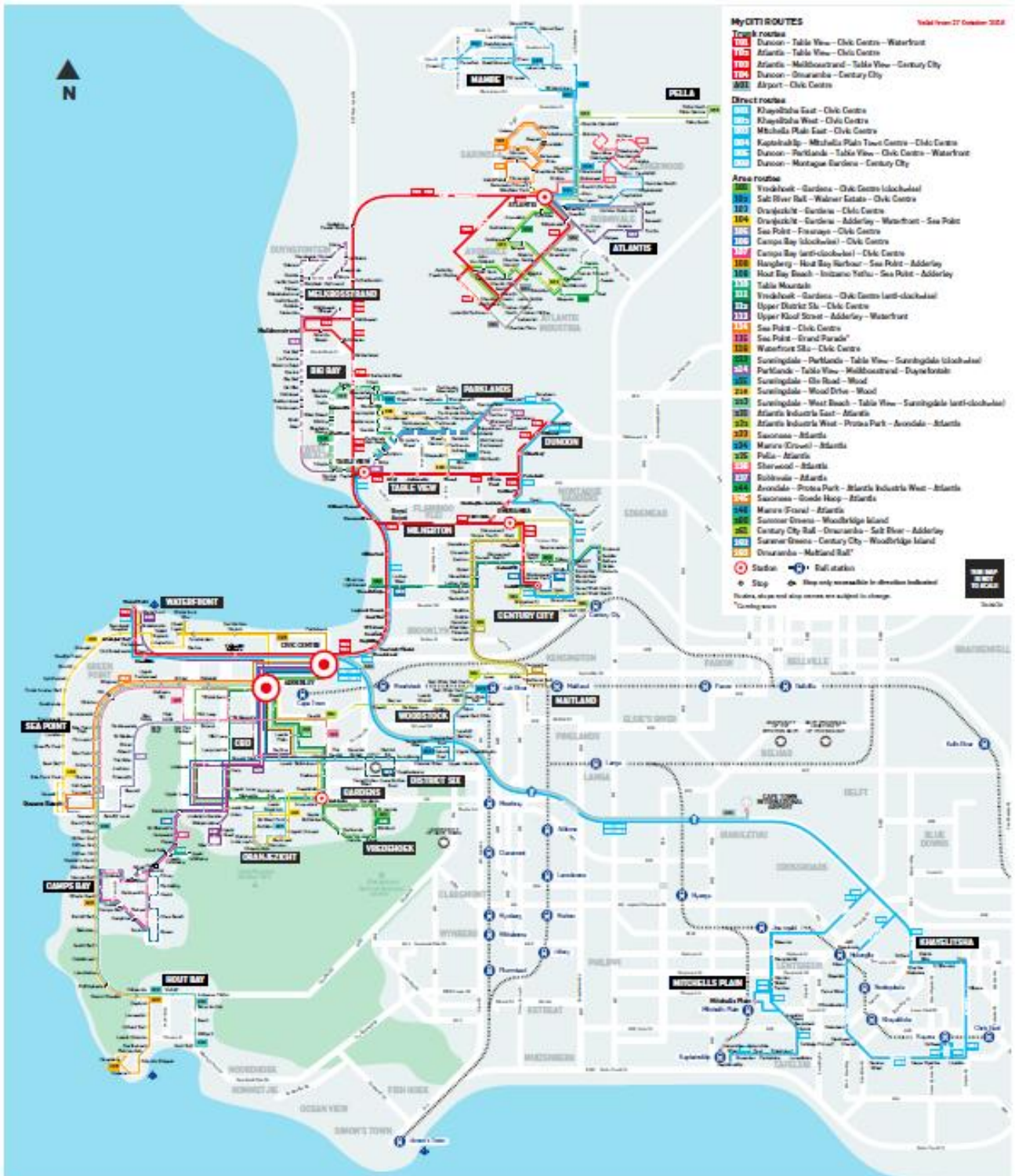


Figure 10: MyCiTi layout of implemented routes (Source: MyCiTi website)

BRT presented an attractive solution to reducing the cost and time of travel in Cape Town, while simultaneously addressing the challenges of the minibus-taxi industry and increasing congestion. By the end of 2017, the CoCT had implemented BRT services along the Atlantic Sea Board, up the West Coast through the Milnerton/Dunoon area toward Century City, in the CBD/Woodstock area and into Vredehoek/Gardens. MyCiTi also ran an airport shuttle and an N2 Express route to Khayelitsha and Mitchell's Plain.

This dissertation does not assess the N2 Express section of the project, however at times it is not possible to separate the N2 Express from the assessment of the IPTN performance. The CoCT viewed the N2 Express as a supplementary MyCiTi service in the interim until rail can be upgraded (City Of Cape Town, 2012). The table below evaluates the intended outcomes of the MyCiTi IPTN project against the achieved outcomes of the project. The information is drawn from the MyCiTi Business Plans published by the CoCT in 2010, 2012, 2015, 2017 and the MyCiTi website.

Public information sessions for phase 2A are underway, as the CoCT continues to roll-out adjusted IPTN plans that include BRT and 'quality bus services'. The CoCT set out to bring 75 percent of the population within 500m of an IPTN station or stop. This has only been partially achieved due to the network still being implemented. The network was envisaged to operate seven days a week, 18 hours a day at peak-time headways of seven minutes on the trunk and 10 minutes on the feeders. The network operates for seven days a week but post the moderation exercise, which sought to adjust the supply of buses to better match demand, the service only runs for 15 hours a day. During the peak the trunk runs at nine-minute headways while the feeders run at 28-minute headways.

The CoCT sought to implement a public transport system that was safe, clean, affordable, reliable and universally accessible; operating on a scheduled, integrated system with real-time information. All of the above has been achieved. The service is provided by a combination of 18 metre articulated vehicles, and 12 and 9 metre rigid vehicles. On the trunk, the buses operate on dedicated roads in the median with enclosed stations, while on the feeders the buses operate in mixed traffic with kerb-side stops. The system began with paper-ticket fare collections and migrated to full electronic fare collection.

Combining Phase one and the N2 Express, the CoCT anticipated a ridership of 75000 passengers per day but by 2017, the system was achieving an average of 67 000 passengers per day. By the 2016/17 financial year, the system was expected to have a fare revenue of R214 million; for the 2017/18 financial year fare revenue was R225 million. For implementation, Phase 1A and 1B were broken down into milestones, each with their own launch date. On average, each milestone was delayed by

between one and three years, with the Phase one finally completed by October 2015, instead of a year earlier, as intended.

With the CoCT displaying an intention to implement Phase 2A, the IPTN project initiated in 2006 is still in full-swing and is evaluated to be in a state of delay.

Table 4: Comparison between intended outcomes and achieved outcomes for all components of IPTN design

	Criteria	Intended outcome	Achieved outcome
Accessibility	Walking distance to trunk/feeder stop	500 metres ¹	Delayed due to partial project roll-out ³
	Peak headway*	Trunk: 7mins Feeder: 10min ²	Trunk: 9 mins Feeder: 28 mins ³
	Daily operational hours	18 hours ²	15 hours ³
	Weekly operational days	7 days ²	7 days ³
	Percentage of population within walking distance of trunk/feeder	75 percent ¹	Delayed due to partial project roll-out ³
Service quality	Vehicle and station/interchange experience	Safe, clean, modern and universally accessible stations and vehicles. Maps and real-time information. ¹	Achieved ⁶
	User service experience	Scheduled, reliable, affordable, and integrated schedules, fares and routes. ¹	Achieved ⁶
Infrastructure	Roads	Median, dedicated lanes with feeders in mixed traffic	Achieved ⁶
	Vehicles	18m articulated vehicles, 12m and 9m rigid vehicles	Achieved ⁶
	Fare system	Trunk: Pre-board electronic fare collection ¹ Feeder: On-board electronic fare collection ¹	Initially paper tickets but migrated to electronic fare collection ²
	Stations	Enclosed stations and kerbside bus stops ¹	Achieved ⁶
Operations	Passenger trips per day *Phase 1 and N2 Express	75 000 ⁴	67 000 ⁴
	Fare revenue per annum *Phase 1 and N2 Express	R214 150 000 (2016/17) ⁵	R225 000 000 (2017/18) ⁴
	First operations date	Phase 1A ¹ Milestone 0: February 2011 Milestone 1: December 2011 Milestone 2: February 2012 Milestone 3: July 2012 Milestone 4: September 2013 Phase 1B: October 2014 ⁵	Phase 1A ⁵ Milestone 0: May 2011 Milestone 1: November 2013 Milestone 2: September 2013 Milestone 3: July 2015 Milestone 4: July 2015 Phase 1B: October 2015 ⁵
	All operations date	Phase 1: October 2014 ⁵	Phase 1: October 2015 ⁵

¹ City of Cape Town, 2010

² City of Cape Town, 2012

³ Transport and Urban Development Authority, 2018

⁴ City of Cape Town, 2017

⁵ City of Cape Town, 2015

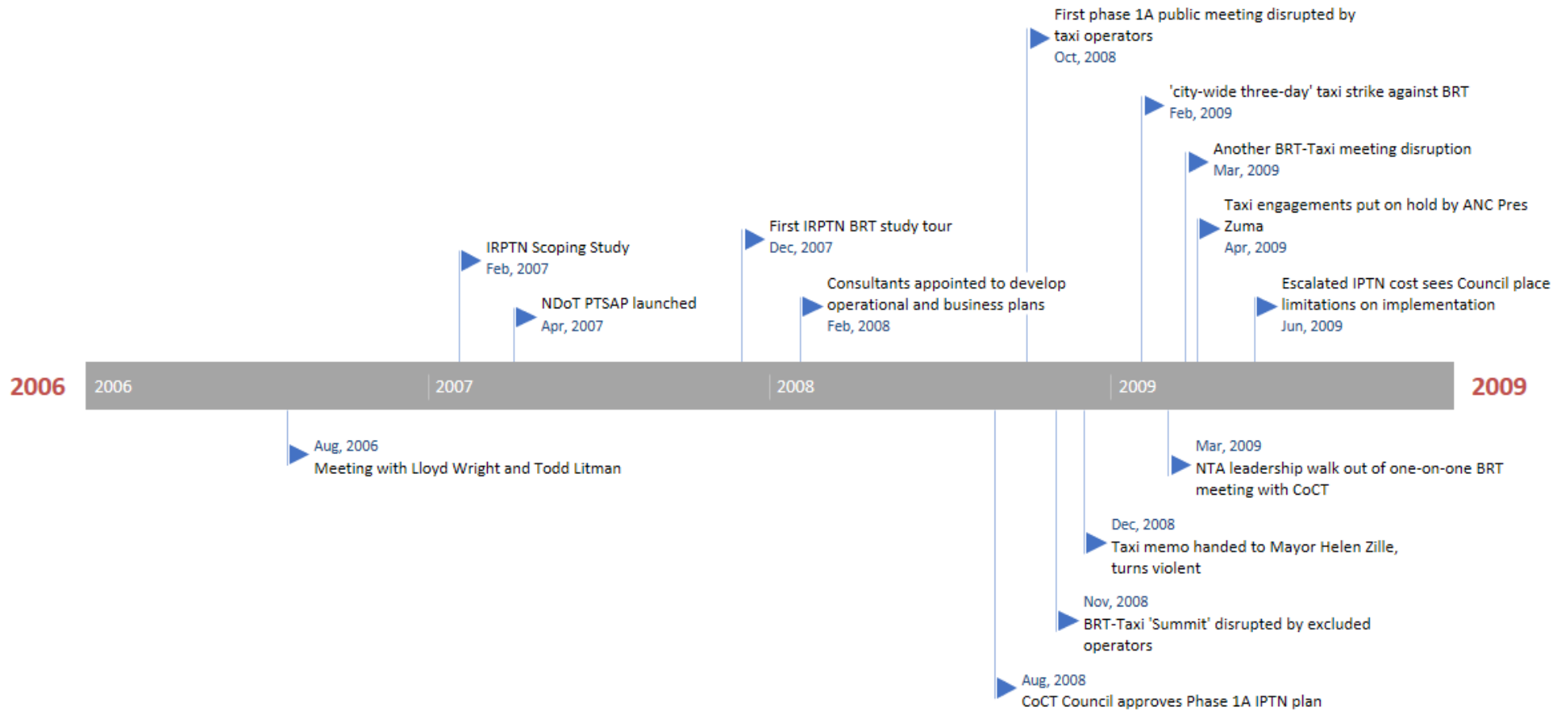


Figure 11: Timeline of events between 2006 and 2009, in relation to early-stage institutional commitment and taxi industry engagement.

7.4. PROJECT TIMELINE

Understanding the possibilities of BRT in Cape Town

BRT was not new to the CoCT, the Western Cape Government had previously considered its implementation down Klipfontein Road, through Athlone. The CoCT had first become acquainted with the idea through a study tour in 2003 to Bogota, Columbia, led by then-Western Cape MEC for Transport, Tasneem Essop. However, its implementation did not materialise until interest in BRT was rekindled after a meeting in August 2006 with former-Mayor Helen Zille; Ibrahim Seedat, who was the Director of Public Transport Strategy at the NDoT at the time; Philip van Ryneveld, a former CFO of the CoCT; Lloyd Wright and Todd Litman (Wood, 2014b). This meeting was followed by a scoping study for a city-wide IPTN that included BRT in February 2007, which found that it was a feasible option. A few months later, the CoCT began compiling a planning document for an IRPTN consistent with the national government PTSAP, newly launched in April 2007 (City of Cape Town, 2010; Wood, 2014b).

Initial stakeholder engagements between the leadership of 14 minibus-taxi associations and the CoCT began in 2007 (Beukes, 2015). However, broader engagements with existing public transport operators was put on hold until the Phase 1A affected areas were determined to a sufficient degree. The first study tour to South America, which only included political leadership, technical officials and consultants took place in December 2007. Upon return, in early-2008, the CoCT appointed two international consultants to develop the operations and business plans for the first phase of the IRPTN. This plan, which was approved by Council on 27 August 2008, included an inner city service, and routes to the airport, Cape Town Stadium, Blaauwberg and Atlantis (City of Cape Town, 2010; Beukes, 2015).

As further plans were developed, and construction started, it became apparent, in mid-2009, that the cost of the IPRTN project would escalate from R1.4 billion to R4.1 billion. As a result the CoCT Council decided to limit implementation to the services needed for the World Cup, and any further implementation to be based on the availability of NDoT funding (City of Cape Town, 2010; Wood, 2014b).

Opposition flexes their muscles

This period also saw the beginning of protests in opposition to the implementation of the IPTN plans, driven by associations aligned to the NTA and operators not included in the Phase one plans (Schalekamp and Behrens, 2010; Schalekamp, 2015; McLachlan, personal interview, 2018, July 25). Disruptions and protests continued into early 2009, reaching a point where the CoCT threatened to 'use the armed forces to prevent disruptions' (Schalekamp and Behrens, 2010). Opposition to BRT

plans across the country bemoaned a lack of consultation on the plans and minibus-taxi operators raised concerns on the future their livelihoods.

Schalekamp provided detailed records of six events between the minibus-taxi industry and the CoCT, in his doctoral thesis. The first was a public meeting held in Bloubergstrand in October 2008 for minibus-taxi operators and residents affected by Phase 1A. The meeting was disrupted by paratransit operators and was forced to end early. The second interaction came at a 'summit' geared specifically for the minibus-taxi industry, hosted at Century City in November 2008. The 'summit', attended by 300 invite-only representatives, was also cut short when operators who had not received an invitation disrupted the meeting. The third event recorded by Schalekamp occurred in December 2008 when a group of paratransit operators handed over a memorandum stating their grievances to then-Mayor Mrs Helen Zille at the Cape Town Civic Centre. The protest action turned violent with damage inflicted upon property, members of the public and public transport services. The fourth event comes in February 2009, when a 'city-wide three-day strike' brought minibus-taxi services to a standstill and was accompanied with violence. It was at this point that the CoCT placed the armed-forces on stand-by.

Schalekamp also recorded that Ms Zille made attempts to resolve the impasse between the CoCT and NTA. The former-Mayor met with the regional leadership of NTA shortly after the strike. The parties agreed to a monthly meeting between the CoCT and the NTA leadership, and that the NTA members would give the IRPTN project a hearing. However, this agreement was short-lived with the NTA walking out of a meeting in early-March 2009, the fifth recording, shortly after this agreement was reached. Again, a meeting in mid-March 2009 also turned sour when NTA members disrupted a meeting for a broader grouping of minibus-taxi industry representatives hosted by the CoCT at the Civic Centre.

As we know from previous chapters, opposition to BRT was not unique to Cape Town. The level of discontent in other cities resulted in a national level meeting between ANC President, Jacob Zuma (who was likely to be the next President of South Africa), city-level political leaders and minibus-taxi operators was held in days before the National Elections in April 2009. All BRT projects and industry engagements were placed on hold until June 2009, following the National Elections.

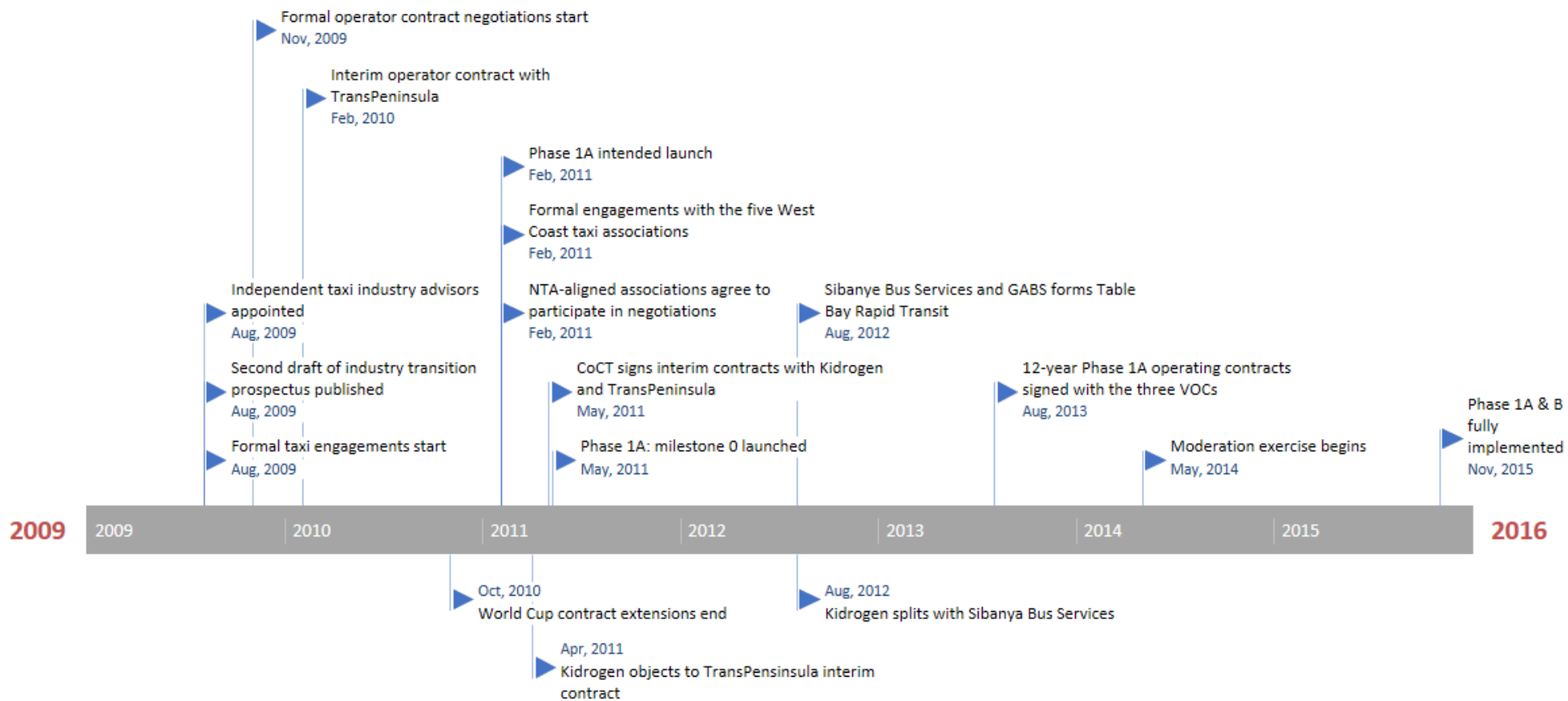


Figure 12: Timeline of events between 2009 and 2016, in relation to industry transition and Phase 1 moderation.

From uncertainty to successful industry transition

Formal engagements with the minibus-taxi industry started again in Cape Town in August 2009, when the CoCT issued the second draft of the prospectus initially issued in early-2009 for Phase 1A services (Schalekamp and McLachlan, 2016). To assist with achieving the industry transformation objectives, the CoCT procured independent advisors to assist the minibus-taxi industry in negotiations and setting-up operating companies in August 2009 (Schalekamp, 2015; McLachlan, personal interview, 2018, July 25). Based on this prospectus, the CoCT engaged with eight taxi associations and two bus companies (Parliamentary Monitoring Group, 2010). The intention was for the affected operators to form two VOCs that would service Phase 1A. However, as will be detailed below, three VOCs were formed, namely TransPeninsula, Kidrogen and Table Bay Rapid Transit.

TransPeninsula consists of Peninsula Taxi Association, Central Unity Taxi Association and Devils Peak Vredehoek Taxi Association. These three associations serve the inner city and Atlantic Sea Board areas. Kidrogen consists of Blaauwberg Taxi Association, Maitland Taxi Association, United Taxi Association, Ysterplaat Taxi Association, Du Noon Taxi Association and Sibanye Bus Services. These five associations serve the West Coast area. Table Bay Rapid Transit consists of previous bus companies, Golden Arrow Bus Services and Sibanye Bus Services. These two bus companies operate routes across the city, including the Phase 1A affected areas.

The engagement phase came to an end and formal contract negotiations began in November 2009. The CoCT signed an interim contract in February 2010 with TransPeninsula for World Cup services because the World Cup event space fell within the region of those affected associations (Parliamentary Monitoring Group, 2010; Schalekamp, 2015; McLachlan, personal interview, 2018, July 25). The contract was for services running between the CBD and the Cape Town Stadium, an inner-city loop and park and ride facilities across Cape Town (City Of Cape Town, 2010). An interim contract was also signed with Golden Arrow Bus Services for an airport shuttle to run during the World Cup.

The World Cup services ran from 'test events' prior to World Cup to 31 October 2010. Beyond the World Cup, Phase 1A was due for its first implementation (milestone zero) in February 2011. Phase 1A was divided into five milestones, with the last milestone to be launched by September 2013 (City Of Cape Town, 2010). Phase 1A has been implemented with an average of a two-year delay on each milestone.

In early 2011, negotiations with the five minibus-taxi associations that serve the West Coast area entered a more serious phase, spurred by the signing of an interim contract with TransPeninsula and construction of stations and road infrastructure up the R27 and along Blouberg Road (McLachlan, personal interview, 2018, July 25). Following the World Cup, the CoCT terminated the IRPTN services

to the Cape Town Stadium, except for event days. However, the CoCT maintained the operation of the inner-city loop and the airport shuttle which was served through the interim contract with TransPeninsula (Schalekamp, 2015).

By early-2011, independent advisors appointed by the CoCT were able to convince the NTA-aligned associations, Du Noon Taxi Association and Ysterplaat Taxi Association, to form an operating company with the three other West Coast Taxi Associations and Sibanye Bus Services (McLachlan, personal interview, 2018, July 25). The stakeholders, who were close to forming the VOC, Kidrogen, objected to the interim contract between the CoCT and TransPeninsula in April 2011. The grouping insisted that the CoCT also enter into an interim contract with themselves for the West Coast services, as the infrastructure was ready and buses were standing idle, following the World Cup. The CoCT ceded, and in May 2011 entered into two interim vehicle operating contracts with TransPeninsula and what was still to become Kidrogen (Schalekamp, 2015; McLachlan, personal interview, 2018, July 25). A week later, the CoCT launched Milestone zero. The interim contracts with TransPeninsula and Kidrogen were extended as infrastructure was completed and vehicles were delivered. However, the 12-year contract negotiations were yet to concluded.

Mid-way through negotiations, in late-2012, Sibanye Bus Services and the five minibus-taxi associations within Kidrogen experienced irreconcilable differences, resulting in the minibus-taxi shareholders buying Sibanye's Kidrogen shares. A third VOC, called Table Bay Rapid Transit was formed between Sibanye Bus Services and Golden Arrow Bus Services to operate the trunk route between Table Bay and the CBD (Schalekamp, 2015; McLachlan, personal interview, 2018, July 25).

The 12-year contract negotiations between the CoCT and the three VOCs concluded in August 2013 (Schalekamp, 2015; Transport for Cape Town, 2015; McLachlan, personal interview, 2018, July 25). TransPeninsula, Kidrogen and Table Bay Rapid Transit operate the MyCiTi services for Phase 1A and Phase 1B, which is an extension of Phase 1A in the West Coast area. By the end of 2015, the CoCT had launched all milestones of Phase 1A and B.

In 2012, the CoCT introduced the plan for interim services to the Cape Town South East suburbs of Khayelitsha and Mitchell's Plain. Interestingly, along with this plan came a different approach to industry transition, as the CoCT experienced the effects in Phase 1A and B of the full services replacement model on the financial sustainability of the IRPTN project (McLachlan, personal interview, 2018, July 25). However, this thesis does not cover the events and decisions which impacted the outcome of the N2 Express service and only considers the events related to Phase 1A and B.

Adapting for the future and the consequences of moderation

Following the signing of the final operating contracts with the three VOCs; the CoCT, for the first time, had the full understanding of actual operating costs. By late 2013, it also became increasingly apparent that fare revenue was lower than expected. This led to the belief that the required operating subsidy would be significantly higher than the provincial bus operating subsidy at the time. To overcome this problem, the CoCT moderated the MyCiTi services to better match supply with demand and thereby improve the cost recovery capabilities of the system

Moderation was preceded by the analysis of different operating scenarios for a completed MyCiTi system, the results of which were compiled in the 'Making MyCiTi financially sustainable' report, published in May 2014 (Transport for Cape Town, 2015). The adjustments suggested by the report were applied to Phase one from late-2014 (McLachlan, personal interview, 2018, July 25). The adjustments, outlined in the 2015 MyCiTi Business Plan, included changing vehicle sizes, changing route frequencies as well as removing or adding new routes, increasing peak fares in comparison to off-peak fares, permitting minibus-taxis to re-enter certain routes, and improving internal management structures.

The CoCT acknowledged that the moderation trade-off was a slightly decreased quality of service for a smaller operating deficit and a more financially sustainable public transport service. It is difficult to assess whether the voids created by moderation are only being serviced by the re-licensed, and therefore legal, operators or if illegal operators have re-entered the respective MyCiTi routes. There are differing takes on the matter. According to the former-Transport political head in Cape Town, Cllr Brett Herron (2018), no illegal operators have been found along the MyCiTi routes. However, other interviewees have shared that vehicles licensed to do long-distance services now ran peak time services as well (McLachlan, personal interview, 2018, July 25).

Whether illegal operators have re-entered MyCiTi routes or not, the MyCiTi services, by the conclusion of this dissertation improved its revenue-to-cost ratio to 48 percent from 30 percent (Venter, 2015), prior to moderation and continues to be one of the CoCT's flagship projects with plans afoot to roll-out Phase two, albeit using a substantially different reform model (Transport and Urban Development Authority, 2017b).

7.5. ANALYSIS OF CASE STUDY FINDINGS

The CoCT has exceeded its fare revenue target; improved its revenue to cost-recovery ratio, its daily ridership figures are below the intended target, but it is the highest figure in the country, the service standards are lower than initially intended, and despite longer delays per milestone Phase one roll-out

was effectively only delayed by one year. Despite this positive picture, the IPTN plan continues to not fulfil initial expectations and the implementation of the project was not without its challenges.

In the analysis, it was found that there are three factors that have resulted in the delay of the IPTN fulfilling initial expectations; as well as two further factors that explain why the CoCT was able to overcome the challenges during implementation. These are: gold-standard BRT is inappropriate for Cape Town, underestimated cost of full industry replacement, funding uncertainty, prudent political leadership, and the adaptability of the Transport and Urban Authority.

Factor one: Gold-standard BRT is inappropriate for Cape Town

The operationally successful examples of BRT that the CoCT visited in South America were characterised by high density cities with bi-directional flow and continuous demand along the trunk routes (Wood, 2014a). However, Cape Town is characterised by the opposite due to the legacy of Apartheid era spatial planning.

The effects of Apartheid era spatial planning on the urban form of Cape Town today sees most residents living in low-density environments and working in higher density environments, usually 10 – 20 kilometres apart. This results in high demand during AM and PM peak hours, to and from work, and low demand during off-peak hours. This in-turn requires a fleet capable of satisfying the peak demands, resulting in a large idle fleet during off-peak. BRT also requires costly initial infrastructural outlays to harness its potential for operational cost savings; which placed an added financial burden on a system which does not have the requisite urban densities to reach the ridership figures need to harness BRT's potential for zero operational subsidies.

Dispersed urban form, high peak to base ratios, single directional flow and point to point demand have consistently been given as reasons for the higher operating costs and lower daily ridership (City of Cape Town, 2010, 2012; Grey and Behrens, 2013; Transport for Cape Town, 2015; Transport and Urban Development Authority, 2017a; Former CoCT Mayco Transport, 2018).

However, the data presented in the project timeline shows a series of events between August 2006 and August 2008 which lead to the implementation of BRT in Cape Town. During this two-year period; a face-to-face meeting between the most senior CoCT political leadership and BRT experts, a scoping study, an international study tour, input and direction from the NDoT and the development of business and operational plans were not enough for the CoCT political leadership and administration to see the fundamentally inappropriate nature of BRT for Cape Town. This points to a potential initial lack of capacity within the CoCT to adequately consider the pros and cons of BRT for the city spatial form.

Factor two: Underestimated cost of full industry replacement

Full industry replacement involved compensation for vehicles and operating licenses, as well as the formation of three VOCs. The engagements and negotiations also continued for longer than expected, resulting in the use of interim contracts and in three phases of compensation – Early Exit Compensation, Early Compensation and Final Stage Compensation. These contributing factors demonstrate that the CoCT miscalculated the potential market values of minibus-taxi operations in the initial planning stages. It must be noted that reliable data on the minibus-taxi industry is notoriously difficult to source.

“These revisions revealed that the original estimates were underestimated, primarily due to the preliminary information available at time of estimating as a result of the short time frames to achieve a service by World Cup 2010...The estimated costs of the transition of the current minibus-taxi industries to the IRT were found to be higher than initially estimated. The industry transition costs initially did not include amounts payable for the surrender of vehicles as it was assumed that should this be required it would be funded by National Government separately.” City of Cape Town, 2010

It also demonstrates that the CoCT misread the state of the political relationship within the minibus-taxi industry, as well as between government and the minibus-taxi industry. The history between NTA, SANTACO and government influenced the anti-BRT protests that flared up in late-2008/early-2009. The push for increased consultation on BRT plans (Schalekamp and Behrens, 2010) and issues around driver harassment by Metro Police (Schalekamp, 2015) demonstrated the mistrust between the government and the minibus-taxi industry. The complexities around government and minibus-taxi engagements in relation to full industry replacement in the IPTN project is addressed by Schalekamp and Behrens in their 2010 journal paper, Engaging paratransit on public transport reform initiatives in South Africa. A quote from the paper summarises the analysis of full industry replacement’s impact on the MyCiTi project:

“Assumptions that paratransit at the aggregate level would be a willing player in the formalisation process proposed under the IRPTN programme and BRT projects, and that it would respond positively to the truncated timeframes under which the local governments propose that it make this radical shift, have proved to be unrealistic.” Schalekamp and Behrens, 2010

Factor three: Funding uncertainty

In June 2009, the CoCT Council limited the IPTN development to the availability of funding from the NDoT. This was partly a driver behind Phase one being broken up into milestones and caused the two-year average delay of each milestone launch. South African legislation necessitates that funding is reviewed in three-year cycles and is received on an annual basis. The quote below summarises the impact that a lack of funding certainty has had on the IPTN project.

“Certainty around funding would make a huge difference to implementation and meeting milestones. Government budgets in three-year cycles, and national government is reluctant to make longer-term commitments because of unexpected demands on the budget that may arise. I understand their lack of ability to commit because three years ago they didn’t know that they were going to fund free education. Now suddenly they have to find that money and that is where parts of the cuts of the grants is going. I am not blaming national government, but it is certainly a massive factor in the way that we implement - the lack of certainty and the lack of commitment to the funding stream that goes longer than three years.” CoCT senior official, personal interview, 2018, July 18

Factor four: Prudent political leadership

The CoCT demonstrated prudent political leadership that was able to adequately respond to changing circumstances. There are four examples of the political leadership of the CoCT influencing the IPTN project. The first example is the attendance of the political leadership, along with existing industry leadership, on the study tours to South America. This demonstrated the seriousness with which the CoCT was considering the adoption of BRT. As well as showing the CoCT’s serious intention to include the existing public transport stakeholders in the reform efforts.

The second example comes in 2008 when former-Mayor Mrs Helen Zille met in a one-on-one meeting with the regional leadership of NTA. The success of the meeting was questionable because at the next broader engagement meeting, the NTA leadership walked out. However, it demonstrated a commitment from the political leadership to overcome the political challenges that the IPTN project faced. The third example is the CoCT Council setting limits on IPTN implementation when it learnt that the project costs had ballooned. Combined with this example, was the decision by the Council to allow four percent of rates income to contribute towards covering the IPTN project. Although the former had a negative impact on the implementation timeframes for Phase one; the financial prudence of the political leadership had a positive impact in decreasing the MyCiTi’s subsidy requirements.

The last example is the initiation of the moderation exercise by the former-TDA Commissioner Melissa Whitehead. Moderation has improved the financial sustainability of the IPTN project. Moderation allowed minibus-taxi vehicles to re-enter Phase I routes, a decision which is in direct conflict with the initial intentions of the IPTN plan. However, the moderation exercise proved to be a precursor to the drive for hybridity found in the 2015 business plan and onwards.

Factor five: Adaptability of CoCT’s Transport and Urban Development Authority

Operating contracts, business and operational plans were changed to respond to the realities of the IPTN system, as lessons were learnt through implementation. Three examples demonstrate this point.

The first example comes from what appeared to be strategy adjustments to engaging with the minibus-taxi industry. After the failed attempt to host the first public meeting, the CoCT cancelled all

further planned public meetings and instead followed the first public meeting with a ‘summit’ for minibus-taxi operators only. This was followed by a one-on-one meeting between former-Mayor Mrs Helen Zille and the NTA regional leadership, once it was identified that NTA was a driving force behind much of the opposition. This was followed by ongoing engagements with the minibus-taxi industry by CoCT officials, but an external consultant was appointed to engage directly with the NTA-aligned associations. This strategy eventually paid off through the formation of Kidrogen.

The second example is the willingness of the CoCT’s TDA to form three VOCs instead of two, upon the advice of external consultants, Organisational Development Africa. Schalekamp notes in his doctoral thesis that the strained relationship between the minibus-taxi associations and Sibanye Bus Services was evidence of the political difficulties between the two industries. The willingness of the CoCT to opt for a more expensive industry transition arrangement to ensure the smooth running of the IPTN services is testament to their capacity to adapt the initial plans to the lessons learnt through implementation.

The third example is the adjustments in the business and operational plans developed between 2009 to 2017. Almost immediately, in the 2010 plans the CoCT identified factors that would contribute to lower than expected operational performance. This remained the case in the 2012 plan and from the completion of the moderation exercise in 2013/14, the CoCT embarked on a drive to improve the financial sustainability of the IPTN project. This led to the introduction of ‘hybridity’ in the 2015 and subsequent plans. The capacity and willingness of the CoCT to adapt the initial plans to develop an IPTN that suits the realities of Cape Town has contributed to the IPTN operational successes.

7.6. CONCLUSION

The CoCT’s IPTN project is delayed due to five underlying factors. Three of the factors are negative in nature and two of the factors, although causing the project to fall short of its intended outcomes, had an overall positive influence on the project. The first cause of delay is distilled to be that the CoCT’s political leadership initially failed to recognise that gold-standard BRT was inappropriate for Cape Town’s spatial form. The second cause was the ballooned cost of the IPTN project caused by the intention to replace all existing public transport operators in the phase one footprint with MyCiTi services. The third cause comes down to municipal finance legislation that restricts government funding to three-year cycles. This restriction coupled with the CoCT Council’s prudent decision to limit IPTN implementation to the availability of national treasury funding was a significant contributor to the delays in achieving each milestone. These three factors collectively explain MyCiTi’s lower ridership, higher operational costs, and longer implementation timeframes.

There are two remaining factors that have caused the MyCiTi project to meet almost all of its intended objectives. The first factor is prudent political leadership which played an active role in ensuring that the project was able to overcome challenges in the industry transition negotiations and to implement the moderation exercise to ensure that the IPTN project remained financially sustainable. The second factor that positively contributed to the outcomes found in 2017, was the adaptability of the CoCT's transport authority, TDA. TDA displayed a willingness to critique the IPTN project in its original form, worked to suggest alternatives, and was flexible to change operational practices and industry transition solutions to ensure that the original 'intended outcomes' remained achievable.

8 CASE FIVE: GEORGE LOCAL MUNICIPALITY

8.1. INTRODUCTION

This chapter begins with an overview of the city of George prior to the initiation of the IPTN project. The overview provides details on population, unemployment, GDP growth, car ownership and a brief description of the layout of the city. It gives a detailed break-down of transport modal choices, affordability of public transport, the dominant issues that users have with transport and the dominant factors that influence modal choice, as found in the 2013 NHTS. The section concludes with an overview of the institutional arrangements that preceded the transformation efforts of the IPTN project.

The overview follows with an evaluation of the success or delay of the IPTN programme. The achieved outcomes are assessed against the intended outcomes set the George Local Municipality (GLM), as defined by the IPTN design parameters outlined in the PTSAP.

This is followed by a detailed timeline analysis of events and decisions taken on the IPTN project between 2003 and 2016. All the above sections are analysed and discussed in the concluding section which details the proposed factors which caused the outcomes of the IPTN project as at the end of 2017.

8.2. CITY OVERVIEW

At the time of renewed interest in transforming the public transport industry, 2007, the population in George was estimated to be 148 000 residents with an unemployment rate of 18 percent in 2009 (George, no date). The GDP of George grew by an average of 4.11 percent between 2000 and 2010 (George, no date). There is limited data on car ownership in George, but it can be inferred that car ownership increased over the period 2003 to 2013. In the Western Cape, car ownership increased from an estimated 45.5 percent in 2003 (Lombard *et al.*, 2007) to 48.4 percent in 2013 (Statistics South Africa, 2014b). In the District Municipality of Eden, in which George is the largest city, 33.5 percent of households had access to a car in 2013 (Statistics South Africa, 2014b). George consists of the outlying suburbs of Wilderness and Herolds Bay, with Blanco and Heatherlands in the West, Denneoord in the North, Glenwood in the East and Thembaletu and Pacoltsdorp in the South.

The state of transport

Minibus-taxi use is the dominant mode of travel for all household trips in the Eden District, at 35.1 percent, followed by 'walking all the way' with 28.6 percent of households using this mode. Thereafter, 26.3 percent of households use private cars either as a passenger or driver, 4.6 percent use a bus and 1.1 percent use a train as their mode of travel.

In the Western Cape, 20.3 percent of households spent more than 20 percent of their household income on public transport in 2013. While, the majority of households, 56.7 percent, spent less than 10 percent on public transport in 2013.

The most important transport related problems for respondents to the 2013 NHTS in the Eden District was no buses available, 18.1 percent of respondents expressed this dissatisfaction. The second biggest concern was minibus-taxi trips being too expensive, with 12.8 percent of households raising this issue; followed by rude drivers, 9.1 percent of households noted this dissatisfaction. Modal choice in the Eden District is determined most significantly by travel cost, travel time and comfort with 43.1 percent, 30.4 percent and 7.1 percent of households citing these factors respectively.

Institutional arrangements of the local public transport sector

Public transport in George is provided by an estimated 250 minibus-taxi operators. They are organised into three taxi associations, namely Uncedo, the George Taxi Owners Forum and the George Huurmotorvereniging. These owners operate an estimated 400 operating licenses. There is also a single conventional bus operator that held operating permits prior the IPTN project called Louis Muller Transport (George Municipality, 2011).

8.3. SYSTEM OUTCOMES EVALUATION

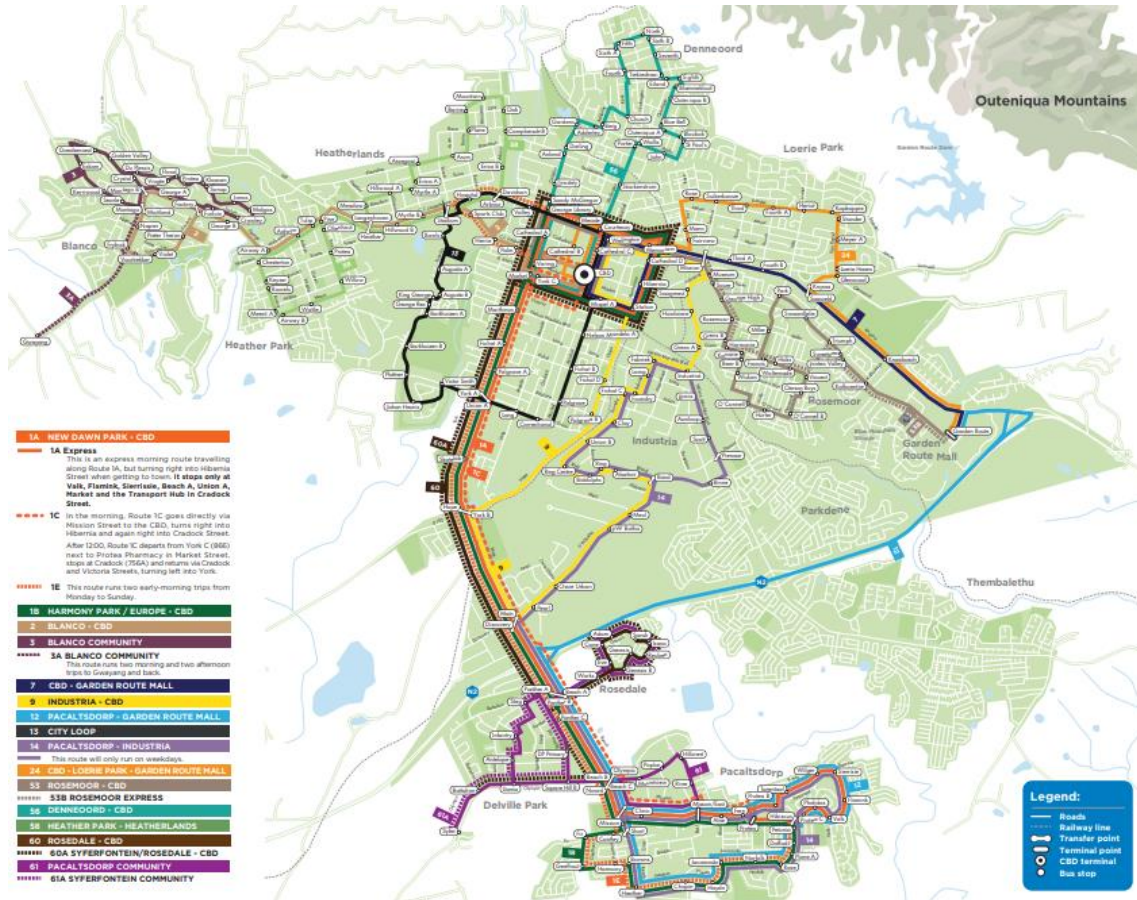


Figure 13: Map of GoGeorge IPTN (Source: GoGeorge website)

The Western Cape Department of Transport and Public Works (DTPW) had been engaged in the idea of transforming the public transport sector in the George Local Municipality (GLM) since 2003. The introduction of the PTSAP, the DTPW and GLM found a renewed impetus to transform the industry.

Table 5: Comparison between intended outcomes and achieved outcomes for all components of IPTN design

	Criteria	Intended outcome	Achieved outcome
Accessibility	Walking distance to trunk/feeder stop	400-600m ¹	Delayed due to partial project roll-out
	Headway	High: 15mins; Low: 1 hour ¹	Peak: 10 mins headway Off-peak: 30 mins headway ²
	Daily operational hours	14-18 hours ¹	16 hours ²
	Weekly operational days	7 days ¹	7 days ²
	Percentage of population within walking distance of trunk/feeder	85% of urban built environment ³	Delayed due to partial project roll-out ¹
Service quality	Vehicle and station/interchange experience	Simple, safe, clean stations and vehicles, with some universally accessibility ¹	Achieved ¹
	User service experience	Scheduled, reliable, affordable, and integrated schedules, fares and routes. ¹	Achieved ¹
Infrastructure	Roads	Roads able to withstand rear-axle vehicles with high loads ²	Achieved ¹
	Vehicles	Combination of standard, midi and mini buses. High and low floor. ¹	Achieved ¹
	Fare system	Pre-board electronic fare payment ¹	Started with paper-ticket system ¹ ; upgraded to electronic payment ⁴
	Stations	Simple stops. Either a pole and bus stop sign or bus stop with single shelter ⁵	Achieved ¹
Operations	Passenger trips per day	51 628 ¹	12 400 ⁶
	Fare revenue per annum	R120 500 367 (2013/14) ¹	R37 301 620.00 (2016/17) ⁷
	First operations date	January 2012 ¹	December 2014 ²
	All operations date	July 2015 ²	Phase 4, 5 and 6 to be launched ²

¹ George Municipality, 2011

² GIPTN, 2018

³ Aboo and Robertson, 2016

⁴ "GoGeorge smart card on its way", 2018

⁵ Robertson, Aboo and Daniels, 2016

⁶ National Treasury, 2017

⁷ George Local Municipality, 2017

⁸GIPTN consultant, personal communication, 2017, October 2

GoGeorge was launched three years later than intended, with phases four, five and six are yet to be launched. Ridership is four times lower than expected and fare revenue is correspondingly lower as well. The GLM and the DTPW continues to pursue the implementation of GoGeorge and therefore the project is assessed to be delayed.

The initial plan was to operate a system for seven days a week at head ways of 15mins in the peak and one hour in the off-peak, operating between 14 and 18 hours a day and bringing 85 percent of the urban population within 400 to 600 metres of a bus stop. Most of the intended outcomes have already been achieved. GoGeorge operates at headways of 10mins in the peak and 30mins in the off-peak for 16 hours a day, seven days a week. The only delayed outcome is having 85 percent of the population within 400-600 metres of a station, but this is due to the fact that the last three phases are yet to be launched.

The intended quality of the service was achieved, as well as the intended vehicles, roads and stations criteria was also achieved. The system started on a paper-based ticket system which was due to be upgraded to an electronic fare collection system in 2018.

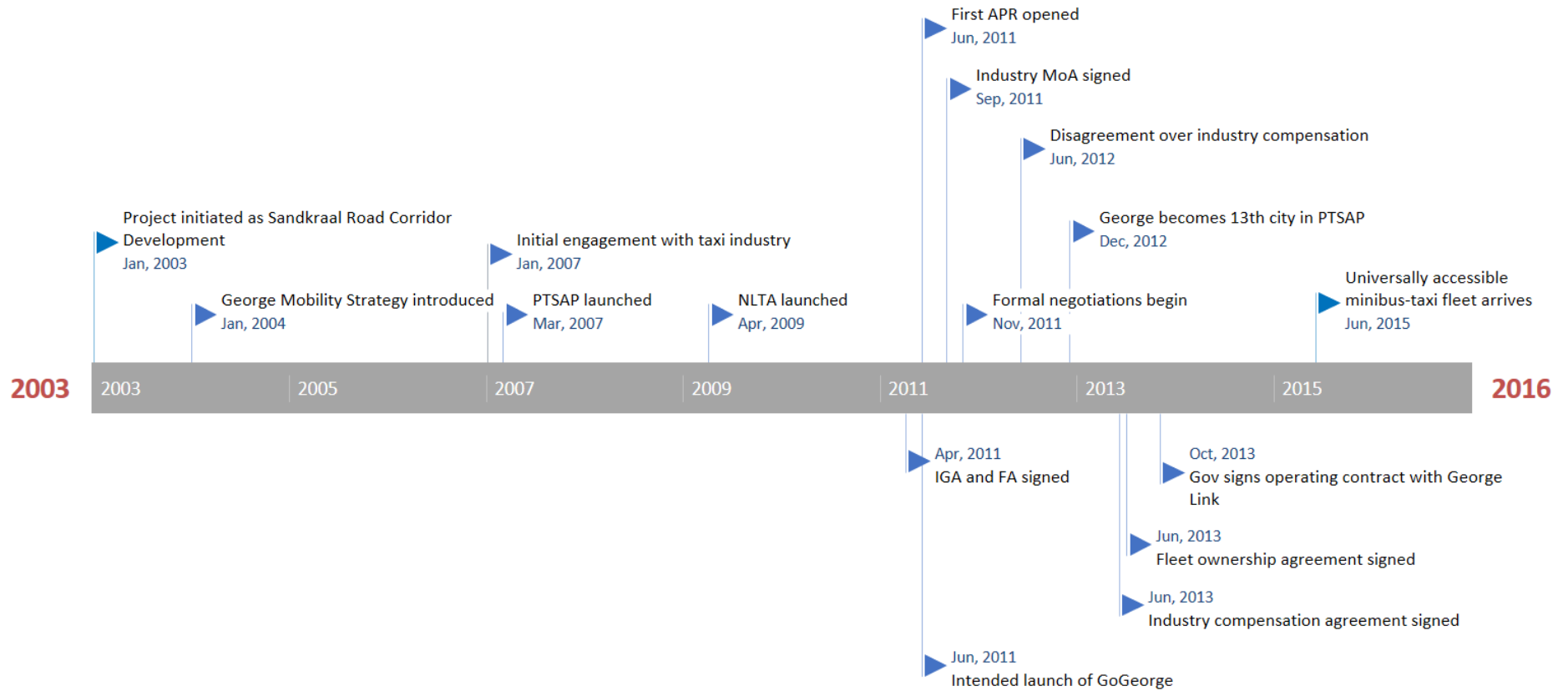


Figure 14: Timeline of events between 2003 and 2015, in relation to institutional arrangements and industry transition.

8.4. PROJECT TIMELINE

The beginning

GoGeorge started in 2003 as a community integration project between Thembaletu, the Apartheid-era blacks-only area, and the George CBD. A year later, the corridor project evolved into the George Mobility Strategy as a joint project between the DPTW, GLM, and the Eden District Municipality. The George Mobility Strategy sought to develop a comprehensive city-wide bus network, rather than a single corridor project (Mooiman and Esson, 2013; Robertson, Aboo and Daniels, 2016). The George Mobility Strategy was renamed to the George Integrated Public Transport Network (GIPTN), branded as GoGeorge. The bus system was first designed in 2006 (GIPTN consultant, personal communication, 2017, October 2). Provincial government initiated engagements with the minibus-taxi industry in 2007. The objective of the initial engagements was to determine the willingness of the minibus-taxi industry to transform into a formally-contracted bus company (Aboo and Robertson, 2016; GIPTN consultant, personal communication, 2017, October 2).

“Let’s have a conversation to see if you [minibus-taxi industry] would be willing to transform, given that we don’t have the legislation to be able to put this in place.” (GIPTN consultant, personal communication, 2017, October 2)

At the time, the National Land Transport Transition Act (NLTTA), of 2000, was the governing legislation. It only allowed for a ‘provincial government, transport authority or core city’ to negotiate with public transport service providers, where the service provider already had an existing interim contract. The NLTTA was replaced by the National Land Transport Act (NLTA), of 2009. The NLTA made provision for a 12-year negotiated contract with a service provider, once only, where the service provider could be an ‘operator of unscheduled services’ as well as other operators listed in section 41(2) of the NLTA. The NLTA also placed the responsibility for planning, implementation and management of IPTNs with local municipalities. Provincial government was given the responsibility to reinforce local governments who lacked the capacity and resources to fulfil their land transport duties.

The PTSAP was launched in 2007, which diverted government attention to the major cities in preparation for the 2010 World Cup (Aboo and Robertson, 2016; GIPTN consultant, personal communication, 2017, October 2). This slowed the progress in the industry engagements as the DTPW had to shift its focus to implementing public transport services in Cape Town on key World Cup orientated routes.

The 2009 NLTA that followed the PTSAP changed the public transport contracting authority from the provincial government to local government. The NLTA enabled the GIPTN to be

implemented but it is also created a new obstacle for the project. The challenge that the GIPTN project faced following this legislation change is that the GLM lacked the capacity to plan, implement and manage an IPTN on its own. To overcome this change in institutional responsibility, the DTPW entered into two agreements to establish a partnership with the GLM, namely the Inter-government Agreement (IGA) and the Financial Agreement (FA) The consultations prior to the agreements took two years to conclude, starting in 2009 and concluding in April 2011 (Mooiman and Esson, 2013; GIPTN consultant, personal communication, 2017, October 2).

The IGA, saw the two government spheres become jointly responsible for the planning, management and funding of the GIPTN. The GLM gained engineering, financial, town planning, legal skills, and institutional knowledge, from the DTPW, to enable it to manage the GIPTN system. While through the FA, the DTPW agreed to subsidise the operational deficits of the GIPTN (George Local Municipality [GLM], 2011; Mooiman & Esson, 2013). A full transfer of skills from the DTPW to the GLM was to occur by July 2016 (GLM, 2011) but this had not happened by September 2017 (GIPTN consultant, personal communication, 2017, October 2)

“The local and provincial government sign the IGA and the FA and province agreed to underwrite the entire thing because they believed in the transformation” (GIPTN consultant, personal communication, 2017, October 2).

Industry transition

The formal negotiations were preceded by industry engagements with the three local minibuss-taxi associations and the conventional bus operator (Aboo and Robertson, 2016). The engagements went a long way to build trust between the stakeholders, however two issues in the formal negotiations delayed the implementation date by two years (GIPTN consultant, personal communication, 2017, October 2).

Once the inter-government relationship was outlined government re-initiated engagements with the existing local public transport industry. The first ‘Affected Persons Register’ (APR) was opened in June 2011 and a second APR in 2013. The register sought to identify all industry stakeholders that wished to participate in the GIPTN (Aboo and Robertson, 2016; GIPTN consultant, personal communication, 2017, October 2). The APR was followed by the signing of a MoA between government and the industry in September 2011. The first formal industry negotiations session took place in November 2011. (Mooiman and Esson, 2013; Aurecon, 2016; GIPTN consultant, personal communication, 2017, October 2). The government hoped to be able to conclude negotiations quickly however, the late start in 2011 meant that negotiations only began in earnest in 2012. And by June 2012, negotiations had stalled for six months on the issue of operating license compensation.

The original idea put to the industry during the engagements in 2007 did not include operating license compensation. The industry agreed to this arrangement, in principle. The arrangement was that the industry would relinquish their operating licenses and in return they would receive company shares, employment benefits and training. However, by 2010, Cape Town, Johannesburg, Tshwane and Nelson Mandela Bay municipalities had agreed to compensate the industry for their operating licenses in their IPTN projects. This set a precedent for compensation for operator licenses, which the industry in George now demanded (Mooiman and Esson, 2013; Aboo and Robertson, 2016; GIPTN consultant, personal communication, 2017, October 2).

Operator compensation ballooned the cost of the GIPTN. As a result, provincial government could no longer solely underwrite the project, therefore additional funding was sought from National Treasury. After six months of discussions, George was included as the 13th city in the Public Transport Infrastructure and Systems Grant (PTISG) and for these six months the industry negotiations stalled until funding was secured. (GIPTN consultant, personal communication, 2017, October 2)

“...it was then decided to go to national and request for George to be the 13th city [in the PTISG]. Constitutionally they could not deny us finding even though we are not one of the [original] 12 cities. We were able to present a strong enough argument as well as demonstrate our progress that they [National Treasury] agreed to grant us funding. At the end of 2012, we [George] became the 13th city” (GIPTN consultant, personal communication, 2017, October 2)

With extra funding secured, negotiations could continue. Agreement over operator license compensation was reached in June 2013. Each operator had to sign a Participation Commitment Declaration Agreement before compensation could be issued (GIPTN consultant, personal communication, 2017, October 2). The operator license compensation mechanism was determined through a lengthy process. Firstly, a moratorium on operating licenses was placed on issuing new or renewing licenses in 2010. Once operating licenses were determined to be valid, they were placed in ‘safe-keeping’ for the duration of the negotiations until compensation was paid. Licenses in ‘safe-keeping’ were renewed every six months.

After determining the number of valid operating licenses in George, the value of the minibus-taxi industry had to be determined through route evaluations. The route evaluations were determined from the data collected in an economic baseline survey conducted in 2007, the Current Public Transport Record from 2009 and the PRE-study completed in 2010. It was agreed compensation would be determined on a sliding scale.

There were three options available to operators: buy-in, buy-out or do not engage. Those that opted to ‘buy-in’ were compensated for the first five years of the operating contract. They received R5500 per month for the first operating license, R4500 for the second, R3500 for the third and R1500

for the fourth. Those that opted to ‘buy-out’ were compensated once off, also using a sliding scale. An operator was paid R350 000 for the first operating license, R250 000 for the second, R150 000 for the third and R100 000 for the fourth and every subsequent operating license thereafter. Those that chose to ‘not engage’ they would continue to operate until the end of their operating license period but were not guaranteed to have their licenses renewed.

Interaction between the three spheres of government

Funding from National Treasury solved the compensation problem, but it introduced an issue with fleet ownership. Initially the Vehicle Operating Company (VOC) was to own the fleet, but national government funding conditions required that the fleet be owned by the Municipality. This was a difficult point for the industry stakeholders because the operators were accustomed to owning their vehicles. However, after four months of negotiations the industry agreed to the new fleet ownership arrangement. It was agreed that the GLM would purchase the vehicles using capital funds, with the permission of National Treasury, due to the precedent set in other cities. The GLM would then transfer the ownership of the vehicles to the VOC at the end of the useful life of the vehicles, which was determined to be 12 years, or at the earliest possible time with the permission of National Treasury. The new fleet ownership model was agreed and signed in October 2013 (GIPTN consultant, personal communication, 2017, October 2).

Following the agreement of the fleet ownership model, the government and the existing operators signed the GIPTN operating contract with George Link (Pty) Ltd on 31 October 2013. George Link was the VOC formed by the existing public transport operators. Although the negotiations were incomplete, the contract was signed because 31 October 2013 was set as a completion milestone in the agreement between GLM and National Treasury. It was necessary to meet this milestone for the GIPTN to receive the next tranche of funding from the National Treasury. Therefore, a process of ‘annexure negotiations’ began following the signing of the operator contract.

“In between that, national says there are specific goals that need to be hit in order for your tranche of money to be released. One of the goals was them signing a contract. We signed it on the 31 October 2013 because we made it a milestone, of course we did not think that we would hit so many glitches. But it was contingent on them signing all the annexures before the contract could be implemented. At the beginning of 2014, we started to finalise the annexures. The annexures had all the detail around pricing, the contract rates per kilometre, the pre-operations costs, branding, training etc.”
(GIPTN consultant, personal communication, 2017, October 2)

During the fleet ownership negotiations, the NDoT introduced a framework that prevented any national government funding from being used for anything that is not universally accessible (Robertson, Aboo and Daniels, 2016; GIPTN consultant, personal communication, 2017, October 2). This complicated matters for the GIPTN team because it believed that a mixed-traffic bus service with

a fleet that comprised of standard buses, midibuses and minibuses was the best solution for George (GIPTN consultant, personal communication, 2017, October 2). The trouble that this presented was that there were no universally accessible minibuses available in South Africa and to import one would have ballooned costs.

“National was so focused on doing BRT BRT BRT, we came in and said we are not doing BRT, we are doing a conventional bus service. We said that we would like to have a mini-bus vehicle but there are no universally accessible mini-buses in the country. To import one would cost the same price as bringing a standard bus which disrupts your entire funding plan...that threw a wonderful spanner in the works” (GIPTN consultant, personal communication, 2017, October 2)

It took six months of deliberation between the GIPTN team and the NDoT to reach an agreement in which the GIPTN team would design and manufacture the first universally accessible minibus-taxi vehicle. Even though this was a significant achievement for the country, it came at an increased project cost and time delay for the GIPTN project. Following the signing of a manufacturing contract with Mercedes-Benz in May 2014, a further nine months were added for vehicle design and manufacture, before the vehicles could be used in the system (GIPTN consultant, personal communication, 2017, October 2).

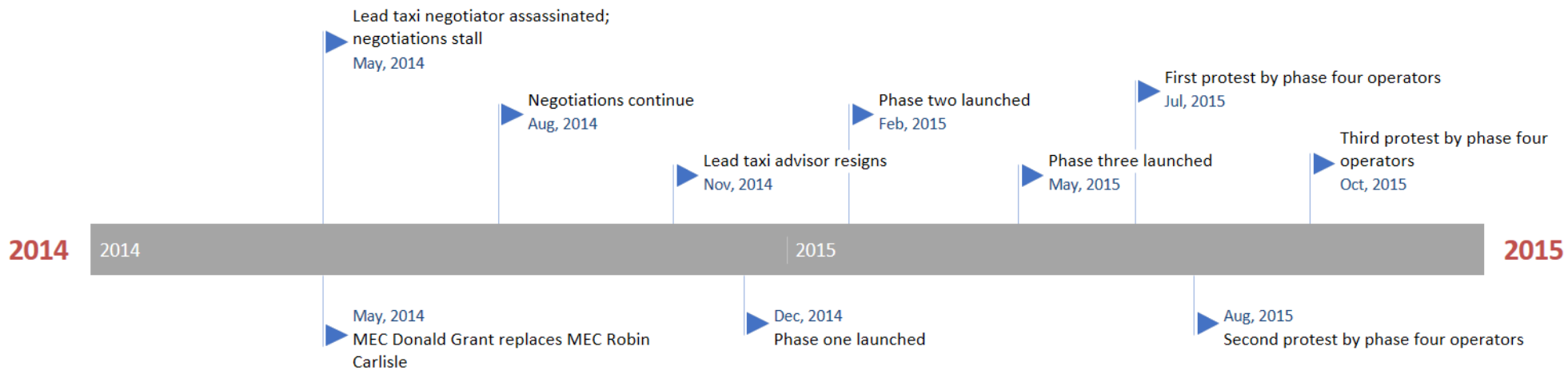


Figure 15: Timeline of events from 2014 to 2015, in relation to the launch of the first three phases

Launching the GoGeorge service

Due to this delay, on 8 December 2014, phase one had to run without minibuses (GIPTN consultant, personal communication, 2017, October 2). Phase one was launched three and a half years after the original intended roll-out date. The initial lack of universally accessible vehicles increased the start-up operation costs (GIPTN consultant, personal communication, 2017, October 2) as it was more expensive to run standard buses than minibuses. Standard buses also exert greater wear on roads than minibuses. Many of the routes that ran through suburbs were intended for the minibus-taxi fleet and therefore the road infrastructure was not upgraded. These roads were damaged as a result, which had a negative impact on initial public acceptance and required unexpected spending on maintenance.

“National refused to allow us to use the current minibus as it stood. Which affected our sequence of phases for rolling out.” (GIPTN consultant, personal communication, 2017, October 2).

The GIPTN project saw three significant leadership changes in the lead-up to the launch of phase one. The first was the unfortunate loss of Tom Queba, the lead negotiator for the minibus-taxi industry, who was shot dead in May 2014 (Caxton News Service, 2016). In the same month, Donald Grant replaced Robin Carlisle as the Western Cape MEC for Transport. These two changes stalled the project for three months before the annexure negotiations started up again in August 2014. Later that year, the minibus-taxi industry’s lead advisor, Jonathan Bloom, left the taxi negotiating team in November 2014 (GIPTN consultant, personal communication, 2017, October 2).

“In May 2014, the lead negotiator at the time was Mr Tom Queba. Mr Queba was assassinated. This throws the entire systems out of kilter, because none of the industry members were willing to step up to take over as lead negotiator for fear of also being assassinated. The project stalled and in between we had a change in MEC which made life very complicated because he was not briefed. Literally, Tom was assassinated and MEC Donald took the post up a week later which made life complicated because there was now no history.” (GIPTN consultant, personal communication, 2017, October 2).

Phase two and three were rolled out in February 2015 and May 2015, respectively. There were minor contestations around the routing of Phase three because the VOC disagreed with the GIPTN team on the need for transfers. As a result, at the launch of Phase three, the VOC ran the buses on the routes that the taxi operators previously ran. However, this issue was resolved within two weeks and the VOC agreed to run the routes as per the instructions of the GIPTN team (GIPTN consultant, personal communication, 2017, October 2).

Following the launch of phase three, in July 2015, a group of dissident minibus-taxi operators protested against the GIPTN in opposition to the compensation model agreed in June 2013 (GoGeorge, 2015; Sinxo, 2015). The protest, which was largely peaceful, began in Thembalethu, which was due for phase four launch in August 2015. The following month, on the eve of the launch of phase four, violent

protests erupted also instigated by a group of dissident minibus-taxi operators who had not agreed to the negotiation terms (ANA, 2015; Herman, 2015; Koyana, 2015; GIPTN consultant, personal communication, 2017, October 2). The protestors were believed to be a part of the UNCEDO association, which was affected by the phase four services. A third round of protests flared up again in October 2015, on the same compensation issue as the protest in August and July 2015 (Asmal, 2015; Stander, 2015).

“The protestors burnt the buses which threw the phase four discussions out of the window for quite a long time because it boiled down to these disgruntled operators, who worked on the premise that the system was never going to come into play, so they never signed any of the registrations in 2011 and 2013. They did not sign the MoA. And now it is all very political” (GIPTN consultant, personal communication, 2017, October 2)

By mid-2017, the government had reviewed the industry negotiation processes to verify that the disgruntled operators were not denied an opportunity to influence the negotiation outcomes. The court found in the government’s favour. However, by the end of 2017, phase four had yet to be launched.

8.5. ANALYSIS OF CASE STUDY FINDINGS

The George Local Municipality had good intentions with its IPTN project. There was positive economic growth and increasing car ownership in the region., along with a dissatisfaction amongst public transport users of the quality of public transport available in 2007.

George, on many fronts, was ahead of the national developments to improve public transport, but it was the development of the NLTA that ultimately gave GLM and DTPW the legal framework within which the GIPTN project could be implemented. The NLTA was preceded by the PTSAP, which saw the introduction of BRT as the new public transport mode of choice. Even though, the PTSAP was a catalyst for change, it also proved to be an impediment to the GIPTN project reaching its intended outcomes. Through the analysis of the findings, the underlying reasons for the achieved outcomes falling short of the intended outcomes is distilled down to two factors: lack of capacity at the NDoT, and multiple changes in leadership.

Factor one: Lack of capacity at the National Department of Transport

Prior to the PTSAP, the public transport service providers in George were satisfied with transferring their operating licenses for VOC shares without the need for compensation. However, the PTSAP saw Cape Town and Nelson Mandela Bay compensate minibus-taxi operators for their operating licenses and vehicles. This created the precedent for compensation in George, geographically half-way between

the two metropolises. This increased the industry transition cost and necessitated DPTW and GLM to approach the NDoT and National Treasury for funding.

This decision in turn affected both the fleet ownership model and the fleet design characteristics. The fleet ownership model changed considerably from the fleet being owned by the operating company to the fleet being owned by the municipality, with the ownership agreed to be transferred to the VOC at a future date. The fleet design characteristics necessitated the design and manufacture of a new universally accessible minibus-taxi vehicle, unique for South Africa. These fleet changes contributed to the delayed implementation timeline; and increased cost through the design and manufacture of the new vehicle, as well as increased infrastructure maintenance cost through the need to use inappropriate vehicles on select routes in the initial stages of the phases one, two and three.

“One decision, the knock-on operational effect is phenomenal and if you don’t fully comprehend it, you will end in a series of problems” (GIPTN consultant, personal communication, 2017, October 2)

Therefore, it is proposed that the GIPTN project has taken longer to implement, has cost more than the initial budget and is yet to reach its forecast ridership figures because the PTSAP set a precedent, and conditions, which were misaligned with the conditions found in George. It is further proposed that the NDoT lacked the nuanced local knowledge of the South African context required to develop plans relevant for its cities and towns. It is also proposed that the NDoT lacked the capacity to adapt national plans to the nuanced conditions of local contexts.

‘The biggest lesson learned in George is that it is the institutional arrangements and the alignment of the interests of all affected stakeholders that take the most time and are the biggest determinant of success and failure. These stakeholders include the Municipality, Provincial and National government, politicians, the taxi industry and the public.’ (Mooiman and Esson, 2013)

Factor two: Multiple changes in leadership

Throughout the GIPTN project there were multiple political leadership changes. Mooiman and Esson find that political stability and buy-in are crucial factors in the success of a multi-year, multi-stakeholder project.

“There was a series of HoD’s that went through at province that made the carry-through of the project slightly complicated because you needed the political will to go forth” (GIPTN consultant, personal communication, 2017, October 2).

The year before the launch of the first three phases saw leadership changes in the province and the minibus-taxi industry. These two stakeholders were the driver of the GIPTN project and the most significant opponent to the project, respectively. When the project reaches the point of launching phase

four, the most contentious phase of the GIPTN, we see violent protests driven by a group of dissident minibus-taxi operators. By the end of this research period, end-2017, phase four was yet to be launched.

Therefore, it is proposed that the delays in implementation found at the end of 2017, and therefore the continued delay in reaching the forecasted ridership figures and the continued unexpected pressure on the fiscus through the need for unintended subsidies, is due to the political leadership, in both provincial government and the minibus-taxi industry, changes in quick succession that preceded the launch of GoGeorge.

It is proposed that the current delays would not have been as lengthy had the provincial leadership and minibus-taxi leadership remained unchanged, because it was under the leadership of MEC Robin Carlisle, Tom Queba and Jonathan Bloom that the GIPTN team were able to navigate the political complexities through the most difficult phases of the negotiations.

8.6. CONCLUSION

In conclusion, it is proposed that the GIPTN project is delayed due to a lack of capacity in the NDoT to develop plans that are relevant to local contexts, a lack of capacity in the NDoT to adapt their plans to local contexts and the instability caused by quick-successive changes in political leadership. The GIPTN project is an example of what could have been achieved through stakeholder engagement. While it also stands as an example of the risks of an attempt to implement a one-size-fits-all approach to transformation projects.

9 DISCUSSION

9.1. INTRODUCTION

This chapter considers all five cases in a cross-case analysis. The chapter investigates whether a national narrative exists that explains the delay of the five IPTN case studies. It does this through a comparative analysis of the system outcomes evaluation, in terms of each characteristic identified from the PTSAP, and an analysis of similarities found in the underlying factors for each case.

9.2. COMPARATIVE SYSTEM OUTCOMES EVALUATION

The NDoT set out to reform the public transport industry through the PTSAP. In addition to the strategy to reform all three dimensions of the public transport industry, the NDoT provided quantifiable design and project criteria for the 13 IPTN projects across South Africa. These criteria – accessibility, service quality, infrastructure, and operations, are detailed in the table, below. Each City outlined their own IPTN criteria, against which each case study was evaluated in the earlier chapters. Overall, the five case studies found that the IPTN's are delayed in comprehensively achieving their criteria.

Accessibility

The NDoT aimed for 85 percent of all urban residents to be within 1000m of a trunk or feeder system. The Cities, bar the CoT, intended to build more comprehensive systems. CoCT and CoJ aimed at 75 percent and 85 percent of residents, respectively, to be within 500m of a station. The GLM allowed itself a range of 85 percent of residents within 400 to 600m, while the NMBM set the most ambitious target of 'all citizens' within 400m of a station. The CoT aimed to have 'most' residents within 1000m of a station or stop. All Cities were delayed in achieving this criterion because none of the projects had implemented all IPTN phases by the end of 2017.

The service headway range set by the NDoT was largely achieved, with delay found in George. NMBM's assessment of 'high frequencies' during the pilot phase was considered to mean ten-minute headways in the peak. CoT operated services with peak trunk headways between seven and ten-minutes, and feeder headways between ten and 20 minutes. CoJ ran all their IPTN routes at headways of five minutes in the peak. CoCT operated their MyCiTi services at an average headway of nine minutes on trunk routes and 28 minutes on their feeder routes. GLM ran their services at headways ranging

between five and 15 minutes on GoGeorge's trunk routes and between 20 and 35 minutes on feeder routes.

IPTN services were to run for seven days a week between 16 and 24 hours a day, as set by the NDoT. All five IPTN project ran services for seven days week, including NMBM during their pilot phase. On operational hours NMBM, CoT, and CoCT ran services for 15 hours a day, only one hour short of the NDoT's objective. The CoJ and GLM ran services for 16 hours a day.

In terms of accessibility, all five IPTN projects were in a state of delay. The only criterion that all five IPTN projects had achieved was providing services for seven days a week. Similarly, none of the five IPTN projects had achieved the walking distance-population percentage criterion. This demonstrates that the timeline within which the five case study cities were expected to achieve 85 percent of residents being within 1000m of a station or stop, was too ambitious.

The GLM did not achieve the peak headway criteria that the NDoT hoped to achieve. It should be noted that George is a non-metro, but also a non-rural, city and therefore an IPTN service with the headways desired by the NDoT may not have been an appropriate design. Throughout the GoGeorge case study it was found that the IPTN project team intentionally designed a system that was suited for the local context and that may not have met the guiding criteria set by the NDoT.

This dissertation did not unpack why the CoT and the NMBM did not operate for at least 16 hours a day; however, in Cape Town the operational hours decreased following the moderation of services conducted to curb operational costs. This could prove that 16 to 24-hour operations was an unrealistic target, given the high operational costs of the IPTN systems.

It should also be noted that the dominant reason for NMBM being delayed in achieving its accessibility criteria is because no services were running at the end of 2017.

Table 6: Comparative analysis of all five IPTN's system performance

	Criteria	PTSAP	Nelson Mandela Bay	Tshwane	Johannesburg	Cape Town	George
Accessibility	Walking distance to trunk/feeder stop	Within 1000m of trunk or feeder	Distance: 400m Delayed due to partial project roll-out	Distance: 1000m Delayed due to partial project roll-out	Distance: 500m Delayed due to partial project roll-out	Distance: 500m Delayed due to partial project roll-out	Distance: 400-600m Delayed due to partial project roll-out
	Headway (Peak time)	Trunk: 5-10 mins Feeder: 10-30mins	'High frequency' during pilot phase	Trunk: 7-10mins; Feeder: 10-20mins	All routes: 5 mins	Trunk: 9 mins Feeder: 28 mins	Trunk: 5-15 mins Feeder: 20-35mins
	Daily operational hours	16 – 24 hours a day	15 hours a day during pilot phase	15 hours	16 hours	15 hours	16 hours
	Weekly operational days	7 days	7 days during pilot phase	7 days	7 days	7 days	7 days
	Percentage of population within walking distance of trunk/feeder	85% of metro residents	Population: 'All' Delayed due to partial project roll-out	Population: 'Most' Delayed due to partial project roll-out	Population: 85% Delayed due to partial project roll-out	Population: 75% Delayed due to partial project roll-out	Population: 85% Delayed due to partial project roll-out
Service quality	Vehicle and station/interchange experience	Safe, clean, modern and universally accessible stations and vehicles. Maps and real-time information.	Safe, clean, modern and universally accessible stations and vehicles. Maps, timelines provided, but no real-time information	Safe, clean, modern and universally accessible stations and vehicles. Maps, timelines and real-time information.	Unclean, no real-time information, maps missing, partial universal accessibility.	Safe, clean, modern and universally accessible stations and vehicles. Maps, timelines and real-time information.	Simple, safe, clean stations and vehicles, with universally accessibility. Maps, timelines provided but no real-time information.
	User service experience	Scheduled, reliable, affordable, and integrated schedules, fares and routes.	Scheduled, reliable, affordable, and integrated schedules, fares and routes during pilot phase	Scheduled, reliable, affordable, and integrated schedules, fares and routes.	Scheduled, reliable, affordable, integrated schedules, fares and routes	Scheduled, reliable, affordable, and integrated schedules, fares and routes.	Scheduled, reliable, affordable, and integrated schedules, fares and routes.

	Criteria	PTSAP	Nelson Mandela Bay	Tshwane	Johannesburg	Cape Town	George
Infrastructure	Roads	Dedicated median bus ways with coloured lanes.	Partially dedicated lanes in the median.	Trunk: Dedicated, median lanes, priority at intersections. Feeder/Comp routes: Mixed traffic-some priority.	Trunk: Dedicated median bus ways. Feeder: mixed traffic.	Trunk: Median, dedicated lanes. Feeders: mixed traffic.	All roads in mixed traffic; upgraded to withstand rear-axle vehicles with high loads.
	Vehicles	Modern buses with level boarding, and multiple wide doors.	Articulated buses with multiple doors on both sides, low floor.	Low floor buses with level boarding. 18m articulated bus and 12m rigid bus.	High floor buses with level boarding. 18m articulated and 12m rigid vehicles.	High and low floor buses. 18m articulated vehicles, 12m and 9m rigid vehicles	Combination of standard, midi and mini buses. High and low floor
	Fare system	Integrated fare structure using electronic pre-board payment	Paper ticket fare system.	Initially paper-ticket system; upgraded to electronic payment	Initially paper-ticket system; upgraded to electronic payment.	Initially paper-ticket system; migrated to electronic payment.	Initially paper-ticket system; intention to upgrade in 2018.
	Stations	Secure, well-lit and easily accessible enclosed stations with dignified design.	Centralised median lane platforms and kerbside stops	Enclosed, attractive design with kerbside bus stops.	Enclosed, attractive design and kerbside bus stops	Enclosed stations and kerbside bus stops	Simple stops. Either a pole and bus stop sign or bus stop with single shelter
Operations	Passenger trips per day	N/A	51 868 (during pilot phase)	4500	51 389	67 000	12 400
	Fare revenue per annum	N/A	R0.00 (2016/17)	R5 952 293.00 (2016/17)	R126 million (2016/17)	R225 000 000 (2017/18)	R37 301 620.00 (2016/17)
	First operations date	Between 2007 and 2010	February 2013 (terminated Nov 2013)	November 2014	August 2009	Phase 1A Milestone 0: May 2011 Milestone 1: November 2013 Milestone 2: September 2013 Milestone 3: July 2015 Milestone 4: July 2015 Phase 1B: October 2015	December 2014
	All operations date	2020	None (2016/17)	Phase 1 partially implemented	Phase 1C yet to be completed	Phase 1: October 2015	Phase 4, 5 and 6 to be launched

Service quality

The NDoT set guidelines that stations, and vehicles should provide a passenger experience that was safe, clean, modern and universally accessible. This was achieved in three of the five case studies – CoT, CoCT, and CoJ. NMBM and GLM implemented systems that were safe, clean, and universally accessible. However, the stations and vehicles were not modern. GLM’s stations were described as ‘simple’ rather than modern because the system used kerb-side stops rather than enclosed stations. NMBM employed kerbside stops during their pilot project with the intention of building enclosed stations at a later stage. Rea Vaya’s facilities, although designed to be universally accessible, were found to be in a state of disrepair rendering the universal accessibility features null. The vehicles and stations were also unclean and some of the vehicles did not function correctly.

All five IPTN’s provided maps and timelines, however, in the case of the CoJ maps were missing. The NMBM provided maps for the pilot project services. Only the CoCT and the CoT provided real-time information at their stations. The CoJ had intended to implement real time information however the displays were not in working order.

All five IPTN’s implemented services were scheduled, reliable, and partially integrated. Although the IPTN’s offered affordable services, more affordable services were still available in Johannesburg, Cape Town, Tshwane and NMBM. The IPTN’s were deemed to be partially-integrated because the services were integrated amongst its own routes but not integrated with other services. It is however assumed that a contributing factor to the lack of multi-modal integration is the fact that not all phases of the IPTN’s were implemented by the end of 2017.

In terms of providing services that are attractive to existing and potential public transport users, only the CoJ and the NMBM were delayed. However, it should be noted that the NMBM was assessed to be delayed because no services were running at the end 2017. The CoCT, CoT and the GLM were assessed to have either achieved, or exceeded, their service quality criteria.

Infrastructure

The NDoT set out guidelines for the core IPTN infrastructure requirements: roads, vehicles, stations and fare payment systems. Roads had to be dedicated coloured lanes in the median; vehicles had to be modern buses with level boarding and multiple doors; the fare payment system had to be integrated across modes using electronic pre-board payment; and stations had to be enclosed, secure, well-lit and easily accessible for all passengers.

The five cases employed three different solutions in their IPTN road infrastructure design. NMBM services ran in a combination of dedicated lanes and mixed-traffic. While GLM operated their services entirely in mixed-traffic. The roads were upgraded in some sections to withstand the greater axle-loads of the IPTN buses. The CoJ, CoT and the CoCT all ran their trunk routes in dedicated lanes in the medians with priority at intersections. The three case studies also ran their feeder services in mixed-traffic with some priority at intersections. The latter three cases came closest to achieving the NDoT's road criteria, however a complete system of trunk routes was found to be unfeasible in all five cases.

Four out of the five cases implemented the types of vehicles the NDoT had envisioned – CoT, CoJ, CoCT, and NMBM. However, there was variation in whether the vehicles were low or high floor. The CoT and the NMBM implemented low floor buses, the CoJ used high floor buses, and the CoCT ran a combination of high and low floor vehicles. The NMBM ran 18-metre buses throughout their fleet, while the CoT, CoJ, and CoCT used a combination of sizes to account for the variation in capacity requirements across the network. The GLM also employed three vehicle sizes in their IPTN fleet, namely low-floor buses similar to the other four case studies, as well as midi-buses and mini-buses.

All five IPTN's launched their services using paper ticket fare systems. By the end of 2017, the CoT, CoJ, and CoCT had migrated to electronic pre-board ticket systems. Feeder routes on these networks used on-board electronic fare payment because passengers alight and board at kerbside stops and used enclosed stations when connecting to a trunk route. The NMBM never had the opportunity to upgrade from paper-tickets to electronic payment during the pilot project. While the GLM were still using paper-tickets by the end of 2017 but intended to upgrade to an electronic fare payment system in 2018.

In terms of infrastructure, all five IPTNs are were in a state of delay. Each case had at least one design criterion that did not match the desired outcome of the PTSAP - in NMBM, only partially dedicated lanes were used, and stations were not enclosed. In the CoT, CoJ, and CoCT feeder vehicles ran in mixed traffic and kerb-side stops were used. While in the GLM all vehicles ran in mixed traffic and no enclosed stations were used. These variations in implementing the infrastructure requirements is due to the PTSAP, at times, being unfeasible for the local contexts.

Operations

The NDoT did not set prescribed ridership and fare revenue targets for the IPTN's to achieve. However, each City outlined estimates on the ridership and fare revenue that could be achieved. Relative to their own estimates, none of the case studies achieved their ridership or fare revenue targets.

By the end of 2017, the CoCT had achieved the highest ridership of 67 000, followed by the CoJ at 51 389. GLM ranked third with a ridership of 12 400, which was followed by the CoT with a ridership of 4500. NMBM had not run any services between the end of the pilot project in 2013 and the end of 2017; however, during their pilot project, they reported ridership figures of 51 868 at the height of the pilot operations.

Fare revenue follows the same trend. None of the case studies had achieved their targets by the end of 2017. The CoCT recorded the highest revenue earnings of R225 million, CoJ follows second with R126 million, GLM follows third with R37,3 million, and the CoT recorded earnings of R5,9 million for the 2016/17 financial year. NMBM had not run any IPTN services by the end of 2017 and therefore no revenue earnings are recorded.

The NDoT had, however, stipulated operation deadlines. The objective was for all IPTN's in the original 12 cities to be operational by the 2010 FIFA World Cup; and for all IPTN's to have implemented all phases by 2020. Only the CoJ had managed to meet this objective and launched Phase 1A in August 2009. The CoCT ran World Cup orientated IPTN services, as did NMBM. However, the CoCT only officially launched their Phase 1A in May 2011. NMBM placed their IPTN fleet in storage after the World Cup until the launch of the pilot project in February 2013. Last to launch their services was the CoT and the GLM, in November 2014 and December 2014, respectively.

By the end of 2017, it seemed impossible that any of the five case studies would meet the 2020 deadline set by the NDoT. GLM was the closest to meeting the target having implemented three of six phases. The CoCT fully implemented phase one and had made progress in phase two construction and industry transition. However, implementing phases three and four by 2020 seemed unlikely. The CoJ had implemented phases 1A and 1B, with construction on phase 1C well underway. By the end of 2017, there was no mention of further phases. The CoT had partially implemented sections of their phase one plans by the end of 2017, which was held up by construction and planning delays, but facilitated by interim industry transition agreements. NMBM had no services in operation by the end of 2017, however plans were afoot for a re-launch of services in 2018.

In summary, all five case studies' IPTN operations were delayed. None of the five case studies had met their own ridership or fare revenue targets. Only the CoJ had managed to meet the NDoT's objective of launching IPTN services in time for the World Cup. The CoCT and NMBM had partially achieved this objective, however official launches did not happen until after 2010. Lastly, the implementation of all IPTN phases by 2020 seemed unlikely to be achieved by any of the case studies, as at the end of 2017.

Overall, the systems outcome evaluation, found that all five case studies, across the accessibility, service quality, infrastructure and operations criteria set by the NDoT were delayed. Nationally, the PTSAP was not achieving its objectives. The delay in achieving the accessibility, service quality and infrastructure criteria pointed to three underlying causes that were inherent to the PTSAP: the implementation timeline was too ambitious, the inappropriate nature of the PTSAP for the South African urban form, and the associated operational costs for the IPTN's were unsustainable.

The section that follows analyses the underlying factors to have caused the operational delays found in the all five IPTN's.

9.3. SIMILARITIES IN THE UNDERLYING FACTORS

The underlying factors causing the IPTN projects to have longer than expected implementation timelines and lower than expected ridership and associated fare revenue are trust, political will, capacity-to-implement, and urban form.

Trust

Trust, most evident in the industry transition negotiations, is a key driver of the delay in the IPTN projects. This was most notable in NMBM, CoT, CoJ and GLM. In NMBM, both the minibus-taxi industry and the local government accused each other of wrong doing, which eventually led to a breakdown of trust. In the CoT, a greater degree of trust was evident between the minibus-taxi industry and the governing authority, where the minibus-taxi industry allowed the CoT to implement phase 2B before industry transition negotiations had concluded. However, the risks were mitigated through an interim compensation agreement. In the CoJ, a lack of trust between the minibus-taxi industry and government led to the creation of UTAF. The lack of trust also necessitated two years of engagement to convince the Phase 1A affected industry to transition to the IPTN project. Consequently, trust improved, hence Phase 1B benefitted from the certainty created when CoJ delivered on Phase 1A. While in the GLM, leadership changes in the minibus-taxi industry negotiation team and in the DTPW, shortly before Phase 4 was due to launch, had negatively impacted trust and affected the ability of the GLM to continue implementing the IPTN.

Given the history of the relationship between the minibus-taxi industry and government, the importance of trust in the implementation of the IPTN projects was to be expected. The IPTN projects come after decades of mistrust between the two stakeholders, dating back to 1985. The national government has, however, made efforts to improve industry consultation to build and aid the government's goal of industry formalisation. The NTTTT included industry stakeholders in its panel as it conducted public hearings, unfortunately, its recommendations were met with resistance from the

industry and failed to be implemented. The next attempt at formalisation was the recapitalisation programme, led by national government, which involved lengthy consultation processes with national taxi mother bodies. The recapitalisation programme was accepted by the industry and is relatively successful, in comparison to previous formalisation attempts. However, although the industry and government had proven that they could work together, mistrust between the stakeholders was still the norm.

The PTSAP and the NLTA added a new degree of complexity to the relationship with the devolution of contracting responsibilities to city-level governments. City governments then in-turn negotiated directly with local associations affected by the IPTN footprints. In all five case studies, the relationship was impacted upon by actions taken by the Cities, which in some cases were unrelated to IPTN plans. The relationship was also influenced by the politics of the respective national alignment i.e. SANTACO is government aligned and therefore pro-IPTN, while NTA opposes government and is therefore anti-IPTN. An example of the former was found in Johannesburg, where taxi associations opposed Rea Vaya because the CoJ had recently upgraded roads in Soweto, a project that was unrelated to Rea Vaya. While one example of the latter was found in Cape Town, where the Dunoon Taxi Association opposed BRT because of its national alignment to NTA.

The issue of trust had become more complex – new factors needed to be considered that could influence the relationship between the minibus-taxi industry and the government, thereby influencing the outcome of the IPTN projects. Therefore, despite the progress made in improving the relationship between the industry and government since 1985, a significant hurdle of mistrust still had to be overcome to implement the PTSAP without any delays. Therefore, the delays in IPTN launch dates, implementation costs, and the likelihood of full implementation by 2020 was fundamentally driven by trust between the local minibus-taxi industry and government.

Political will

The case studies found that where the political will to overcome industry-government mistrust, amongst other issues, was the strongest, there the IPTN projects were the least delayed. Therefore, political will, either the abundance or lack thereof, was found to be a key driver of the underlying factors that caused the delay in four of the five case studies. In NMBM, a lack of political will to build a trusting relationship with the minibus-taxi industry saw the project flounder from one issue to the next as it struggled to achieve a tangible outcome. In the CoT, fundamental to delay was the decision by the political leadership to implement line 2B. This was driven by the pursuit of quick political wins, which even though it resulted in short-term deliverables, it had predominantly negative results for the five years that followed the decision. The CoT case demonstrates that political will does not only include

the intention to get things done, but it must equally include the intention to achieve the deliverables in a manner cognisant of long-term implications. In the CoJ case, senior political leadership in the CoJ and in the minibus-taxi industry drove the IPTN project. This, coupled with external political pressure of the impending World Cup, resulted in Phase 1A being implemented within three years. Decisive political leadership was again found to be vital for the implementation of Phase 1B. The political will of the minibus-taxi industry changed in Phase 1C, due to the uncertainty that came with the change in local government political power.

In the CoCT, the political will to overcome difficulties in the minibus-taxi engagements and to moderate the services was a key driver for the current state of the IPTN project. Lastly, in GLM, external consultants were found to be the main drivers of the IPTN project, therefore political will was not found to be a significant driver. However, despite this finding, it is imperative to understand that the IPTN would not have been implementable without the involvement and commitment by political figures in the GLM, DTPW and the local mini-bus taxi industry.

Political will is influenced by two factors – subjective intention and external pressure. Subjective intention can produce an action of malintent or of goodwill. Subjective intention is influenced by a myriad of conditions, for which a discrete list is extraordinarily difficult to compile. Two examples of subjective intention are: a government official who abuses IPTN funds to corruptly benefit a politically connected business figure acts out of malintent. While, a government official who arranges a one-on-one meeting with minibus-taxi operators to effectively address their grievances to assist the industry transition acts out of goodwill. The IPTN projects were influenced by both forms of subjective intention by the stakeholders. Allegations of malintent were found in some of the case studies, while evidence of actions driven by goodwill were also found.

External pressure came in the form of the World Cup, which drove the urgency with which the NDoT created and implemented the PTSAP. Even though the pressure existed to develop ‘world-class’ public transport facilities in time for the World Cup only the CoCT, CoJ and the NMBM used their IPTN progress to the benefit of the World Cup. Once the World Cup had passed, external pressure on the City-governments to implement came from the National Treasury. The NMBM pilot project and CoT Line 2B developments were as a result of pressure from National Treasury to see more results from the IPTN grant funding.

Capacity to implement

A lack of capacity to comprehensively implement the PTSAP was a driving factor of delay in all five cases studies. A lack of capacity can exist for two reasons. The first is that a project's capacity requirements can place an unrealistic expectation on the implementer. While the second is that the implementer is unable to adequately use its existing capacity or build new capacity to meet the needs of the project. In a perfect scenario the project either requires a capacity that the implementer can provide, or the implementer is able to build capacity to meet the new capacity needs of the project. Through the five case studies it was found that at the outset of the PTSAP, none of the five Cities possessed the capacity required to comprehensively implement the PTSAP. However, efforts were made in all five case studies to build the capacity needed to implement the PTSAP.

In the GLM, capacity was built through an institutional relationship with the DPTW, which was to result in a capacity transfer to enable the GLM to oversee all components of GoGeorge, however the transfer had not happened yet by the end of 2017. The GLM case study also found a lack of capacity in the NDoT for the nuanced application of the PTSAP. The CoCT built its internal capacity to a point of being able to adequately implement, manage and monitor its IPTN.

Poor quality planning was the cause of the initial delays in the CoT. Efforts were made to improve the internal transport planning capacity of the CoT, but by the end of 2017 the CoT had replaced all original IPTN employees leaving the CoT with little institutional knowledge and a reliance on external consultants. The CoJ initiated their IPTN project with very little capacity in the transport department, however strong political will at the outset of the project enabled internal capacity to be improved. However, a notable comment by interviewees was the lack of contract management capacity within the CoJ. Hence, by the end of 2017 the quality of Rea Vaya services was not as intended. In the NMBM, the project was plagued by infrastructural planning shortcomings from the beginning. Later on, issues of system planning, and implementation lead-times led to ongoing delays in achieving the project objectives. Efforts were made to improve capacity, however, the effectiveness of the improved capacity seemed to be hampered by alleged maladministration and corruption.

The PTSAP sought to simultaneously reform all three dimensions of the public transport industry: operator business structure, service provision, and competition. This reformation was also due to take place over an ambitious 13-year period. Therefore, it is concluded that the IPTNs are delayed in all five case studies because the PTSAP set a reform agenda and an associated timeline that was inappropriate for the majority of the City's ability to build the required capacity to achieve all the objectives of the PTSAP.

Urban form

The delay in ridership and fare revenue performance of the IPTNs was fundamentally caused by the inappropriate nature of the PTSAP for South African urban form. The inability of the Cities, bar GLM, and the NDoT to identify this problem before initiating the projects is another indicator of a lack of capacity, in 2007, to identify appropriate transit designs for the local South African context.

Urban form influences transit use through land use, density and site design. Cities that are characterised by combinations of mixed land use, high density and attractively designed amenities that encourage NMT, tend to have high levels of transit use. The South American cities from whom the South African government drew inspiration for the PTSAP are characterised by one or more of these qualities. Bogota is an often-cited case for the potential of BRT, however Bogota is also characterised by extremely high densities, that are key to its large ridership figures. Curitiba, another popular case of BRT potential, was presented with an opportunity in the 1960's to design their ideal city. The city was designed to encourage medium to high density, mixed land use and attractive developments along transit corridors.

South African cities on the other hand are characterised by low densities, largely single purposed land uses, and few designs that encourage NMT. It should be noted that South African cities have a significant NMT culture, however this is symptomatic of a large urban poor population who cannot afford public transport and do not have access to private vehicles.

The PTSAP set out to implement a network of Rapid Rail and Bus Rapid Transit priority corridors integrated to feeder services and include NMT and meter-paid taxis. The BRT corridors were modelled on the 'gold-standard' for BRT design developed by international consultants. The designs featured high speed, dedicated, coloured bus ways in the median with enclosed stations designed to be visually appealing and universally accessible. The system would use pre-board electronic fare payment with level boarding of vehicles with multiple doors to reduce vehicle dwell time. Vehicles would run at regular intervals with priority at intersections. Passengers would be informed of arrival times using real-time intelligent information systems.

The CoCT was the only case study where urban form contributed in a fundamental manner to MyCiTi's delay. CoCT's moderation exercise sought to improve the financial sustainability of MyCiTi's services, given the impact of urban form on operational performance. The impact of Johannesburg's urban form was also seen in the lower than expected operational performance of Rea Vaya. Urban form cannot be isolated as a fundamental reason for delayed ridership and fare revenue in Tshwane because, at the end of 2017, A Re Yeng's interim services did not connect important origins and destinations. While in NMBM, the Pilot Project ran for an insufficient length to deduce whether

ridership figures would reach expectations or not, and whether any delay was the result of the NMBM's urban form. Ridership and fare revenue performance was also delayed for GoGeorge; however, this was not due to urban form, but rather the delayed implementation of phase 4, which fundamentally was driven by trust and political will.

Therefore, it is concluded that the PTSAP drew inspiration for a public transport solution that worked in one context and applied it inappropriately to the South African context. The impact of costly features such as electronic fare payment, high-floor level-boarding, and real-time information caused the IPTN's to be expensive to implement with longer than expected implementation timelines. Even though much has been achieved, since the PTSAP's launch, to improve South African cities through mixed land uses and attractive site designs; it unfortunately has not yet been enough to overcome the impact of urban form on the ridership and fare revenue performance of the case studies.

9.4. CONCLUSION

All five case studies found that the IPTN projects were delayed relative to their own criteria of 'intended outcomes'. In terms of accessibility, the only criteria achieved in all five case studies was providing services seven days a week. This outcome is indicative that the accessibility criteria was either inappropriate for the cities, or the implementation timeline was too ambitious.

In terms of service quality, CoCT, CoT, and GLM either achieved, or exceeded, their criteria. The CoJ and NMBM had not achieved their intended quality of the IPTN services. In the cases of CoJ and NMBM, the outcomes were fundamentally driven by a lack of political will or a lack of capacity to manage the contracts that would see service quality meet the intended outcomes. While in the cases of CoCT and CoT the outcomes were positively influenced by political will and the appropriate capacity to manage their service contracts. In GLM, the service quality criteria were applied in a manner that was appropriate for its local context.

In each case study at least one infrastructure criterion was not met, therefore all five cases were deemed to be delayed. In all five cases there were infrastructure criteria that were inappropriate for the local context. This is indicative of the inappropriate nature of the PTSAP for the South African urban form.

In terms of operations, all five case studies were delayed. None of the five case studies had achieved their ridership or fare revenue targets, which is also indicative of the inappropriate nature of the PTSAP for the South African urban form.

All of the five case studies displayed longer than expected implementation timelines, with only CoJ able to launch by 2010; while by the end of 2017, it seemed impossible that any of the case studies will implement all IPTN phases by 2020. The longer implementation timelines were fundamentally driven by a combination of an inappropriately ambitious timeline, political will, difficulty in overcoming the complexity of trust in the minibus-taxi industry-government relationship, and capacity to implement found in City governments.

Therefore, nationally, by the end of 2017, the NDoT was not achieving its reform objectives through the PTSAP. In summary, five underlying factors were identified as the drivers of delay: an inappropriately ambitious implementation timeline, the difficulty of overcoming the lack of trust between the government and the minibus-taxi industry, political will, a lack of capacity-to-implement, and the inappropriate nature of the PTSAP for the South African urban form.

10 CONCLUSION

10.1. INTRODUCTION

This research project set out to unpack the fundamental reasons that caused the delay, success, or failure, as at the end of 2017, of IPTN projects in Nelson Mandela Bay, Tshwane, Johannesburg, Cape Town, and George. The end of 2017 marked ten years of the NDoT driving the PTSAP, published in 2007. The NDoT acknowledged the decline of the public transport sector and the need for urgent reform. Car ownership, and thereby congestion, was increasing. Existing public transport users were dissatisfied with the quality of public transport citing issues of overcrowding, cost, safety, and travel time across all five case studies.

The PTSAP sought to address all three dimensions of the public transport industry in one reform agenda – reform the business structure of minibus-taxi operators to become contractible entities, design contracts to formalise competition and simultaneously reform service characteristics to improve quality. The service standards were set to ‘Gold-standard’ Bus Rapid Transit inspired by cases of successful public transport reform in South American cities. The reform agenda was to be achieved by devolving the planning, implementing, contracting and managing functions down to local governments. All to be implemented by 2020.

At the outset of the research, it was believed that inter-personal, legal and financial, and the organisational capacity of the different stakeholders were the key factors driving the outcomes of the IPTN projects. Therefore, the research was framed by the following questions:

1. What impact did the industry engagements and negotiations have on the outcomes of the IPTN projects, and why did this occur;
2. What impact did stakeholder capacity to implement have on the outcomes of the IPTN projects, and why did this occur; and
3. What impact did the original PTSAP, in relation to South African city spatial form, have on the outcomes of the IPTN projects, and why did this occur?

In conclusion, this dissertation proposes that the five IPTN projects are delayed due to four factors. These are the difficulty of building trust between the minibus-taxi industry and government, the difficulty to build adequate capacity to implement a complex project such as the PTSAP, the inappropriate nature of the PTSAP for the South African urban form, and the influence of political will. The propositions are expounded below by considering the initial framework questions.

10.2. IMPACT OF STAKEHOLDER CAPACITY TO IMPLEMENT

The PTSAP desired for local municipalities to plan, implement, monitor, regulate and manage the IPTN's. The devolution of these functions to local government was enacted through the 2009 NLTA. The NDoT recognised in the PTSAP that a 'quantum leap over existing local public transport management capacity' would be required to successfully implement all components of the plan. This was coupled with a commitment to provide support to the municipality's planning efforts.

At the outset of the IPTN projects, none of the five case studies possessed the requisite capacity to implement the PTSAP. But all five Cities sought to build their capacity; the outcomes of which varied. In one case adequate internal capacity was built which enabled the IPTN operations to be moderated and made more efficient, while in another case the City was reliant on external capacity and delays were significant. The impact of the Cities' capacity-to-implement was not found to be due to a lack of effort to build the requisite capacity. It is rather a function of the complexity of the PTSAP and the inappropriately ambitious timeline set for its implementation.

The PTSAP sought to reform all three dimensions of the public transport sector: operator business structure, service characteristics, and competition. The literature review found, and the NDoT stated, that highly skilled capacity would be required to implement the PTSAP and that a 'quantum leap' in local government capacity would be required to achieve all the elements of the PTSAP.

Therefore, in conclusion, the discrepancies between the capacity found in the five Cities, both to implement the PTSAP and to build new capacity, and the capacity required by the PTSAP was found to be a fundamental underlying factor that caused delay in implementation timelines. It is therefore concluded that the PTSAP was too complex and the timeline was too ambitious for the capacity available within the five local governments.

10.3. IMPACT OF MINIBUS-TAXI INDUSTRY NEGOTIATIONS

The PTSAP viewed the existing public transport operator as a vital stakeholder and set out to give the operators, drivers and workers guaranteed and improved income, through a guaranteed stake in the

IPTN's. Responsibility was given to local municipalities to negotiate with local minibus-taxi industries to determine ways for full participation of the minibus-taxi industry in the IPTN's.

All five Cities began with a process of engagements with their respective local minibus-taxi industries. The engagements were intended to educate the industry role-players on the tenants of the IPTN plans. In all cases, engagements continued for lengthy periods of time as the industry grappled with whether it could trust the local governments. The periods of engagement graduated into formal contract negotiations in which operator license compensation was introduced. It is necessary to note that the PTSAP did not make financial compensation for participation of the minibus-taxi industry a requirement. And it is necessary to note that in George, the minibus-taxi industry initially agreed to transition into formal bus operations without being compensated for potential lost income. The minibus-taxi industry in George changed their transition conditions when minibus-taxi associations in neighbouring Nelson Mandela Bay and Cape Town agreed to financial compensation for their operator licenses to secure their IPTN participation. Operator license compensation ballooned the cost of the IPTN projects, placing strain on the financial sustainability of the projects, if the full industry participation component of the PTSAP was to be upheld.

Operating license compensation came about because of the lack of trust between the minibus taxi industry and government. Since 1985 the government has carried out a series of attempts to reform the minibus-taxi industry. This resulted in the rapid and uncontrollable expansion of the industry, against which the industry warned; weak state-led regulation of the industry resulted in self-regulation, often violent in nature; and the reform processes at times left the industry feeling un-consulted on the government's reform plans. As a result, the industry sought surety that they would, at least, not be worse-off if the governments IPTN plans did not materialise. The PTSAP condition of full participation of the minibus-taxi industry gave the industry significant sway in the negotiations process; making it difficult for the Cities to deny some form of financial compensation.

Therefore, in conclusion, the full participation of the minibus-taxi industry in the IPTN projects resulted in increases in the IPTN implementation costs and increases in the implementation timelines. This has made the PTSAP financially unsustainable to implement, all of which stems from the decades of mistrust between government and the minibus-taxi industry. Therefore, a fundamental underlying factor that caused the case-specific delays found in each case study was the lack of trust between the government and the minibus-taxi industry.

10.4. IMPACT OF THE SOUTH AFRICAN CITY URBAN FORM

The PTSAP sought to reform the South African public transport industry by employing technology developed during public transport reform projects in South America. Bus Rapid Transit was developed in cities that are characterised by high densities, mixed land uses and attractive site designs. The combination of these three factors are the three most influential urban form factors that encourage transit use. South African cities on the other hand are characterised by low densities, largely single purposed land uses, and limited designs that encourage NMT.

The PTSAP drew inspiration for a public transport solution that worked in one context and applied it inappropriately to the South African context. The use of the costly 'Gold-standard' BRT designs has led to significant operational losses, and therefore requiring costly operational subsidies from the NDoT. The operational losses are due to the expensive features of the PTSAP designs; along with transit use characteristic of South African cities – high peak to base ratios, singular directional flow and a culture of private vehicle use. Therefore, it is concluded that the delay in ridership figures and fare revenue was due to the inappropriate nature of the PTSAP for the South African urban form.

10.5. ADDITIONAL PROPOSITIONS

In addition to the three propositions detailed above, political will was also found to be a fundamental determinant of the success or delay of the IPTN projects. Political will is driven by subjective intention or external pressure. The complexity of subjective intention is beyond the scope of this dissertation, because there are numerous contributing factors to decision-making by individuals. Two sources of external pressure influenced the political will of the case study cities – The World Cup and National Treasury. The World Cup provided the catalyst needed to drive the reform agenda for 'world-class' public transport, especially in host cities. While the National Treasury pushed to see deliverables for the grant funding provided for the IPTN projects.

10.6. OPPORTUNITIES FOR FURTHER STUDY

Looking beyond this dissertation, three opportunities for further study present themselves. Firstly, there is value in investigating manners in which local governments could work to build trust with the minibus-taxi industry during periods where the government is not actively pursuing reform programmes. Periods of intensive reform attempts tend to place the government's relationship with the industry under strain. It would be invaluable for both city governments and the national government to continuously work at building their relationship with the minibus-taxi industry. If this is done

successfully, then when placed under strenuous conditions, perhaps the state of the relationship will cause less-extreme outcomes as were found in the study of the IPTN cases.

A second opportunity is the need for a new public transport strategy. This dissertation demonstrates that public transport reform that attempts to achieve large shifts along the dimensions of public transport reform is bound to experience similar delays. Therefore, there is room to investigate the public transport sector's receptiveness to incremental reform projects. There is an argument to be made that incremental reform projects are more financially sustainable, are better able to match the pace of urban form changes and will receive less opposition from existing public transport operators. Therefore, understanding the potential impacts of an incremental reform programme would add value to the discourse on public transport reform.

A third opportunity is to study the potential effectiveness of a minibus-taxi industry reform programme that makes use of existing market forces that drive the industry. The reform programme studied in this dissertation attempted to entice minibus-taxi operators to completely abandon their operations. This dramatic change to the industry played a significant role in causing project delay. Therefore, research into alternative reform programmes that uses existing factors such as the industry remuneration model, driver behaviour, or the authority carried by associations to reform the dimensions of the industry would add value to the discourse on public transport reform.

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APPENDIX A: EXCERPT FROM THEMATIC ANALYSIS

<u>Timeline</u>	<u>Quote</u>	<u>Code</u>	<u>Source</u>
2006	In 2006 the South African National Department of Transport (NDoT) launched a policy programme to revitalise passenger transport systems in the country. Under this Integrated Rapid Public Transport Network (IRPTN) programme it was envisaged that 12 cities would embark on phased programmes to overhaul public transport by implementing integrated networks reliant on new Bus Rapid Transit (BRT) trunk routes and motorised and nonmotorized feeder services.	Vision	SchalekampanBehrens2010
2007	The legislation was promulgated in 2007 when KPMG did their work. Got put on the table to the industry post that, which says this is what we want to do, the plan.	Negotiations	Interviewee A
2008	Industry looks at it and says there are two major issues. First, you haven't consulted with us and the legislation states that we must be the key operators in the new system and transform what we have. That's the one problem that we have; you didn't actually transform. The second problem that we have is that you didn't factor in the cost of transitioning in the plan; it's like the plan starts from a base that isn't real.	Negotiations	Interviewee A
2007	NMB visits Bogota with municipal and transport officials and taxi operators; funded by the ITDP in 2007	Timeline	Wood2014
2007	Because of the fruitful exchanges between delegations from Johannesburg and Nelson Mandela Bay to Pereira and Bogota, the national governments of South Africa and Colombia signed an accord to exchange technical expertise on BRT. The first component of this exchange included a visit from the Managing Director of Pereira's BRT to Nelson Mandela Bay in December 2007.	Timeline	Wood2014
2008	since 2008 Nelson Mandela Bay's Integrated Public Transport System has been besieged by politics and poor planning and, in spite of considerable efforts, the project remains in a state of postponement	Implementation	Wood2014

APPENDIX B: INTERVIEW SCHEDULE

<u>Date</u>	<u>Name and surname</u>	<u>Case study city</u>	<u>Role</u>
17/08/2017	Mary Brennan	Nelson Mandela Bay	Laphumilanga CFO
17/08/2017	Terence Faltein	Nelson Mandela Bay	Laphumilanga board member
17/08/2017	John Hill	Nelson Mandela Bay	Algoa Bus Company employee
21/08/2017	Anonymous	Nelson Mandela Bay	Anonymous
02/10/2017	Anonymous	George	Anonymous
03/10/2017	Anonymous	George	Anonymous
03/10/2017	Anonymous	George	Anonymous
20/11/2017	Anonymous	Nelson Mandela Bay	Anonymous
23/11/2017	Mmakanaga Shai	Tshwane	Industry transition negotiator
23/11/2017	Stefan Taljaard	Tshwane	Transport planning consultant
24/11/2017	Ben Maseko	Johannesburg	CoJ Industry transition negotiator
24/11/2017	Chris Ngcobo	Johannesburg	CoJ Industry transition negotiator
20/11/2017	Anonymous	Nelson Mandela Bay	Anonymous
26/06/2018	Bob Stanway	Johannesburg	Former CoJ Transport Executive Director
28/06/2018	Rehana Moosajee	Johannesburg	Former CoJ Transport MMC

<u>Date</u>	<u>Name and surname</u>	<u>Case study city</u>	<u>Role</u>
06/10/2018	Anonymous	George	Anonymous
10/07/2018	Gary Hayes	Tshwane	Former AMCE employee
13/07/2018	Anonymous	Johannesburg	Anonymous
16/07/2018	Lisa Seftel	Johannesburg	CoJ Transport Executive Director
16/07/2018	Anonymous	Tshwane	Anonymous
18/07/2018	Brett Herron	Cape Town	CoCT Transport Mayco Member
25/07/2018	Nico Maclagan	Cape Town	Transport planning consultant
10/10/2018	Anonymous	Cape Town	Anonymous

APPENDIX C: EXAMPLE OF INTERVIEW QUESTIONS

Guiding interview questions

Case study: Nelson Mandela Bay Integrated Public Transport System

Please note that the following questions are informed by the readily available literature on the NMB IPTS. These questions serve only as a guide. Thank you for taking the time to contribute to the research.

Please see the accompanying diagram: Actual timeline for Nelson Mandela Bay IPTS according to the literature reviewed. The “sections” are bounded by significant events.

Section 1: 2007 – July 2010 (Pereira exchange visits – FIFA Soccer World Cup)

Negotiations between existing public transport operators (EPTO) and government:

1. Please could you describe the relationship between the mini bus-taxi operators and the municipality in the early days of the BRT project?
2. What was the stance of Algoa Bus Company during these early phases of the BRT project?
3. Was the creation of the Nelson Mandela Bay Public Transport Forum an effort to coordinate the mini bus-taxi voice in BRT negotiations?
4. What was contained in the Memorandum of Understanding signed between the mini bus-taxi operators and the municipality?
5. Apparently SANTACO and the provincial taxi councils joined the negotiations at a later stage; why did they join?
6. What happened in the negotiations that resulted in the BRT buses being placed in storage from July 2010?

Construction:

1. Why did the municipality opt for unsheltered stations with on-board fare collection?
2. Were the dedicated lanes too narrow? If so, why do you think this happened?

Section 2: 2010 – Feb 2014 (Buses placed in storage – End of BRT pilot phase)

1. Please could you describe the relationship between the mini bus-taxi operators, Algoa Bus Company and the municipality during and immediately after the 2013/14 pilot phase?
2. What did the (municipality, taxi operators, Algoa Bus Company) learn from the pilot phase?
3. What was the BRT ridership during the 2013/14 pilot phase?
4. Why do you think the BRT operation attempts in 2011 and 2012 failed to materialise?

Section 3: 2014 – Aug 2017 (End of BRT pilot phase – reports of BRT operations commencing)

1. Why have no BRT operations taken place since the end of the 2013/14 pilot phase?
2. Apparently, the BRT relaunch expected in June 2017 has been postponed to October 2017. Is this correct and what has caused this delay?
3. Why do you believe that there have been so many staff changes at the IPTS over the years?

4. What happened in the EPTO negotiations that resulted in the signing of a second MoU?
5. What have been some of the recent sentiments/reactions of business, property owners and residents towards the NMB IPTS?

Section 4: Assessment of IPTS project and objectives

1. Do you think that the initial IPTS project timeline was realistic?
2. What, in your opinion, have been some of the successes of the IPTS project so far?

APPENDIX D: INFORMED CONSENT FORM



Centre for Transport Studies Faculty of
Engineering and Built Environment
University of Cape Town

021 650 2699

Informed consent form

Introduction

I am Mikhail Manuel, a Student in the Centre for Transport Studies in the Engineering and Built Environment Faculty of the University of Cape Town, South Africa. I am conducting research on the factors affecting the success or delay of Bus Rapid Transit projects in South Africa and I would like to interview you as a part of the case study.

Purpose of Study

The purpose of the interview is to understand your insights into the implementation in the BRT project in which you were involved. The research hopes to understand what factors influence BRT projects in the case study city, and in South Africa at large. The research hopes to contribute to the growing academic literature around South African BRT and hopes to record insights and advice which may prove helpful for future BRT projects.

Analysis of data

The interview will be voice recorded, with your permission. The recording will be transcribed and analysed. The voice recording and transcriptions will be kept safe and will not be shared with anyone else. The interview scripts will be analysed in terms of the definition of successful BRT, as defined by the case study city. As well as in terms of the factors that have affected the implementation of BRT in the case study city. Some themes are listed below:

Definition of successful BRT

- Making the city accessible
- Attractive for all users
- Hallmark Bus Rapid Transit technology

Already known factors affecting BRT implementation

- Institutional transformation of existing paratransit and conventional bus public transport providers
- Escalated infrastructural and operational costs

The themes above have become apparent through the literature review phase. However, the research is hoping to comprehensively understand the implementation of BRT in South Africa, therefore more themes of analysis may become apparent through the interview phase of data collection.

Duration and Content of Interview

This interview will take approximately one to two hours. I will ask a number of questions related to the topic of my study.

Confidentiality

All the information gathered during this interview is confidential and will be solely used for the intended purposes of this study. With your permission, I would like to state your name and surname, position/role fulfilled in the BRT project and organisation with whom you are associated. I will not include or reveal any of this information, in the dissertation or to any other person, without your permission.

Voluntary Participation

I will conduct this interview with the understanding that you have freely accepted to take part in this study, and that you are not under any obligation to answer the questions that I will be asking. You are free to discontinue the interview at any time.

Benefits

There are no direct personal benefits that you will get by participating in this study. However, the study will enhance our knowledge on the subject.

Information about Study

Feel free at any time to ask questions to clarify anything related to this interview or study.

Consent

I freely consent to take part in this study. I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop participating at any point should I not wish to continue. I also confirm that the purpose of the study has been fully explained to me. I understand that this is a research project whose purpose is not necessarily to benefit me personally in the immediate or short term. I also understand that my participation will remain confidential.

Signature of Interviewee..... Date:

- Yes, you are welcome to use my name and surname, position/role in the BRT project and my associated organisation.
- Please keep my participation and personal information confidential

APPENDIX E: ETHICS APPROVAL

Application for Approval of Ethics in Research (EIR) Projects
Faculty of Engineering and the Built Environment, University of Cape Town

APPLICATION FORM

Please Note:

Any person planning to undertake research in the Faculty of Engineering and the Built Environment (EBE) at the University of Cape Town is required to complete this form before collecting or analysing data. The objective of submitting this application prior to embarking on research is to ensure that the highest ethical standards in research, conducted under the auspices of the EBE Faculty, are met. Please ensure that you have read, and understood the **EBE Ethics in Research Handbook** (available from the UCT EBE Research Ethics website) prior to completing this application form: <http://www.ebe.uct.ac.za/uctebe/research/ethics.pdf>

APPLICANT'S DETAILS	
Name of principal researcher, student or external applicant	
Mikhail Manuel	
Department	
Civil Engineering	
Preferred email address of applicant:	
Mn1mik001@myuct.ac.za	
If a Student	Your Degree: s.g., MSc, PhD, etc.,
	Name of Supervisor (if supervised):
MPhil in Transport Studies	
A/Prof Roger Behrens	
If this is a research contract, indicate the source of funding/sponsorship	
This is not a research contract	
Project Title	
Case study analysis of the factors that have contributed to the success or delay of initial expectations of South African BRT operations and operating subsidies, with particular focus on the institutional and service integration arrangements, and the associated engagement processes, between informal public transport operators and government.	

I hereby undertake to carry out my research in such a way that:

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

SIGNED BY	Full name	Signature	Date
Principal Researcher/ Student/External applicant	Mikhail Manuel	signature removed	06 Jun 2017

APPLICATION APPROVED BY	Full name	Signature	Date
Supervisor (where applicable)	A/Prof Roger Behrens	signature removed	06 JUN 17
HOD (or delegated nominee) Final authority for all applicants who have answered NO to all questions in Section 1; and for all Undergraduate research (Including Honours).			
Chair : Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.	G. Sithole	signature removed to avoid exposure on line	2 AUG 2017