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Published in:
Urban Policy and Research

DOI:
10.1080/08111146.2020.1730787

Publication date:
2020

Urban Policy and Research

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/cupr20

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To cite this article: Lara K. Mottee , Jos Arts , Frank Vanclay , Fiona Miller & Richard Howitt (2020) Reflecting on How Social Impacts are Considered in Transport Infrastructure Project Planning: Looking beyond the Claimed Success of Sydney's South West Rail Link, Urban Policy and Research, 38:3, 185-198, DOI: 10.1080/08111146.2020.1730787

To link to this article: https://doi.org/10.1080/08111146.2020.1730787

URBAN POLICY AND RESEARCH
2020, VOL. 38, NO. 3, 185–198
https://doi.org/10.1080/08111146.2020.1730787

Routledge
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Reflecting on How Social Impacts are Considered in Transport Infrastructure Project Planning: Looking beyond the Claimed Success of Sydney's South West Rail Link

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ABSTRACT

Urban rail transport megaprojects are promoted as generating positive social change at a metropolitan scale, yet they produce complex unplanned negative impacts at local scales. Environmental and Social Impact Assessment (ESIA) and its follow-up help decision-makers assess and manage the social and environmental impacts of major projects. Using Western Sydney's politically-successful South West Rail Link as an example, we identified the practice challenges and governance barriers to applying ESIA and EIA follow-up across spatial scales. These challenges and barriers influence the planning and management of the impacts of integrated urban development and transport infrastructure development.

摘要

城市轨道交通大型项目在大都市范围内产生积极的社会变革，但在地方范围内却产生复杂的计划外负面影响. 环境和社会影响评估（ESIA）及其后续行动有助于决策者评估和管理重大项目的社会和环境影响. 以西悉尼政治上成功的西南铁路为例，我们确定了跨空间尺度应用ESIA和EIA后续行动的实践挑战和治理障碍. 这些挑战和障碍影响了城市综合发展和交通基础设施发展影响的规划和管理.

ARTICLE HISTORY
Received 2 October 2019
Accepted 10 February 2020

KEYWORDS
Social impact assessment; environmental impact assessment; integrated planning; urban planning; transport infrastructure planning; EIA follow-up

1. Introduction

The success of megaprojects is typically determined by their being on time and on budget, rather than on careful examination of the social and environmental outcomes that are achieved (Steele and Legacy 2017, Flyvbjerg 2017). Yet, the public benefits of major urban rail transport projects are promoted for their potential contribution to long-term integrated planning policy goals. These goals are typically expressed in terms of positive economic, environmental and social outcomes at the metropolitan scale. At the local scale, however, transport megaprojects often result in complex, unplanned, negative, and unfairly-distributed social impacts (Wheeler 2000, Brenner 2003, Low and Sturup 2014, Fensham 2015). While project-level Environmental and Social Impact Assessment (ESIA) and its follow-up might be expected to identify and address these potential impacts (Glasson *et al.* 2013) and contribute to the public accountability of decision-makers (Pinto *et al.* 2019), the political context of projects often sees success being claimed in terms of the metropolitan-scale planning objectives, with local-scale issues being ignored or obscured (Low and Sturup 2014). To address the management of social impacts and to help understand metropolitan and local-scale

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consequences of existing and future projects, improvements are needed in urban governance and project evaluation.

The aim of this paper is to explore how the practice challenges and governance barriers faced in applying ESIA and its follow-up, influence the planning, assessment and management of social impacts arising from major transport infrastructure projects. To this end, we use the case of Western Sydney's South West Rail Link (SWRL) to answer the question: What are the challenges and barriers to good ESIA practice and governance in the assessment, management and follow-up of social impacts arising from integrated urban transport projects; and how might these be addressed?

The SWRL is an interesting case study because it was considered to be successful as measured by traditional budget and time metrics, and in meeting the State policy aim to support the future population of the South West Growth Centre (SWGC). The SWGC is a strategic policy that included the development of major infrastructure projects as part of integrated place-based planning (Fensham 2015). When the SWRL commenced operations in 2015, a year ahead of schedule and under budget, it initially received high praise in the media and from the NSW government (NSW Government 2015, Saulwick 2015). Despite this praise, within 18 months of opening, negative media reports emerged about social impacts.

The existence of these unplanned social impacts creates a concern about how the scales of analysis and measures of success that were used masked important local social considerations. The local social impacts also reveal a tension between the SWRL's metropolitan-scale planning objectives (as determined by its positioning within the SWGC) and the subsequent consequences for local communities. This tension is consistent with broader governance issues that exist between local-scale (local government) and metropolitan-scale (state government) priorities (Steele and Legacy 2017).

Drawing on a review of planning approval documents, interviews with key project personnel, and field observations, this paper identifies practice challenges and governance barriers to applying ESIA and its follow-up during integrated urban and transport development (integrated development). Our research into the SWRL showed that practitioners conducted good practice ESIA, however, the impacts that affected the local community post-completion remain unaddressed. This paper provides insights into how to better plan for, assess and manage the social impacts of urban transport infrastructure projects.

2. Integrated Development Planning and Social Impacts in Transport Infrastructure

Recent approaches to the strategic planning of infrastructure have seen major transport projects incorporated into integrated place-based urban development. Known as area-oriented planning or place-based approaches, this type of integrated planning is viewed as an opportunity to enhance the transformations that shape cities and to address urban policy and land-use objectives (Heeres *et al.* 2012a, 2012b, Arts *et al.* 2016). Land use planning can be integrated with transport planning to create synergies (Herees *et al.* 2012b). Bradford and Wolfe (2010, p. 1) described integrated approaches to planning as "policies that are multi-level in their governance structure and tailored to the specific reality of individual regions". Through varying governance arrangements, planners and developers work together to address issues experienced across scales (Barca *et al.* 2012, Heeres *et al.* 2016). However, the public need for transport infrastructure is usually only framed in policy at the metropolitan scale, where there is usually a high level of political interest and oversight (Howitt and Jackson 2000, Wheeler 2000, Mottee and Howitt 2018).

In order to achieve alignment of policy goals, integration of sustainability, transport, land use and social objectives must be done early in the process (Te Brömmelstroet and Bertolini 2010, Arts and Faith-Ell 2012). However, in practice, there can be substantive (e.g. different planning tools/methods, disciplinary terminology and objectives) and institutional (e.g. different funding sources, procedural resistance) challenges that restrict the early implementation of integrated planning and assessment (Te Brömmelstroet and Bertolini 2010, Heeres *et al.* 2012a, Heeres *et al.* 2016).

Governments promoting integrated urban policy, planning and assessment must overcome these challenges to facilitate successful transport development.

Developing major transport infrastructure requires environmental, social and feasibility assessments to carefully assess a proposal prior to project approval (Heeres *et al.* 2015). A common process to evaluate environmental and social effects is Environmental Impact Assessment (EIA). EIA is a systematic process that examines the environmental (and social) consequences of actions in advance of a decision about whether to proceed with a project or not (Glasson *et al.* 2013). The process includes predicting, assessing, mitigating, monitoring and managing the impacts of identified consequences. It is usually presented in the form of an Environmental Impact Statement (EIS) with various specialist technical reports attached (e.g. Traffic, Biodiversity, Social Impacts). Social Impact Assessment (SIA) is a complementary assessment that focuses on analysing, monitoring and managing the social consequences of actions (Vanclay 2003, Vanclay *et al.* 2015, Mottee and Howitt 2018). "Its primary purpose is to bring about more sustainable and equitable biophysical and human environment" (Vanclay *et al.* 2015, p. 95). For large infrastructure projects, it is typical to conduct integrated assessments of environmental, social and health impacts, hence the term *ESIA* is used in this paper.

To achieve positive social outcomes, impacts must be managed across the entire project lifecycle (Franks and Vanclay 2013, Heeres *et al.* 2016). The management strategies proposed in ESIAs are intended to mitigate impact and manage uncertainty (Storey and Jones 2003, Glasson *et al.* 2013, Vanclay *et al.* 2015). During the development of large infrastructure projects, impact predictions frequently become irrelevant or inaccurate (Storey and Jones 2003, Morrison-Saunders and Arts 2004). Implementing contingency planning is a method for managing change in dynamic environments (Storey and Jones 2003, Franks and Vanclay 2013, Glasson *et al.* 2013).

The management of megaprojects calls for adaptive management and the ongoing monitoring of projects to manage uncertainty and maintain flexibility, because unplanned changes in schedule, scope and cost are likely (Priemus *et al.* 2013). Project evaluation is essential to evaluate the project and determine whether public and political notions of success were fulfilled (Flyvbjerg 2017, Pinto *et al.* 2019). It is an argument of this paper that EIA follow-up should be an essential part of project evaluation. Maintaining continuous improvement in projects calls for flexibility within governance and regulatory structures to cater for uncertainty, changes in the environment, and unforeseen consequences (Termeer *et al.* 2010).

Development associated with integrated planning can generate complexities for monitoring and managing impacts. Major public transport projects can also create conflicts around accountability. These conflicts are often about who is responsible for protecting the interests of the local affected community versus political, commercial and metropolitan interests. ESIA assists governments to identify stakeholders and their interests, and establish accountability and rapport with local affected people (Dare *et al.* 2014). Accountability in relation to the project's commitment to impact management is supported by EIA follow-up (Morrison-Saunders and Arts 2004). EIA follow-up should be the final step in the ESIA process. It is an ongoing activity applied after the consent decision to evaluate the environmental and social outcomes of the project, address any pertinent changes since the original ESIA was conducted, as well as reflect on the adequacy of the ESIA process (Morrison-Saunders *et al.* 2004, Glasson *et al.* 2013). There are three levels of EIA follow-up: micro to consider the way impacts from a project were addressed; macro to consider how the EIA system (in its jurisdictional setting) performs; and meso to consider the concept of EIA overall (Morrison-Saunders and Arts 2004). The four elements of good practice EIA follow-up are: monitoring, evaluation, management, and communication (Marshall *et al.* 2005). These four elements facilitate the evaluation of environmental and social impacts for the purposes of making decisions about their continued management, and communicating this to stakeholders. Follow-up is most effective when enforced by regulation (Morrison-Saunders *et al.* 2003). Arguably, "governance" (the processes and structures to ensure a commitment to implement and act on follow-up) should be included as the fifth element (Pinto *et al.* 2019).

3. Methods

The research involved a case study of the SWRL in Sydney, Australia. The SWRL commenced operations in February 2015. The SWRL was chosen because it was considered to be successful by traditional measures of success (from both a political and project management perspective), however, media reports reflecting community feedback suggested that it was not successful from a social perspective. In order to answer our research question, we wanted to understand the practice challenges and governance barriers to assessing and managing social impacts that were experienced in the development of the SWRL.

A qualitative multi-methods approach was used, involving site visits, document analysis of relevant materials, and semi-structured interviews with key informants. Principles of ethical social research (Vanclay *et al.* 2013) were observed, and the research was approved by the Macquarie University Human Research Ethics Committee (Project 5201700424).

Initial field observations were made by the lead author during working hours on a typical working day, Monday 26 March 2018. This involved travelling by train along the route of the 11 km rail link, alighting at each station (Leppington, Edmondson Park, Glenfield) and walking around the vicinity of the station to observe the surrounding built environment. At each station, the lead author walked approximately 10 minutes in each publicly-accessible direction from the station. Ten minutes is generally regarded as the approximate maximum distance people will walk to a station (Searle *et al.* 2014). Photos were taken and notes were recorded in a research diary. Observations were made about the presence or absence of the social impacts predicted in the *South West Rail Link Concept Plan and Environmental Assessment* (Parsons, Brinckerhoff 2006a) and the *South West Rail Link Glenfield to Leppington Rail Line Project Approval Environmental Assessment* (Parsons Brinckerhoff 2010a).

Before and after the preliminary field observations, publicly available planning approval documents, online media reports, policy documents, academic and grey literature relating to the SWRL and SWGC were reviewed.

Nine semi-structured interviews were undertaken face-to-face or via skype/phone in the first half of 2018. The interviewees were selected on the basis of major involvement in key political and project decision making processes or because of their role in the planning process for the SWRL. The interviewees included: consultants (ESIA practitioners), government transport agency staff (project managers & planners), government officials (politicians & regulators), and a SWGC Commission representative. Interview questions were derived from the literature on good practice ESIA, case materials, and previous research (see Mottee and Howitt, 2018). The questions focussed on the participant's involvement in the SWRL and their perspectives about the assessment and management of social impacts in the project. Interviews were recorded, transcribed and analysed using NVivo.

In April 2019, a workshop was conducted with a further 7 government planners and regulators (i.e. not the original interviewees) to report on preliminary findings from this research, gain feedback, and discuss how the research might inform future project planning.

4. Description of Sydney's South West Rail Link

The SWRL comprises an 11 km passenger rail line running from Glenfield to Leppington in the south-western suburbs of Sydney, Australia (see Figure 1). The original justification for the SWRL, as far as Sydney's metropolitan strategy (NSW Government 2005) was concerned, was to service the population of the future urban land release areas known as the South West Growth Centre (SWGC). In addition to providing transport access for the SWGC, the SWRL would also provide operational support for the growing rail network in Sydney through upgrades at the existing Glenfield station and connecting a new train stabling (train parking) facility (Parsons Brinckerhoff 2006a; Parsons Brinckerhoff 2010a).

With the Glenfield station already in existence, two new stations were constructed on the SWRL, Edmondson Park and Leppington. Costing around AUD $1.8 billion (TFNSW 2015), it came into operation in 2015. The SWRL traverses three Local Government Areas: Campbelltown City

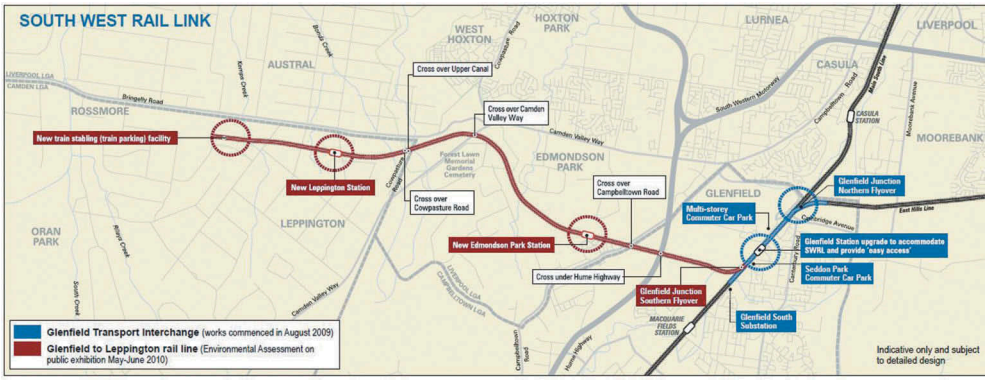

Figure 1. Stages of the South West Rail Link (SWRL) (Parsons Brinckerhoff 2010b).

Council, Liverpool City Council and Camden Council. The route was predominately within agricultural and rural-residential greenfield areas. Key features of the project included:

- a new heavy rail line between Glenfield and Leppington and associated infrastructure;
- new stations at Edmondson Park and Leppington;
- upgrade works at Glenfield Station and the station interchange; and
- a train stabling facility at Rossmore.

A timeline of key dates is given in Table 1. The SWRL would provide public transport access to the Greater Sydney Metropolitan area for the future 300,000 people to be housed in the SWGC (DPE 2019a, Parsons Brinckerhoff 2010a). Staged land releases were proposed in 18 precincts over a 40-year timeframe (Parsons Brinckerhoff 2010a). The NSW Government established a statutory body,

Table 1. South west rail link key dates.

Date	Event
Mid-2005	The SWRL was announced in the NSW Government's *City of Cities: A Plan for Sydney's Future* and Metropolitan Rail Expansion Program as part of the North-West–CBD–South West Rail Link (NSW Government 2005).
November 2006	In support of the Concept Plan and Stage A works application, an Environmental Assessment (EA) was produced (Parsons Brinckerhoff 2006a).
22 November 2006 to 2 February 2007	The Concept Plan and EA was publicly exhibited, with submissions invited. A Submissions Report was prepared to address responses received (Parsons Brinckerhoff 2006b).
August 2007	A concept plan for the project (Stages B1/B2) and Stage A works are approved under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) subject to further Environmental Assessment (EA) for Stage B.
February 2009	A Review of Environmental Factors (REF) under Part 5 of EP&A Act for 'low impact' works is finalised for Stage B1 (Department of Planning (DOP) (NSW) 2007).
February 2010	The SWRL was announced as a separate project in the new Metropolitan Transport Strategy for Sydney (NSW Government 2010).
May 2010	The Stage B2 EA was finalised in accordance with requirements stipulated in the Concept Plan Approval conditions (Parsons Brinckerhoff 2010a).
19 May 2010 to 21 June 2010	The Stage B2 EA was publicly exhibited with submissions invited. A Submissions Report was prepared to address the responses received (Parsons Brinckerhoff 2010b).
November 2010	Full approval for Stage B works was granted under Part 3A of the EP&A Act (DoP 2010).
2011	Work commences.
2012	Original planned completion date as advertised in the *City of Cities: A Plan for Sydney's Future* in 2005.
9 February 2015	The project announced as being finished (NSW Government 2015).
13 February 2015	Sydney Morning Herald reported that commuters are praising 'quicker travel times' 'traffic-free streets' and 'spacious carparks (Saulwick 2015).
2016	Planned delivery date as reported in the Stage B2 EA.
27 July 2016	First major online media report of high patronage and carparks 'at capacity' at Edmondson Park and Leppington (Ngo 2016).

the *Growth Centres Commission*, to coordinate urban development planning of the precincts, facilitate staged land releases, conduct negotiations between local and state government, landowners and developers, and prepare and implement land use master plans for the development of infrastructure in the SWGC (Williams 2016).

The project was completed in 2015, a year ahead of schedule and AUD $300 million under budget (about 15%). This achievement was promoted as a major success story by the NSW Premier, the Transport Minister, and Minister for Western Sydney (NSW Government 2015). It was also initially praised by many commuters for its quick travel times, traffic-free streets, and spacious carparks (Saulwick 2015).

The inclusion of the SWRL in planning for the SWGC facilitated its classification as "critical infrastructure" for the State of NSW (NSW Minister for Planning 2010). Under NSW legislation, each "state significant" project requires various planning approvals and an ESIA (DPE 2019b, Parsons Brinckerhoff 2010a). For the SWRL, design and development approval were split across three stages: A, B1 and B2 (Parsons Brinckerhoff, 2010a). The Concept Plan and the EA were approved initially, with the final approval for Stage B1/B2 works being subject to a further EA (Parsons Brinckerhoff 2006a, DoP 2007).

5. Results: Reflections on Key Issues in the Planning, Assessment and Management of Social Impacts in the South West Rail Link

Our research identified that challenges and barriers to good ESIA practice and governance vary according to project phase. Therefore, to structure our findings, we grouped our results under three headings: During Strategic Planning; During Project Approval; and Post-Construction.

5.1. During Strategic Planning

While the justification for the SWRL was to service the SWGC, our interviews revealed that the project and its justification changed over time. The initial EA and project approval both acknowledged that the project's key aim was providing transport infrastructure to service the SWGC. Servicing future population growth was also emphasised in the NSW Government's 2005 *Metropolitan Rail Expansion Program* (MREP) and Sydney's city plan, which both discussed the role of a new rail line in contributing to the economic corridor between the SWGC and Sydney's Northern suburbs. In contrast to this discussion of servicing the SWGC, our interviewees revealed that the real need for the SWRL was as an operational requirement to increase rail stabling capacity:

> RailCorp were actually running at [full] stabling capacity across the network and they were looking for a place to stable their trains, and it became a fairly strong driver for the business case for the project as well. So there were probably two things that were at play, partly the proposals for the SWGC and the opportunities for that land use development to be serviced by a heavy rail line, and the capacity constraints that RailCorp had. [Transport agency staff member]

Similar remarks were made by another interviewee:

> So to get funding for [the] project to sort of move forward, it was quite a difficult task. And to be honest, if it wasn't anchored by this need for stabling, it wouldn't have happened in the time period that it did. [Transport agency staff member]

These quotes establish that the operational needs of rail network were a significant factor in obtaining support from the political decision-makers and the rail operator.

Despite this revelation, all interviewees noted that the SWRL's positioning as integrated development for the SWGC and its "critical infrastructure" status contributed to its success. The SWRL's location within the SWGC: fostered collaboration between government departments to gain planning approval; helped facilitate community support for the project (at least initially); and helped justify the project as being in the public interest. The greenfield location of the SWRL was noted by

interviewees as a contributor to project success in terms of time and budget as this facilitated a more accurate cost estimate in the business case.

One interviewee commented that, despite not being originally planned by RailCorp to service the SWGC, it was beneficial to metropolitan planning to have the transport infrastructure in place prior to the intended growth in population:

> I mean from a strategic planning point of view, … it's actually a really good case study in building the infrastructure before it gets populated. That is a big tick in itself, because we are always chasing our tails. [Transport agency staff member]

From our interviews, there was no evidence that there was any systematic thinking about the identification of potential social impacts, their assessment or management in the project.

5.2. During Project Approval

Some participants (especially agency staff) reflected that the greenfield location reduced the complexities usually encountered when constructing infrastructure in urban environments. They thought that the severity of social impacts arising from congestion, air pollution, noise, and land acquisition would be less because it was a greenfield site, and that the community were generally supportive of the project. This impression contributed to the project being designed to have a rapid timetable for approval and construction.

In contrast, the ESIA practitioners felt the greenfield location was problematic. They argued that, because the SWRL was being designed and constructed ahead of urban development and land release, the specifics of the town centres and master plans were not complete and continually evolving, making it difficult for them to understand the social context (see also Parsons Brinckerhoff 2010b). Furthermore, the routing and train station design kept changing, making it impossible for them to assess the likely social impacts (because it was not possible to establish who would be affected). A representative from the SWGC Commission noted that land release was complex because it relied on the installation of essential public services (e.g. water, sewerage, electricity). The problem was that the different utility authorities were not able to deliver these essential services in a coordinated or timely fashion. Therefore, the detailed town planning that was needed for the ESIA practitioners to make sense of the likely future social situation was not available.

Because the future population was unknown, community consultation to inform the ESIA process and conceptualise impacts could only include those who were currently being impacted or transport users potentially impacted in the wider catchment:

> one thing that we sort of realised early on was that, actually that the community we were missing out on is that future community, that would be settling in that area and we didn't really find a good way how we would capture how we would engage with them, because at that the time they didn't exist. [Transport agency staff member]

Agency staff and ESIA practitioners mentioned in the interviews that there was an issue in relation to the payment of compensation for land acquired for the SWRL (although this was tied-up with the land to be acquired for the SWGC). ESIA Practitioners noted that the designation of the locality as the SWGC created an expectation that rural-residential and agricultural lands would be rezoned as low density residential, making them more valuable. Most existing land owners believed that when their land would be taken, they would be entitled to compensation in terms of this new zoning. However, the NSW land acquisition laws allowed the land for the SWRL to be valued in terms of the former zoning, thus the people who lost their land for the SWRL had their hopes dashed. Furthermore, as the compensation amounts were confidential, it was not possible to establish whether fair and just compensation had been paid. There was quite some indication that there was widespread dissatisfaction with the compensation paid.

ESIA practitioners also found it challenging to identify social opportunities and benefits, or to develop management strategies to address the needs of an unknown future, while balancing the

needs of the present community. ESIA practitioners felt that the government's focus on the future population meant that issues impacting the current population were not investigated thoroughly and constrained their ability to identify opportunities to benefit the current population:

> The interesting thing about the EIS [Environmental Assessment report], … is that the assessment didn't really address the sort of, the interim years, the early years. It very much looked at – once this is an urban community, how would it work from a social perspective? The assessment probably didn't really look at the kind of "what's it going to be like in 5 years?" … I'm not convinced it thoroughly considered the existing residents and the wider community. The property acquisition, the property acquisition impacts, and property impacts were probably a bit undercooked. [ESIA Practitioner]

Understanding the cumulative social effects of the project and how they interacted with the other developments in the area proved too complicated to assess in the ESIA, and ultimately was overlooked. One interviewee hinted that politically-driven timeframes may have also contributed to a lack of integrated assessment:

> sometimes people don't acknowledge that the EIS is a real catalyst, it's not just about specifically just looking at those technical impact issues, it's actually a catalyst for considering things in a holistic way, and I think if we had more time we might have been able to do that better. [Transport agency staff member]

In scoping the Stage B2 EA, ESIA practitioners were influenced by the earlier Concept Plan Approval. It was decided that only some studies were needed for the Stage B2 EA, and consequently an SIA was not conducted, as one practitioner noted:

> I suspect that they [the planning department] took the view that the social assessment had been dealt with at the concept stage. Although the project approval dealt more with the fine tuning of the design and a more detailed assessment, the fundamental social issues hadn't really changed. [ESIA Practitioner]

Another ESIA practitioner felt that this excessively limited the scope of their work and that the absence of an SIA during the Stage B2 EA meant that they could not adequately explore potential positive opportunities for the present and future populations.

> The assessment focussed more on the changes that were going to happen to that community. A big part of that was focussed on … how they would be impacted, I guess, during the construction phase … And then it really looked at, I guess, what the benefits would be. … It kind of looked at the benefits from that future population. … but I felt a lot of things that we wanted to do to mitigate the change, we were kind of constrained in what the government was willing to do. [ESIA Practitioner]

The transport agency staff felt that the staged approval process was positive overall, as it facilitated the design and construction of the project, such that the much-needed low environmental impact works in Stage A and B1 could be completed independently of the more significant works for Stage B2. One interviewee reflected that, while this staging benefited the project's delivery, it was not the real reason for splitting the approvals. They argued that it was actually state plans and the lack of funding between political terms that split the project and created subsequent challenges for practitioners in completing the assessment.

5.3. Post-Construction

The initial field observations (in March 2018) provide information about changes in the built environment following completion of the SWRL in 2015. These observations also provide insight into the consequences of the shortfalls in assessing and managing social impacts (as discussed above).

It was observed that in the vicinity of Leppington station, semi-rural housing and agricultural land were the predominant landuse types. At Edmondson Park station, it was noted that the town centre development was underway, however, many blocks of vacant land remained. Nevertheless, at both stations, commuter carparks were full and streets over-crowded with vehicles illegally-parked on footpaths and in kiss-and-ride and no-parking zones. The Google News search of

"Leppington station" and "Edmondson Park station" also reflected this. Within 18 months of the project success being reported in the media, there were many reports of problems with parking and traffic.

One ESIA practitioner felt that EIA follow-up should have been conducted so that it aligned with the stages for future development releases. They felt that this type of follow-up would have allowed for staged assessment of social change and re-assessment of social needs and impacts (such as parking) as the local population grew, and as the uncertainties that were difficult to assess earlier were resolved:

> it could have been staged more. Like, because, obviously population doesn't go from 0 to whatever – it's an accrued thing that happens over time. But I guess there was a lot of other factors that contributed to that: demand growth, the private sector investing in that area, developers, and things like that. There's lots of other things that play into that. . . . there could have been more done on managing that social change over time, and the cumulative effects of all the other infrastructure, all the other planning. I think the government could have been a bit more coordinated. [ESIA Practitioner]

Other interview participants from government argued that the issue of the current carparking availability was actually a measure of success for the project, as it demonstrated passengers were using the train line. It was noted by several participants, and in the Stage B2 EA, that the carparks were known to be under-capacity for the future predictions and that the intent was that, as the population would grow, developers would provide multi-storey carparks that would service mixed-use development in the area (Parsons Brinckerhoff 2010a). However, the EA also predicted there would be an increase in vehicle traffic from a wider surrounding population catchment, who would drive a considerable distance to access the stations at Leppington and Edmondson Park (Parsons Brinckerhoff, 2010a).

The ESIA practitioners also noted there was an NSW Government sustainability policy at the time, which intended to encourage more sustainable modes of transport to reach train stations and reduce car use by restricting car-parking. They noted that this was not successful at the SWRL stations. This highlights a conflict between project-level outcomes and the goals of more general (urban) metropolitan policies at that time. Accessibility, parking and transport were assessed in the Stage B2 EA, and agency staff noted that the government was aware that parking was a potential issue to be addressed in the future. However, as development is yet to occur at Edmondson Park and Leppington but carparks are full, it would appear that the SWRL has become attractive to a different set of commuters, and is at full capacity earlier than anticipated. The mitigation measures in the Stage B2 EA stipulated the requirement to conduct ongoing consultation between relevant state agencies, master planners and local councils regarding the provision of transport needs and station accessibility (taxi, bus, parking, kiss and ride) as development progresses into the future (Parsons Brinckerhoff 2010a, p. 436). However, the "conditions of approval" for the Stage B2 project did not specify requirements relating to transport needs, meaning that there was no legal obligation for the NSW Government to re-consider parking as part of the SWRL's operation. Consequently, it has become an issue for local government, who have had to conduct follow-up consultation to place accountability on the state government, and seek funding to address the issue, while the local community and council experience the negative impacts. Reflecting on the follow-up actions of state government and focusing on traditional measures of success, one government official noted:

> No, I think it's a bit silly, a bit chauvinistic and dumb, governments, the state government, thinks its job is to build, then say it's done, we've done it, hey, then walk away basically! And planning, I think planning [the planning department] is very much aware of those issues, but, but there's still a very strong engineering culture in rail, it's about delivering a project on time, on budget, hopefully, and then saying, let's just run it. But, as for the long-term [social] problems and benefits, they tend not to, tend not to be overly concerned about those things, but that's a cultural thing. [Government Official].

6. Discussion: How the Challenges and Barriers Influenced the Planning, Assessment and Management of Social Impacts

While project managers and governments often promote time and cost as the most appropriate measures of project success, these may not secure the sustainable and equitable social outcomes that contribute to the achievement of desired integrated policy and community goals. Project managers and the NSW Government argued that the SWRL was successful: carparks and trains were full and the project came in ahead of time and under budget. A significant component of the project's business case was its operational need, and transport agency staff also argued this contributed to the project's success. Thus, the initial positioning of the project did not begin from a strategic or integrated planning policy goal. Therefore, opportunities for ESIA practitioners to respond to social policy goals and identify significant social benefits through the project came too late.

ESIA practitioners also highlighted the limitations of their work in addressing social impacts. Opportunities to use the SIA process to secure sustainable and equitable social outcomes were constrained by the way the EA terms of reference were set and how the proponent framed the project. While the SWRL was considered successful in providing a new transport connection, ESIA practitioners felt they were not able to apply good practice in evaluating equitable social outcomes for present and future populations. They also were not able to identify opportunities to manage social change over time to enable the project to more equitably benefit a wider population. The project boundaries that set the scope of the EA ultimately influenced the scale at which impacts would be assessed and managed, and how accountability would be pursued once the project was operational.

All this points to a limitation in the capability of project-level processes in evaluating the achievement of integrated policy aims, due to the tension between city and state-level needs in managing the "public interest" (Steele and Legacy 2017). It also suggests that, although the project was a success by traditional measures of time and cost, these measures may not be appropriate when projects are positioned within wider-scale public policy aims, such as integrated land use and transport (Heeres *et al.* 2012a, Flyvbjerg 2017). Unintended negative local consequences may be overlooked or ignored. We suggest that greater emphasis on follow-up and monitoring against social goals should be given in policy and project evaluations.

Positioning the project as "critical infrastructure" that is needed to address a wider issue for Sydney and the state of NSW created a perception of greater importance for the needs of the metropolitan population (and state-government priorities) over local needs and priorities. The challenges faced in assessing the present and future social needs of local population reflect this tension between different levels of government. Despite overcoming barriers to integrated planning to deliver the SWRL, the state's management of local impacts did not deliver an equitable social outcome. For example, land acquired for the SWRL was valued less than the land purchased for residential development in the SWGC. The local impacts of this inequality were not considered, primarily due to disparities in governance at different spatial scales (Low and Sturup 2014, Steele and Legacy 2017).

Although participants identified that two-way engagement occurred between levels of government through multiple avenues and that this engagement reflects effective collaboration in multi-level governance (Lockwood *et al.* 2009), now that the project is operational, the mandate for collaboration has diminished, and local Councils are forced to lobby the state government in relation post-completion impacts. Thus, the state-level accountability for the management of social impacts of the SWRL has diminished over time.

Our findings emphasise that good practice ESIA alone cannot ensure positive social outcomes from transport infrastructure projects (Mottee and Howitt 2018). In the case of the SWRL, unplanned negative social impacts resulted despite good practice ESIA. However, our research identified that, in the case of the SWRL, the final EIA follow-up step (which should have addressed residual negative impacts), was not as effective as it should have been.

In the SWRL, the statement to mitigate social issues given by the proponent (NSW Government) in the EA (the "statement of commitments") was an important positive outcome from the approvals process. However, EIA follow-up to monitor ESIA management strategies and evaluate the need for further assessment or mitigation failed to identify and respond to the local transport issues and cumulative effects. This was despite the fact that the issues were much discussed in the media and local councils. Thus, we identified that the management strategies proposed in the EA and the subsequent Ministerial Conditions of Approval (both mechanisms for regulation that should facilitate EIA follow-up) were inadequate as triggers for re-assessment of local impacts post-completion. The problem of parking and the failure to deliver on commitments point to a need for improvement in the governance of EIA follow-up at all levels and across levels (Pinto *et al.* 2019).

A greater emphasis on the role of follow-up is also needed to implement the recommendation suggested by one ESIA practitioner to use a staged integrated impact assessment process to address social needs. This recommendation would address missed opportunities in the SWRL: to adapt and manage impacts arising from social change due to the development; uncertainty surrounding future impacts; and to identify opportunities for transport-related benefits, while also capturing and addressing any negative impacts arising in the interim.

7. Conclusion

The lessons learned from our research on the SWRL indicate there is a gap between the practice tools and governance processes that are used in the assessment, management and follow-up of project impacts. Improvements are needed to ensure that metropolitan policy-level goals and project-level aims are evaluated and achieved, fairly and in the public interest. Project-level ESIA does not provide a "silver bullet" ensuring the post-approval management of impacts or appropriate accountability of decision-makers for impacts at the local-scale. This was evident in the case of the SWRL, given the challenges to applying good practice that were encountered by the ESIA practitioners. However, if applied effectively, good practice EIA follow-up can help decision-makers deal with uncertainties in the assessment process by facilitating development of adaptive strategies to better manage impacts that arise from social changes post-completion.

Facilitating accountability for managing the unintended consequences of urban transport infrastructure projects is often complex due to mismatches between the levels of government in financial and planning priorities, and because the impacts vary at different spatial scales. Assessments that focus on future populations in the long term and that target metropolitan goals can overshadow impacts at the local scale, resulting in unsustainable and/or unfair outcomes. Furthermore, in the absence of effective EIA follow-up, impacts at the local scale may be easily overlooked in favour of metropolitan scale priorities. Assigning accountability at the project level for long-term changes arising from projects that are part of integrated urban planning policies is problematic. In order to overcome the barriers and challenges faced, project-focussed EIA follow-up must be supplemented at the metropolitan policy level by adequate assessment, monitoring and reporting of outcomes. Other mechanisms (e.g. adaptive governance approaches and policy evaluation models) used to measure and monitor the impact of policy-level changes also have a role to play in ensuring positive social outcomes for communities.

Despite the success of the SWRL in providing significant local and metropolitan-scale accessibility benefits, the local-level negative social impacts should not be dismissed as insignificant. In setting approval conditions, it is important for urban planners and regulators to recognise that: urban spatial development is incremental; the related social change is gradual; and that the effects (both positive and negative) of urban transport infrastructure projects may not be visible or experienced immediately by existing communities. Our participants concurred that more work is needed to improve governance processes to prevent barriers and challenges in the assessment, management and follow-up of social impacts for future projects in Sydney and elsewhere. An effective EIA follow-up process at the micro and macro level is also essential to ensure

accountability of decision-makers. Adopting a more equitable and adaptive approach to integrated urban and transport development is critical to understand how social impacts are assessed across space and time, and how social outcomes are managed and evaluated in planning and governance.

Acknowledgments

We would like to thank the interviewees for volunteering their time to participate in this research.

Disclosure statement

No potential conflict of interest is reported by the authors.

Funding

This doctoral research was supported by an Australian Government Research Training Program Scholarship administered through Macquarie University, Sydney Australia.

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