Rail Stations | Reinvented

Examining Railway Station Redevelopment Abroad

May 12th, 2015 | George Mason University
School of Policy, Government, & International Affairs
Submitted to the Union Station Redevelopment Corporation

Rail Stations | Reinvented

Examining Railway Station Redevelopment Abroad

An International Case Study Review

prepared for

Union Station Redevelopment Corporation

in cooperation with

George Mason University
School of Policy, Government, and International Affairs
Transportation Policy, Operations, and Logistics

Title page image credit: Union Station's 2nd Century." Accessed March 15th, 2015. http://www.usrcdc.com/projects/active/21st-century/.

Disclaimer

The research outcomes summarized in this document represent the aggregated findings of the report's authors. It is intended that it be used for informational and/or academic purposes exclusively. It does not constitute any standard or specification, nor does it endorse any particular process or product. The views represented do not necessarily reflect those of the Union Station Redevelopment Corporation (USRC) or George Mason University (GMU).

Preface

"Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans, aim high in hope and work, remembering that a noble, logical diagram once recorded will not die, but long after we are gone be a living thing, asserting itself with ever-growing insistence."

-Daniel H. Burnham, *Union Station Architect (1846-1912)*

The practicum team wishes to acknowledge the generosity of Ms. Beverly Swaim-Staley and her colleagues at USRC, in granting GMU the opportunity to work with a very visible and influential transportation industry player. The students are equally grateful to Professor Jonathan Gifford for his wisdom and guidance in developing this project.

Prof. Gifford's class of graduate students hail from a variety of diverse backgrounds, and are all presently enrolled in GMU's School of Policy, Government, and International Affairs. Likewise, all are pursuing the Master of Arts degree in Transportation Policy, Operations, & Logistics (TPOL) at George Mason's Arlington campus.

With a myriad of practical experience in various transportation disciplines, their collective knowledge has been applied, in part, to meet the requirements of the TPOL degree program. This practicum has provided them with an opportunity to showcase a sample of their competencies, allowing them to further their personal and professional development.

What follows is the culmination of a semester long, collaborative research project executed by a group of 14 transportation industry peers. The team utilized the research criteria as defined by their client, USRC, to evaluate global railway station redevelopment in accordance with their requests – the findings of which are contained within this report.

Executive Summary

In light of a major station redevelopment initiative, USRC, the non-profit organization that manages operations at Union Station in Washington, D.C., utilized a team from GMU's TPOL graduate program to evaluate international examples of railway station redevelopment projects. The purpose of the evaluation was to discover lessons on effective planning, financing and construction that might be applied to the redevelopment of Union Station. The research focused on four rail station redevelopment projects that incorporate a multimodal focus, utilization of public-private partnerships (P3s), and broader cultural or economic factors that catalyzed political and financial support for the projects. The four projects were comprised of Atocha Railway Station in Spain, Poznán Glówny Railway Station in Poland, St. Pancras International Station in England, and Southern Cross Railway Station in Australia.

The Atocha redevelopment project was part of a national initiative to significantly expand access and connectivity to high-speed rail (HSR) service in Spain and to the broader European Union (EU). The project created a dedicated HSR hub with four major rail lines. The new terminal construction cost was $265.8 million USD.

The Poznán Glówny redevelopment project was designed to create a modern, multimodal transportation hub that would leverage unused land to revitalize the neighborhood and improve access for a major sporting event in 2012. Heavy utilization of P3s in construction and as part of long-term sustainability measures were key aspects of the project. The project's total cost was $186 million USD.

The St. Pancras redevelopment project was a key capacity access and economic redevelopment project. St. Pancras is a HSR connector for London to the Eurostar through the Channel Tunnel. The redevelopment project was a strategic component of a much larger economic development project that heavily incorporated P3s. The entire project's redevelopment cost was slightly north of $1.2 billion USD.

The Southern Cross redevelopment project sought to improve rail access prior to the 2006 Commonwealth Games and lay the groundwork for significant P3 economic development and management. The rail station redevelopment was plagued with a number of process, political, and financial outcomes that demonstrate the benefits and risks of P3 involvement. The financial settlement to contractors alone was nearly 60 percent of the initial projected cost of the station project and while design flaws resulted in limitations to accessibility and the retention of exhaust fumes, the economic benefits from the project are manifest.

Rail station redevelopment projects rely heavily on government funding. Unlike aviation, highways and shipping, passenger rail struggles to cover operating and infrastructure costs.

While European passenger rail fares better, new high-speed rail lines are struggling to attract unsubsidized ridership and under fare pressure from low-cost airlines.[1] Several of the rail station redevelopment projects profiled utilized P3s, seeking to accelerate construction timelines while maximizing private-sector efficiencies and revenue streams.

Each case study analysis includes a description of ownership and identifies planned or achieved finance structures. The role of P3s is addressed from the standpoint of advantages and disadvantages. Each project's perceived economic, community and cultural benefits and sustainability features are also documented. The role of external economic and cultural activities in creating a political framework favorable to the project is also addressed.

The findings were mixed. Given the minimal return-on-investment (ROI) that the projects provided, the political support required to secure government investment was secured as a result of emphasizing project value. Based on either cultural strategies, as was the case at Poznán Glówny and Southern Cross, or through the application of broader economic strategies, as was true in both St. Pancras and Atocha.

[1] "Problems down the Line," *The Economist*, January 10, 2015, http://www.economist.com/news/business/21638109-high-speed-networks-are-spreading-fast-face-rising-competition-problems-down-line.

Table of Contents

Introduction

Union Station is a heavily utilized multi-modal rail hub with well over 100,000 visitors daily. The station serves traffic from Amtrak passenger rail, commuter rail (Virginia Railway Express, Maryland Area Regional Commuter), Metro rail, and charter and city buses. In addition to its role as a regional transportation hub, Union Station's proximity to the U.S. Capitol complex results in significant utilization by tourists. According to the U.S. Department of Transportation, the station is visited by over 30 million people annually, many simply to take advantage of its restaurants. Currently, the station is undergoing repairs, major interior renovations, and other significant changes to improve access to trains, metro lines and buses.

The USRC tasked the practicum team with evaluating international examples of rail station redevelopment focusing on how to finance and build a multi-modal, transit oriented, station that includes heavy and light rail. Additional parameters included that the team review a minimum of four station projects and that projects were within the last ten years. Key aspects of the projects included: description of financial structures and ownership, economic and community benefits and sustainability efforts that were incorporated into the design. Each of the four stations reviewed includes heavy or light-rail components and is currently underway or completed within the last 10 years. The projects incorporated P3s, which are considered important for broader economic or cultural development strategies and incorporated multi-modal and sustainability features similar to Union Station.

Methodology

The information presented in this paper is drawn from relevant literature, analyses, and current planning, design and construction efforts from four international multimodal train stations. After an initial screening of more than 20 stations, the research team narrowed the scope to the seven stations that most closely met the project criteria (Atocha, Madrid, Spain; Central Station, Rotterdam, The Netherlands; Poznań Główny, Poznań, Poland; Southern Cross, Melbourne, Australia; St. Pancras Station, London, England; Union Station, Toronto, Canada; and Zurich Hardbrücke, Zurich, Switzerland).

After meeting with USRC, the team received approval to move forward with the research on the seven stations. After a second stage of review eliminated three additional stations due to lack of data, the final four stations selected are Atocha, Poznań Główny, Southern Cross, and St. Pancras. While the key focus of the report is centered on the four case studies, an overview of key concepts and practices includes examples from many of the redevelopment projects examined.

CASE STUDY: Atocha Railway Station, Madrid, Spain

Background

The Atocha Railway Station, located in Madrid, services commuter, intercity and regional trains coming from the south (Alta Velocidad Española or AVE high-speed rail).[2] The railway station was originally built in 1851 but was mostly destroyed by a fire. The station reopened 30 years later, with several remodeling efforts in the mid 1980s and early 1990s, the station has had several facelifts to include retail, dining and a botanical garden.

On March 11, 2004, Atocha was struck by a terrorist attack. A memorial now stands in the station to remember the victims from the 2004 bombings.[3]

The station's redevelopment focuses on an airport-style process for arrivals and departures.[4] The new building is designed to separate the arrival and departure areas entirely. The station operates at 80 percent capacity and serves 16 million passengers per year.[5] There are a total of 13 platforms and 24 tracks at the station. It is the largest station in Madrid and is to be considered the hub for the high-speed rail system – attributed to its geographical location in the center of the country.

Project Goals

The ongoing and projected Atocha Railway Station and high-speed rail expansion include the following deliverables:

1. Madrid-Badajoz line towards Lisbon
2. Madrid-Alicante-Murcia and Valladolid-Burgos-Vitoria high-speed lines
3. Enlargement of Madrid's Atocha station, and a new tunnel for high-speed use connecting Madrid's Atocha and Chamartín stations
4. Construction of the third and fourth tracks on the high-speed section between Torrejón de Velasco and Madrid
5. High-speed Valladolid-Galicia line[6]

[2] "Atocha Railway Station, Spain," *Railway Technology*, n.d., http://www.railway-technology.com/projects/atocharailwaystation.
[3] Ibid.
[4] Ibid.
[5] "Atocha Train Station," Tourism, *Go Madrid*, (2015), http://www.gomadrid.com/transport/atocha.html.
[6] Matilde Del Valle Serrano, "Spain: European Investment Bank and Public Works Ministry Sign Agreement to Provide EUR 5 Billion for High-Speed Rail Projects," *European Investment Bank*, October 29, 2009, http://www.eib.org/infocentre/press/releases/all/2009/2009-212-espagne-la-bei-et-le-ministere-de-lequipement-signent-un-accordcadre-portant-sur-loctroi-de-5-milliards-deur-en-faveur-de-projets-du-reseau-ferroviaire-a-grande-vitesse.htm?lang=en.

The main objectives for these development projects are to increase rail capacity and connect southern high-speed rail networks to Madrid.[7] Also, construction of Atocha's new terminal will allow the station to handle increased capacity levels from the rail expansion across the country.

Structure

The Atocha expansion is one of the largest multimodal railway projects in the world. The project includes modifications to the railway station along with the addition of new high-speed rail tracks (both an expansion and new construction). Spain's high-speed rail lines, which are slated to reach every major city, will be developed to 10 times the original railway network size.[8] The country's rail expansion also allows 90 percent of its citizens to be within 30 miles (50 km) of a railway station.[9]

Figure 1: Spain's high-speed rail expansion[10]

[7] "Conexion AVE Atocha Chmartin," June 21, 2011, http://www.eib.org/projects/pipeline/2009/20090633.htm.
[8] Victor Blanco, Justo Puerto, and Ana Ramos, "Expanding the Spanish High-Speed Railway Network," *Omega* 39, no. 2 (June 11, 2010): 138–50.
[9] Ibid.
[10] "AVE (Alta Velocidad Espanola)," n.d., http://en.wikipedia.org/wiki/AVE.

Figure 2: Spain's high-speed rail expansion [11]

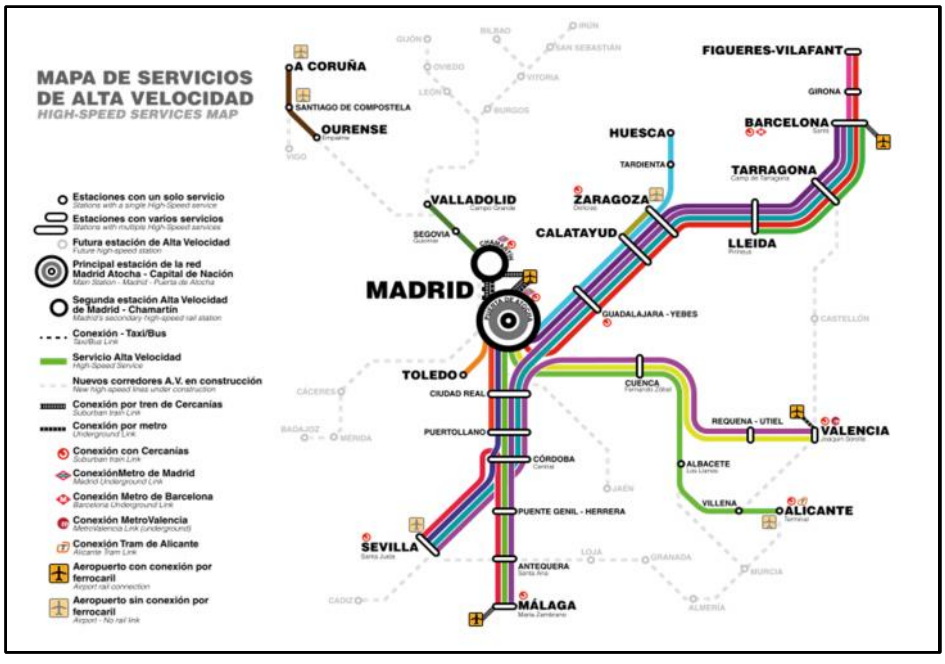

Figure 3: Rail network stemming from Madrid[12]

[11] "AVE High Speed Train," Railway, *Eurail*, (2015), http://www.eurail.com/trains-europe/high-speed-trains/ave.
[12] Ibid.

Ownership

The Atocha station and rail lines are owned by the Spanish government. An execution plan approved in 2005 by the Council of Ministers identified the development of Spain's high-speed rail network as their top priority through the Strategic Planning of Infrastructure and Transport (PEIT), along with the Ministry of Public Works and Transport.[13] These initiatives helped lay the groundwork for substantial future investments in high-speed rail across Spain. Existing maintenance, construction and operations are overseen by Spain's rail infrastructure administrator, Administrador de Infraestructuras Ferroviariasor (ADIF).[14] Renfe, a company overseen by ADIF, operates Spain's passenger and freight rail network.[15]

Financials

In 2009 the Spanish Ministry of Public Works and Transport secured funding through the European Investment Bank (EIB) for the expansion of Madrid's Atocha Railway Station, also known as "Madrid Puerta de Atocha".[16] The first phase of Atocha's project timeline spans from 2010 to 2015 with a final project completion date of 2025.

Existing funding for both the railway station and high-speed rail expansion has been secured by the Spanish Ministry of Public Works and Transport and incorporated as part of the EIB's commitment to invest 5 billion euros into the development and expansion of Spain's high-speed rail network. The Atocha Chamartin high-speed rail funding through the EIB was issued in 2012. As part of the project deliverables, Atocha's new rail terminal is estimated to cost €251 million ($265.8 million USD[17]).[18] Phase one of the entire railway expansion is estimated at €624.4 million ($661 million USD).[19]

The project's total rail and terminal expansion is scheduled to be complete by 2025. The EIB has issued a total budget of €5 billion ($5.29 billion USD) for the entire project. Concerns have been raised regarding railway stations with slower development. Stops such as Guadalajara, Camp de Tarragona – which require millions of dollars for construction – may lack the necessary passenger volume to recoup costs.[20] Even with reduced passenger fare rates, a decrease in

[13] Blanco, Puerto, and Ramos, "Expanding the Spanish High-Speed Railway Network."
[14] "EIB and Spain Ink 5bn Funding Agreement," *Railway-Technology.com*, October 29, 2009, http://www.railway-technology.com/news/news68341.html.
[15] "Administrador de Infraestructuras Ferroviarias," *Wikipedia*, n.d., http://en.wikipedia.org/wiki/Administrador_de_Infraestructuras_Ferroviarias.
[16] "Railway Tech."
[17] *Unless otherwise indicated, currency conversions throughout the report are based on exchange rates as of March 31, 2015.*
[18] "Rail Terminal Extension Opened in Spain," December 17, 2010, http://www.railway-technology.com/news/news105359.html.
[19] Ibid.
[20] Xinhua, "Big Expansion Expected for Spanish High-Speed Rail Network in 2015," *Global Times*, January 6, 2015, http://www.globaltimes.cn/content/900182.shtml.

anticipated development within certain areas of the country might call into question the scope of the rail expansion.[21]

Benefits

The design and expansion of the Atocha station is integrally related to the development of high-speed rail networks in Spain. This driving force behind Atocha's expansion is one reason why the station is expected to see an increase in revenue. In some countries, high-speed rail is already the main mode of rail transportation and in others expectations for high-speed rail are high. Spain is counting on this new form of rail travel to increase the use and popularity of its rail system.[22] The country plans to market its rail system, promoting faster travel and new technology to intrigue potential customers.

Spain's plan is to connect the entire country with the expansion of its AVE high-speed rail. There are already 6-8 lines in operation, with another 8-11 in construction or planning phases. With the increase in high-speed rail throughout Spain there is also the assumption that businesses in and around rail stations will see increase in revenue.

On a larger scale, cities and towns not visited often may be more accessible thanks to high-speed rail and thus these smaller communities may benefit economically from increased visitors. The new AVE rail lines will provide access to parts of Spain and Europe that are in some cases too distant or expensive using other modes (air travel, conventional rail travel). Renfe does not yet know whether all communities will be accepting of the development of new rail stations in their towns.

The Atocha station features a botanical garden over an area of 4,000 m^2 (43,000 ft^2).[23] While this specific feature is not generating renewable energy for the station or promoting a green future, it is a unique feature to the station and is a tourist attraction. Perhaps implementing tourist attractions within the station, with sustainability at the core or not, can generate revenue to the station and its surrounding businesses.

[21] Fernando Puente, "Where next for Spanish High-Speed Rail?" *Www.railjournal.com*, July 15, 2013, http://www.railjournal.com/index.php/high-speed/where-next-for-spanish-high-speed-rail.html.
[22] "New Fares Boost High Speed Rail Traffic," *Railway Gazette*, March 21, 2014, http://www.railwaygazette.com/news/passenger/single-view/view/new-fares-boost-high-speed-traffic.html.
[23] "Botanical Garden Inside Atocha Train Station," Environmental/Nature, *Amusing Planet*, (n.d.), http://www.amusingplanet.com/2012/09/botanical-garden-inside-atocha-train.html.

CASE STUDY: St. Pancras International Station, London, England

Background

St. Pancras rail station in London was originally opened in 1868 but had fallen into disrepair by the turn of the 21st century. Between 2001 and 2007, the station was redeveloped and expanded as part of the new Channel Tunnel Rail Link (CTRL, later rebranded as High Speed 1 or HS1), which connects Paris, Brussels and London. The station expansion allowed for the accommodation of the 400-meter (1,312 feet) Eurostar trains in addition to a growing number of passengers.[24] Before the redevelopment, the station served 55,000 passengers in the morning peak; with HS1 to the Channel Tunnel and forecast growth, this was expected to rise to 92,000 by 2011, with 300,000 passengers daily.[25]

The development of the HS1 between Paris and London created several engineering challenges, including the construction of new high-speed rail lines that increased speeds on the British side of the Channel to 186 mph (300 km/h). St. Pancras was selected as the international terminus in London in part due to its proximity to King's Cross, a main station within the London Underground.[26] The station's redevelopment served both to better coordinate various transportation modes and to refurbish the original Victorian architecture of St. Pancras.

Project Goals

The final version of the government's National Planning Policy Framework (NPPF) was published in 2012. The NPPF sets out the government's expectations and requirements from the planning system and is meant as high-level planning guidance for local officials. This approach allows the planning system to be tailored to reflect the needs and priorities of individual communities. The NPPF defines the delivery of sustainable development through three roles: planning for prosperity (an economic role); planning for people (a social role); and planning for places (an environmental role).

The NPPF recognizes that transport policies have an important role to play in wider sustainability and health objectives as well as their direct influence on development. It seeks to ensure that the transport system is balanced in favor of sustainable transport modes giving people a real choice about how they travel.

[24] "St Pancras - the New Link to the Channel Tunnel," *BBC*, November 15, 2007, sec. 629, http://news.bbc.co.uk/2/hi/in_depth/629/629/6969116.stm.
[25] Andy Sindle et al., "Super Subterranean Hub: Updating King's Cross St Pancras," *Proceedings of the ICE - Civil Engineering* 164, no. 2 (May 1, 2011): 73–80, doi:10.1680/cien.2011.164.2.73.
[26] "St Pancras - the New Link to the Channel Tunnel."

In alignment with the goals of the NPPF, the vision for King's Cross was to deliver a sustainable development for London – a lasting place for people and a community with a long-term future that supports changing patterns of social and economic behavior. The government was strongly committed to urban redevelopment in east London, thus pushing for St. Pancras as the HS1 terminus.[27]

St. Pancras station is a gateway to London and served the London Olympic and Paralympic Games in 2012. With infrastructure dating from the 1860s, future ease of maintenance and longevity remain a priority. Planners placed a particular emphasis on preventing or managing water ingress, an endemic problem in some older stations. The design also sought to maximize the use of natural light.[28]

Structure

Designed to handle a large number of international passengers and acting also as a profit center for its franchise holder, the redeveloped St. Pancras station looks in some ways like an international airport.[29]

The adjacent King's Cross St. Pancras Underground Station offers local, regional, national and international transport modes – 10 in total.[30]

In November 2007, after a long renovation, St. Pancras went "international" with the arrival of the Eurostar on its tracks. The platforms had to be lengthened to accommodate the modern trains, which previously arrived at Waterloo Station, about two miles away. A terminal area was constructed for Eurostar services to continental Europe via HS1 and the Channel Tunnel, with platforms for domestic trains to the north and southeast of England. High-speed Eurostar trains connect London from St. Pancras Station with Paris, Brussels and some smaller destinations. The restored station has 15 platforms, a shopping center and a bus station. In St. Pancras, 9,000 square meters (97,000 square feet) of retail space are directly connected to passenger flows.[31]

[27] Minhye Hwang and Yekyeong Shin, "Comparative Study on Urban Regeneration Strategy through the Utilization of the Old Railway Station Cases," *Advanced Science and Technology Letters* 32 (Architecture and Civil Engineering 2013) (2013): 54–57.
[28] Sindle et al., "Super Subterranean Hub."
[29] Etienne Riot, "A European Perspective on the Planning of Major Railway Stations: Considering the Cases of St Pancras Station and Paris Gare Du Nord," *Town Planning Review* 85, no. 2 (January 1, 2014): 191–202, doi:10.3828/tpr.2014.12.
[30] Odile Heddebaut and Derek Palmer, "Multimodal City-Hubs and Their Impact on Local Economy and Land Use," 2014, https://hal.archives-ouvertes.fr/hal-01073030/.
[31] Riot, "A European Perspective on the Planning of Major Railway Stations."

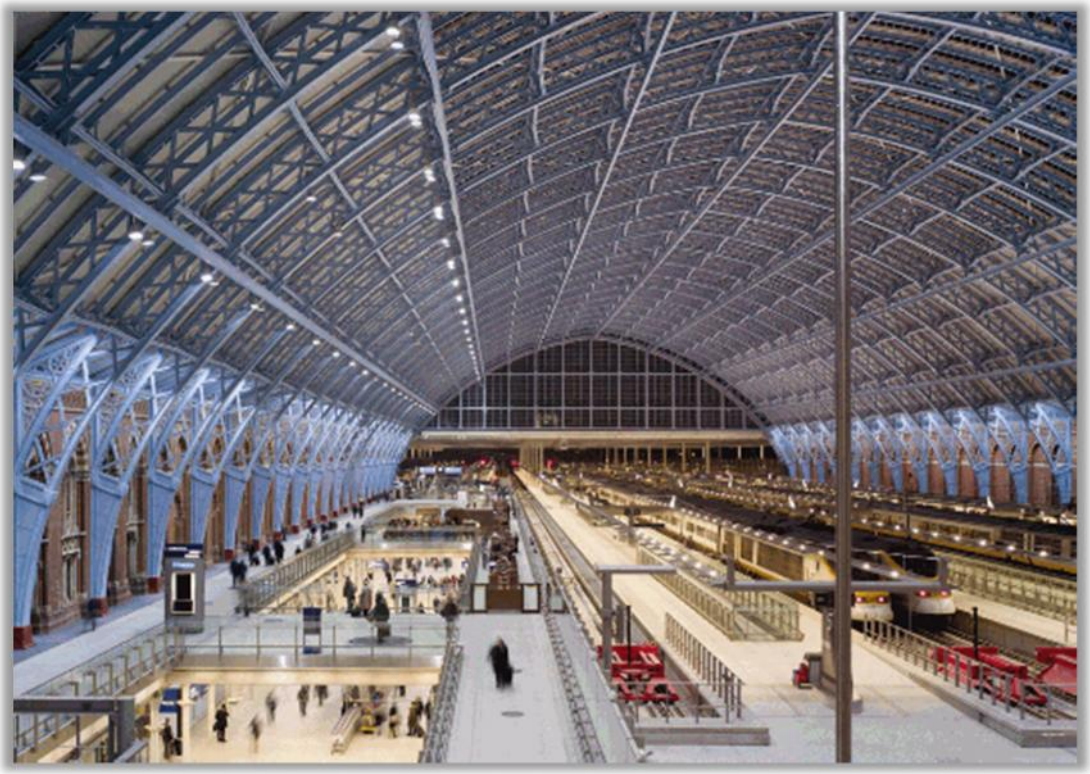

Figure 4: St Pancras International Railway Station[32]

Ownership

Along with the adjacent area known as King's Cross Central, St. Pancras is owned by London and Continental Railways and is one of 19 stations managed by Network Rail. Previously classified as a private company, Network Rail was reclassified as a central government body in 2014.

Network Rail's main customers are the separate and mostly private-sector train operating companies, responsible for passenger transport, and freight operating companies. Network Rail does not run passenger or freight services. Thus, Network Rail and the train operating companies have the shared responsibility of delivering train services.

Essentially, HS1 leases St. Pancras to Network Rail, and Network Rail outsources day-to-day operations of the station to Eurostar. Network Rail's other stations are managed by whichever company won the franchise to operate the line that serves them.[33]

[32] "St Pancras International," accessed May 9, 2015, http://www.architecture.com/RIBA/Awards/RIBANationalAwards/Winners2008/London/StPancras/StPancras.aspx.
[33] Riot, "A European Perspective on the Planning of Major Railway Stations."

Financials

An £850 million investment ($1.26 billion USD) – up from an initial estimate of £310 million ($460 million USD) by London & Continental Railways – re-established St. Pancras as a major transport hub, and made it the new London terminus of Eurostar.[34] In February 2006, the Secretary of State for Transport announced £50 million ($73 million USD) in funding for the completion of the station, plus another £10-15 million ($15-$22 million USD) to for the installation of associated signaling and other lineside works.

Benefits

The station's northern ticket hall now enables passengers to interchange easily between different transport modes. The station is well placed to serve new mixed-use developments north of King's Cross.[35] A pedestrian walkway now runs under Pancras Road from the eastern entrance of the domestic concourse to the new northern ticket hall of King's Cross St. Pancras tube station (opened November 2009) and the new concourse for King's Cross railway station (opened March 2012). King's Cross station is the southern terminus of the East Coast Main Line, one of Britain's major railway backbones providing high speed inter-city services. It is also a London terminus for Great Northern, which provides commuter services in the region.

The land between and behind the two stations is being redeveloped with nearly 2,000 new homes, 5.3 million ft² of office space and new roads as King's Cross Central. The St. Pancras Renaissance London Hotel was opened in 2011 in what had previously been the Midland Grand Hotel, which operated between 1873 and 1935.[36]

The redevelopment benefits along the HS1 may create as many as 100,000 and 50,000 new homes near the four intermediate stations (St. Pancras, Stratford, Ebbsfleet and Ashford).[37]

The structures in St. Pancras redevelopment and surrounding King's Cross area have a design life of 120 years. Sustainable construction techniques maximized use of permanent works in intermediate stages to reduce temporary works, thereby saving steel. Pulverized-fuel ash, a waste product from power stations, was used as a cement replacement in the construction.

---

[34] "St Pancras Closure Is End of Era," *BBC*, April 11, 2004, sec. London, http://news.bbc.co.uk/2/hi/uk_news/england/london/3618213.stm; "The Eight Hundred Million Pound Railway Station - BBC Two," *BBC*, accessed May 7, 2015, http://www.bbc.co.uk/programmes/b008ct46.

[35] Sindle et al., "Super Subterranean Hub."

[36] Thomas Lane, "Sleeping Beauty Awakes: The St Pancras Midland Grand Hotel," *Building*, May 22, 2009, http://www.building.co.uk/sleeping-beauty-awakes-the-st-pancras-midland-grand-hotel/3141089.article; Mark Easton, "A Monument to the British Craftsman," *BBC*, May 5, 2011, http://www.bbc.co.uk/blogs/legacy/thereporters/markeaston/2011/05/a_monument_to_the_british_craf.html.

[37] David Banister and Mark Thurstain-Goodwin, "Quantification of the Non-Transport Benefits Resulting from Rail Investment," *Journal of Transport Geography* 19, no. 2 (March 2011): 212–23, doi:10.1016/j.jtrangeo.2010.05.001.

The public area environment needs careful control of carbon dioxide levels and the fan power provided is more efficient than the minimum required by building regulations. Lighting has also been designed for efficiency, with the ability to reduce illumination levels outside opening times and using movement detectors back-of-house to cut energy use and lamp operational hours.[38]

[38] Sindle et al., "Super Subterranean Hub."

CASE STUDY: Poznań Główny Railway Station, Poznań, Poland

Background

The Poznań Główny Railway Station is located in Poznań, Poland, the country's fifth largest city with nearly 550,000 inhabitants[39], roughly 200 miles west of the Polish capital of Warsaw. Poznań Główny is an interchange station for domestic travel in Poland and international destinations in both western and eastern Europe. The station became operational in 1879 and is regarded as a landmark in the city.[40] Throughout its history, Poznań Główny has experienced various stages of reconstruction. During World War II, the station suffered major damage and was restored with classical features. During the reconstruction periods in the 1960s and 1970s, the station received more upgrades where it acquired modernist features.[41]

In November 2007, the Polish National Railways – Polskiei Koleje Panstwowe S.A. (PKPSA) made an announcement for a possible P3 project in Poznań that would include a train station, along with retail development, to be completed in time for the 2012 UEFA European Football Championships (Euro 2012).

Project Goals

The selection of Poland and Ukraine as hosts for the Euro 2012 games provided the incentive to redevelop Poznań Główny into a true multimodal facility. In April 2007, Poland and Ukraine were selected to host Euro 2012, a soccer tournament held every four years to determine the continental champion of Europe. In an effort to prepare for the events, both governments began to plan large-scale infrastructure projects and investments in the cities where the games were to be hosted. Poznań was selected as a host city with the Polish cities of Gdasnk, Warsaw and Wroclaw.[42] The redevelopment of the train station would not only improve access for the Euro 2012 tournament, it would also leverage unused land for the public private partnership arrangement and incentivize revitalization for the community.

[39] Joanna Stańczak, Agnieszka Znajewska, and Aleksandra Daniłowska, *Population in Poland. Size and Structure by Territorial Division* (Warsaw: Główny Urząd Statystyczny; GUS (Central Statistical Office), June 2014).
[40] PKP S.A. Polish National Railways - Polskie Koleje Państwowe S.A., "Poznań Central Station," 2015, http://rozklad-pkp.pl/en/terminal/poznan-glowny.
[41] Ibid.
[42] Tomasz Lisiecki, "Poznan City Center, An Integrated Transport Centre," 2013.

Figure 5: Poznań Główny (Pre-redevelopment)[43]

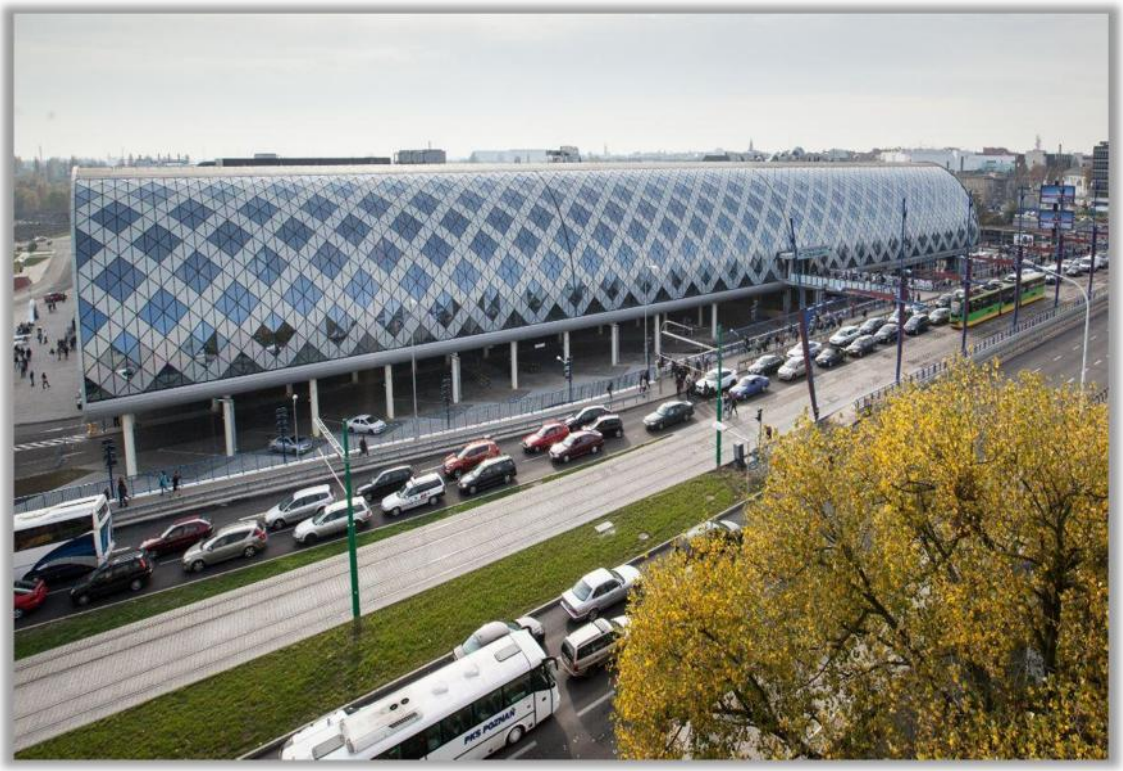

Figure 6: Poznań Główny (Post-redevelopment)[44]

[43] Ibid.

Structure

The redevelopment of Poznań Główny transformed the facility into a multimodal transportation hub. With over 6,000 personnel working on the project, the redevelopment was completed in a relatively short time in two phases. The first phase was completed after 10 months of construction. On May 29, 2012, the new Poznań Główny railway station was inaugurated by Poland's President Bronisław Komorowski and featured a new station building located above the railway tracks accompanied by retail space.[45] Apart from Warszawa Centralna, the primary railway station for Warsaw, Poznań Główny is the only Polish rail station built over platforms.[46] The station serves PKP intercity rail system that operates daily trains domestically and internationally. The Poznań Fast Tram, the only grade-separated light rail line that operates in the city, connects the train station with Poznań's northern suburbs in 10-20 minutes.

The second phase would integrate the new station building together with a retail and shopping center to complete the Poznań City Center project. The grand opening of Poznań City Center occurred on October 25, 2013. The redevelopment has generated numerous economic, environmental, and societal benefits for the city. The improved transportation infrastructure has been a catalyst for new business and housing opportunities.

Exactly six months after inauguration of the project, the building suffered a structural setback. A large section (330 m^2 / 3,550 ft^2) of suspended ceiling on the second floor of Poznań City Center collapsed. The building was shut down for two weeks due to the serious nature of the incident.[47] TriGranit received severe criticism due to the amount of negative publicity that was generated. According to Cichla, "Frustrated shoppers vented their frustration on the Internet and in the local media." Retail owners and locals were also skeptical of the issue since the building was sold to another owner one month prior to the ceiling collapsing.[48]

---

[44] Ibid.
[45] Europe Real Estate REP, "Poznan City Center," n.d., http://europe-re.com/poznan-city-center/41682; Ernő Koncz, "New Poznań Główny Train Station, Developed by TriGranit Holding Ltd and Europa Fund III, Officially Opened by President Bronisław Komorowski of Poland" (TriGranit Development Corporation, May 29, 2012), http://www.europacapital.com/europa/en/news/press-releases?id=84.
[46] Polish National Railways - Polskie Koleje Państwowe S.A., "Poznań Central Station."
[47] Aneta Cichla, "When It All Caves in Crisis Situations in Shopping Centres: Case Study of Poznań City Center," *Eurobuild CEE*, June 2014, http://english.eurobuildcee.com/?page=edition&id=1279&id_article=2647.
[48] Ibid.

Ownership

The station's redevelopment team designated to execute the project would be selected based on the following three criteria:[49]

1. Experience on completing such projects
2. Credibility of the proposed business model
3. Estimated potential returns

In October 2009, a separate PKP selection committee formed that granted TriGranit, a Budapest-based property developer specializing in large-scale retail and office developments, negotiating exclusivity in October 2009. In June 2010 the joint venture agreement was signed. The ownership for Poznań Główny Railway Station consists of two major players, Polish National Railways and Trigranit Development Corporation. (PKPSA) owns 257 acres of land (104 hectares). A large part of this land is unused and also considered valuable urban space. PKPSA is the dominant railway operator in Poland, maintaining full responsibility for management of all of the other PKP Group companies, and managing 14,558 miles of railway tracks. They are in approximately €1.1 billion ($1.18 billion) in debt due to inefficiencies, lack of strategic management, and lingering results from the socialist period. Employment numbers in 2010 were of 90,000 in comparison to 152,000 in 2001.[50]

TriGranit has had stake in all of the three agreements signed for the project (investment agreement, train station development agreement, and project management agreement). Responsibilities have included securing equity and debt financing, leasing and selling the project, full cost overrun risk, financing and building the train via the joint venture at a lump sum (subject to penalties), and general project management for the project.[51]

PKPSA's responsibilities included contributing the land to the joint venture, once TriGranit fulfilled key criteria, and repaying costs of train station to join venture from the revenues generated by its operation.

[49] Lisiecki, "Poznan City Center, An Integrated Transport Centre."
[50] Ibid.
[51] Ibid.

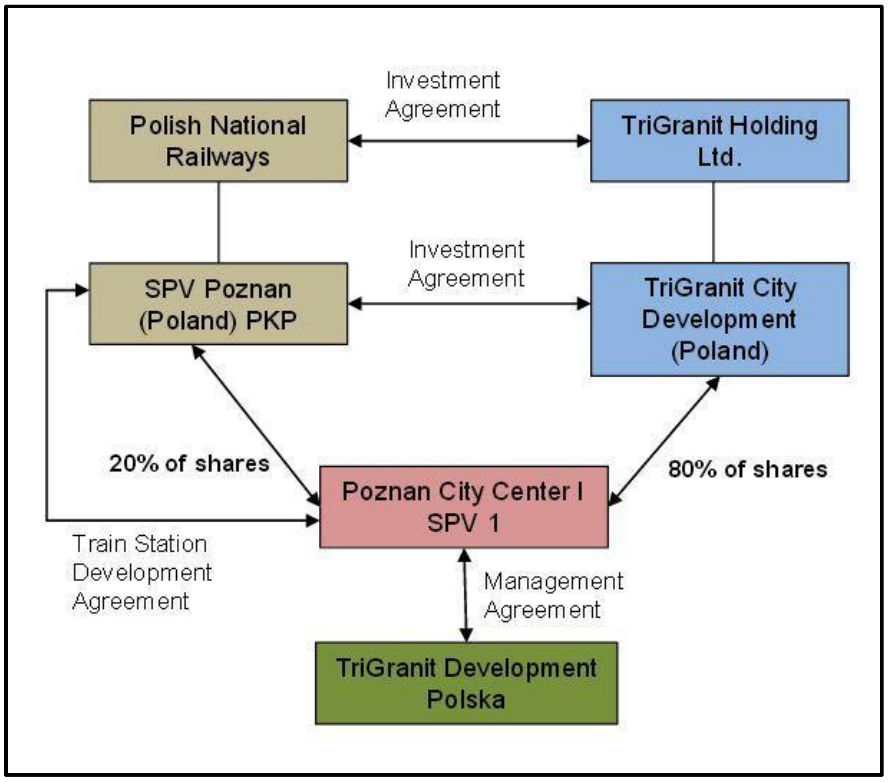

Figure 7: Corporate Structure, Poznań Główny Railway Station Development Project[52]

Financials

The budget consisted of accounting for land cost (€15 million; $16. 1 million USD), hard cost (€109 million; $117.3 million USD), soft cost (€40 million; $43 million USD) and financing cost (€9 million; $9.7 million USD), totaling €173 million ($186 million USD). The sources of funding were to come from PKP – land contribution (€15 million; $16.1 million USD), TriGranit (€49 million; $52.7 million USD), and debt financing (€109 million; $117.3 million USD), totaling €173 million ($186 million USD).[53]

The debt financing presented some problems initially, including the withdrawal of a large German lender in December 2010. In order to accommodate the unexpected loss, a consortium of five banks was put together along with a development and investment loan facility, signed in December 2011. The consortium included facility agent BZ WBK (Santander), Nordea, Raiffaisen, BRE Bank, and HypoNOE, for a total of €109 million ($117.3 million USD) in financing.[54]

[52] Ibid.
[53] Ibid.
[54] Ibid.

Key decisions were made unanimously, including the finance agreement, architect's agreement, main construction contracts, project exit, and changes to the business plan. Other decisions required the involvement and participation of public figures, such as decisions pertaining to the train station requiring approval from the Minister of Transport. The size and complexity of the project made PKP's assistance critical to the success of the project.[55]

Benefits

The redevelopment of the rail station has attracted a lot of business into the area. Poznań City Center incorporates 58,000 square meters (624,000 square feet) of leasable space as well as 230 shops and 35 bars, restaurants, and cafes.[56] Altogether, it is estimated that 2,500 jobs have been created for the local economy.[57] New residential districts are also being constructed as a part of the redevelopment process, which is bringing in more revenue into the city while also improving on the housing stock.

From a community perspective, users of the railway station are benefitting from several new features. Poznań City Center incorporates a new station building as well as a new bus station with 19 bus bays. The station building also contains new ticketing and waiting areas which provide a sense of place, safety and security for individuals arriving at or departing from the station. In addition, a 1,500-space park and ride facility was constructed for private commuters.[58]

One key aspect of the project was the incorporation of several sustainability components. The redevelopment took into consideration the need to provide better access for pedestrians and bicyclists. A new road design structure featuring three kilometers (1.85 miles) of bicycle lanes was built on-site, along with an area for secure bicycle parking. In addition, new rain water infrastructure was also constructed to offset some water and discharge runoff.[59]

[55] Ibid.
[56] TriGranit Development Corporation, "Poznan City Center, Poznan A New Heart of the City," 2014, http://www.trigranit.com/portfolio/103-poznan-city-center-poznan.
[57] Ernő Koncz, "'The Award Winning Poznan City Center Opens Its Doors'" (TriGranit Development Corporation, October 25, 2013), http://trigranit.home.pl/home/www/tr//en/download/dlaprasy/Poznan-City-Center-press%20release.pdf.
[58] Lisiecki, "Poznan City Center, An Integrated Transport Centre."
[59] TriGranit Development Corporation, "Poznan City Center, Poznan A New Heart of the City."

Figure 8: The new station provides better transfer between multiple modes of transportation and incorporates many mitigation/runoff features[60]

[60] Lisiecki, "Poznan City Center, An Integrated Transport Centre."

CASE STUDY: Southern Cross Railway Station, Melbourne, Australia

Background

What is now Southern Cross Railway Station first came into existence in 1859 as "Batman's Hill" station. The station was first constructed to serve Melbourne at the beginning of the Victorian Gold Rush, a two-decade period that transformed the small settlement on Australia's south east coast into one of the largest and richest cities in the world by the late 1800s. Renamed "Spencer Street Station," the makeshift outdoor platforms became the terminus of several different early rail lines into the city. In the 1880s, Melbourne became the focus of new national plans to link the Colony of Australia by rail. Spencer Street Station would become the starting point for this national rail network as well as the hub of Melbourne's regional multimodal transportation system by the turn of the century.[61]

Spencer Street Station grew with the city around it, which developed into an urban metropolis of 3 million people by the 1990s.[62] The station underwent a major redevelopment between 1960 and 1962 to integrate a new standard gauge direct connection to Sydney. With this direct connection several improvements followed, including new tracks, boarding platforms, and a station building. The station's new facilities were designed to accommodate the future City Loop, the city's first subway rail, which was first planned in 1929, but not fully constructed until 1985.[63] The completion of the City Loop relieved some of the heavy traffic that crowded Spencer Street Station by constructing three new underground stations and looping many inbound suburban trains around the central business district, similar to Chicago's elevated loop system. Spencer Street Station, however, remained the main terminus station for intercity trains from Sydney, Adelaide and Canberra, as well as regional trains, along with some commuter rail lines. The need to accommodate future growth at Southern Cross Station therefore remained a topic of debate into the late 1990s.

Project Goals

Urban revitalization for Melbourne was a key focus of Victoria's Premier, Jeff Kennett, who publicized several high profile capital improvement projects in the city, leading up to a bid for the 2006 Commonwealth Games in 1997. The Commonwealth Games are a major international sporting competition featuring 71 countries competing in traditional British games such as netball, badminton, and lawn bowl. Similar to the format of the Olympic Games, the

[61] Public Transport Victoria, "Early History of Public Transport," 2013, http://ptv.vic.gov.au/about-ptv/victoria-s-pt-network/history/early-history-of-public-transport/.
[62] Australian Bureau of Statistics, "Population Growth: Capital City Growth and Development," June 24, 1996, http://www.abs.gov.au/AUSSTATS/abs@.nsf/2f762f95845417aeca25706c00834efa/924739f180990e34ca2570ec0073cdf7!OpenDocument.
[63] Simon Reeves, David Wixted, and Suzanne Zahra, *Survey of Post-War Built Heritage in Victoria: Stage One*, 2008, http://www.dtpli.vic.gov.au/__data/assets/pdf_file/0010/219268/Post_War_Study_volume_1.pdf.

Commonwealth Games are held once every four years in a different host city. The host city is charged with building accommodations and infrastructure for up to 4,000 competing athletes and 100,000 international visitors for the 10-12 day period.

One of the largest projects associated with the bid was a $2 billion ($1.52 billion USD) plan to redevelop the blighted Docklands waterfront behind Spencer Street Station. The Docklands redevelopment plan, called "Melbourne's Millennium Mark," became controversial because of its developer focus and lack of community engagement.[64] While the Plan called for creating a fully redesigned urban waterfront, building several high rise office and residential buildings, and creating a walkable, pedestrian environment, the only major project realized by the end of the decade was Victoria Stadium (now known by its sponsor name Etihad Stadium). Located directly behind Spencer Street Station, the stadium then became the focus of the Commonwealth Games bid, which was awarded to Melbourne after the two other bidding cities dropped out in 1998. With an unprecedented influx of tourists expected to attend the Games, the already overcrowded Spencer Street Station received a new and urgent focus for redevelopment.

In addition to creating new capacity to handle the rush of spectators attending the Commonwealth Games, the redevelopment project was advertised as the remaking of the "integral hub of Melbourne's public transport system." The high hopes for the project in the early part of the decade are evident in media sources as officials claimed that the new station would "transform accessibility for travelers, provide a link to the emerging Docklands, and regenerate the west end of Melbourne."[65]

While the Docklands district had hosted intense industrial and shipping activity during World War II, the development of new ports closer to major shipping channels south of city in the 1970s left behind a vacant and blighted waterfront just west of the central business district. Plans to redevelop the Docklands were considered as early as the 1980s as part of a bid to host the 1996 Summer Olympic Games.[66] While the Olympics were awarded to Atlanta instead of Melbourne that year, the Docklands plan generated interest and support in remaking the station from a rail line divider of the city into a modern hub that would serve as a connector between Melbourne's Central Business District and a new urban waterfront, mixed-use development district.

[64] Kim Dovey, *Fluid City: Transforming Melbourne's Urban Waterfront*, 1 edition (Sydney, NSW, Australia : Abingdon, Oxfordshire ; New York: Routledge, 2005).
[65] State of Victoria, "Design Panel Appointed for Spencer Street Station Redevelopment," *Major Projects Victoria*, April 2, 2002, http://www.majorprojects.vic.gov.au/design-panel-appointed-for-spencer-street-station-redevelopment/.
[66] Dovey, *Fluid City*.

Structure

Southern Cross Station now spans 22 standard tracks and 16 platforms. It is the main terminus station for all Australian national rail lines to Melbourne. It is also a station on the City Loop subway and a main station for several regional and commuter rail lines. There are bus, taxi, and street tram connections as well. The station serves 1,000 trains a day and an average of 35 million passengers each year. While the redevelopment of the station did not meet all of the hopes and promises of project officials, the project arguably served its greater purpose by becoming the impetus that finally drove investment and development to the blighted Docklands section of Melbourne. With better transit access, increased pedestrian traffic, and the commercial and retail investment that the P3 project brought, urban development has taken off around Southern Cross Station in the last decade.

Figure 9: Southern Cross Station[67]

[67] This photo is licensed under Creative Commons and is free to use and share with attribution. Photo Credit: Adam Selwood from Melbourne, Australia, June 28, 2008. Accessed from: http://commons.wikimedia.org/wiki/File:Southern_Cross_Station_2008.jpg

Ownership

The Southern Cross P3 deal included a partnership structure which created a private consortium of major foreign and domestic corporations contributing certain areas of expertise. The consortium is called Civic Nexus and includes Leighton Contractors (Australia, engineering/construction, ABN Amro (Netherlands, finance), Nicholas Grimshaw and Partners (UK, architecture) and Honeywell (US, systems/engineering).

Civic Nexus designed, financed, and built the station, and is now responsible for the operations and maintenance for the full lease term of 30 years. At the end of the lease, the contract can be renegotiated and renewed. If either party chooses not to renew the contract, the station will be returned to the Victoria government in working order.[68]

The redevelopment of Spencer Street Station into "Southern Cross Station" was designed as a P3 financing structure in an attempt to deliver the redevelopment in a more efficient and cost-effective way due to the time and financial constraints associated with the deadline to complete the project prior to the 2006 Commonwealth Games.

An iconic undulating rooftop structure covering the open platforms was proposed by architect Nicolas Grimshaw (whose design firm would become part of the Civic Nexus consortium which was awarded the P3 contract in 2002). The new expanded station would offer a grand entrance to the City of Melbourne for visitors to the games, while functioning as the city's main public transportation hub for years to come. Unlike traditional design-build contracts used to deliver major infrastructure projects, this P3 deal had a design-build-finance-operate-maintain (DBFOM) contract that almost completely handed the reins over to the private sector.

The Southern Cross P3 operates under an availability payment arrangement. This means that the State of Victoria will pay Civic Nexus $30 million ($22.8 million USD) per year for the 30 years so long as Civic Nexus is operating and maintaining the station in good condition.[69] The payment is only made if the station is available for use, and penalties can be enforced if the station does not meet certain performance measures including track conditions, cleanliness of the station, and HVAC system functionality. As the P3 deal was intended to realize cost efficiencies, a P3 project financial analysis was completed to compare the incoming private bids with the cost of the public sector conducting the entire DBFOM functions of the project.

[68] Victorian Auditor General's Office, *Management of the Southern Cross PPP*, November 21, 2007, http://www.audit.vic.gov.au/publications/2007/20071121-Management-of-Southern-Cross-Station.pdf.
[69] DesignBuild-Network, "Southern Cross Station, Melbourne, Victoria, Australia," 2015, http://www.designbuild-network.com/projects/southerncrossstation/.

The Value for Money Analysis determines the difference between the private sector's bid based on cost-efficiencies and risk valuations of the private sector, and the Net Present Value (NPV) of the asset to the State (the Public Sector Comparator). In this case, the State of Victoria Public Sector Comparator figure for the project (with all risk and liabilities incurred by the State), $228 million ($173 million USD) was more than the Civic Nexus Consortium bid, allowing an advantageous deal to go forward in which the State gets a brand new station, at a (theoretically) reduced overall cost, with an annual payment that is manageable.[70] The total cost of construction, an estimated $700 million ($532 million USD) would be forwarded by the financial backers of the consortium. The consortium hoped that this upfront cost would be made back and turned into a profit through collecting annual availability payments and capitalizing on the retail and commercial opportunities of the station.[71]

Financials

Australia's economic policies in 1990s followed a trend of increasing government partnership with the private sector modeled after Margaret Thatcher's privatization program in the UK. The privatization of Melbourne commuter rail lines was one among many privatization initiatives of newly elected Victoria Premier Jeff Kennett in 1992. As part of the Infrastructure Investment Program for Victoria, designed to solve the State's budget woes through privatizing government services, Kennett transferred $33 billion ($28.08 billion USD) worth of public assets, including ports, utilities, hospitals, and prisons, over to private sector ownership during his seven years in office.[72]

However, Kennett faced a challenge with public transport. The Public Transport Corporation (PTC), which was the regional public authority charged with operating the commuter train system (as well as Melbourne's street tram system and the Victoria 'V/Line' regional trains), operated at a steep loss, and had to be subsidized heavily by the state government. Kennett started out by cutting PTC's expenses deeply, removing all staff from stations, conductors from trains and trams, and slashing operating costs by $250 million ($190 million USD) per year.[73]

Following the defunding, Kennett broke up the PTC into five separate corporate entities: two operating separate commuter rail lines, two operating a divided street tram system, and one for the State's regional train lines.[74] The government then began the process of transferring these systems to private operation through the experimental use of P3. The idea for breaking up the

[70] Ian Davidoff and Jose Gomez-Ibanez, *Partnerships Victoria: The Public Sector Comparator*, October 4, 2006.
[71] DesignBuild-Network, "Southern Cross Station, Melbourne, Victoria, Australia."
[72] Davidoff and Gomez-Ibanez, *Partnerships Victoria: The Public Sector Comparator*.
[73] Department of Infrastructure, State of Victoria, *Public Transport Partnerships: An Overview of Passenger Rail Franchising in Victoria* (Melbourne: Victorian Government, March 2005), http://ptv.vic.gov.au/assets/RailFranchsingOverview.pdf.
[74] Ibid.

Victoria public transportation system into different entities was to encourage competition among the new private operators, in order to drive investment and enhance service.

In this case, each contract to lease and operate the rail/tram lines was for 10-15 years, and although the main infrastructure was already built and existing, the P3 deal required the franchisee to procure about $1.1 billion ($836 million USD) worth of new rolling stock and infrastructure upgrades. The government provided base contract payments that were locked in as availability payments upfront, as well as additional financial incentives for exceeding minimum service standards for punctuality and reliability. The fares from the multimodal ticketing system went into a common pool to be divided between operators based on system usage.[75] Despite high hopes, just over three years into the new contracts, three of the six operators fell into insolvency and financial crisis, forcing the government to the renegotiation table. New contracts were eventually drawn up to resolve the crisis, and continue private operation of the system at a higher cost to the government.

Benefits

Population statistics from the Docklands neighborhood highlight the rapid development of the area. In 2001, only 787 residents lived in the isolated Docklands neighborhood west of Spencer Street Station. By 2011, this emerging district was home to 7,418, a ninefold increase in 10 years. In the same ten years, the median weekly household income rose from the $1,000-$1,199 category to $1,900 in 2011. ($760-911 to $1,444 USD) (The 2001 Australian Census of Population and Housing reported median income data in a range for small statistical areas.) Also the percentage of employed persons in the neighborhood who used public transit to commute to work increased from 7 percent to 25 percent. The population increases are skewed toward younger families as well, with the biggest population increases present in both the 25-34 age group and the 0-4 age group.

Even those who promoted the Southern Cross station redevelopment acknowledge that the project came in over budget and behind schedule. However, the effect of the major investment on the economic and community growth of a blighted area of Melbourne should not be underestimated. Today, the transportation plan for the Docklands expects continued growth in the neighborhood, stating, "Whilst Docklands has experienced some challenges as it has developed over time, the early provision of transport infrastructure to service the precinct remains a model for other urban renewal projects to follow."[76] The Docklands neighborhood is

[75] Ibid.
[76] Places Victoria, *Access Docklands: A Strategy for the Docklands Transport Network*, April 2013, http://www.places.vic.gov.au/__data/assets/file/0007/9178/Access_Docklands_Final_April2013,0.pdf.

still growing today, and the district is expected to be fully developed by 2025, with 20,000 residents and $17.5 billion ($13.3 billion USD) in total private investment.[77]

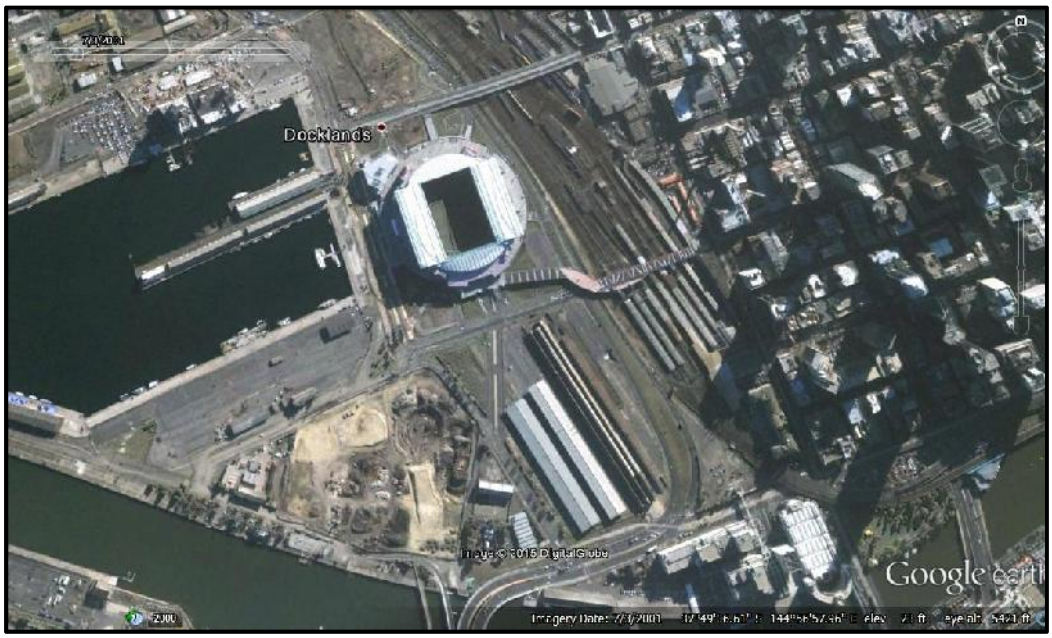

Figure 10: 2001 (Before project)[78]

Figure 11: (After project)[79]

[77] Places Victoria, "Docklands," April 2015, http://www.places.vic.gov.au/precincts-and-development/docklands.
[78] "Southern Cross Station, Melbourne, Victoria, Australia," *Design Build Network*, accessed April 15, 2015, http://www.designbuild-network.com/projects/southerncrossstation/.
[79] Google Earth, "Southern Cross," Image (Melbourne, Australia: DigitalGlobe, July 3, 2001).

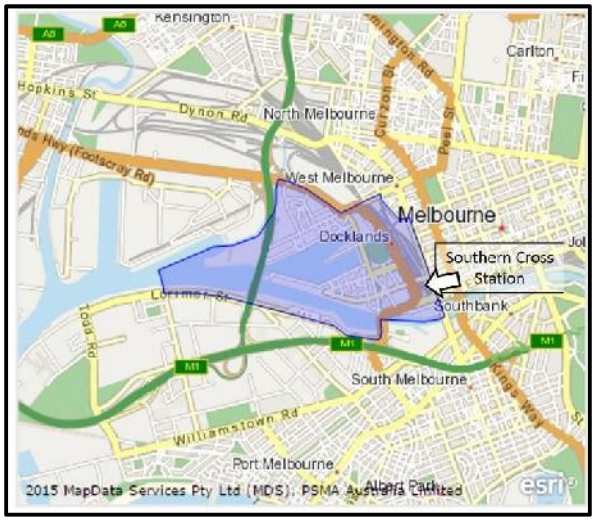

Figure 12: Statistical area for population analysis[80]

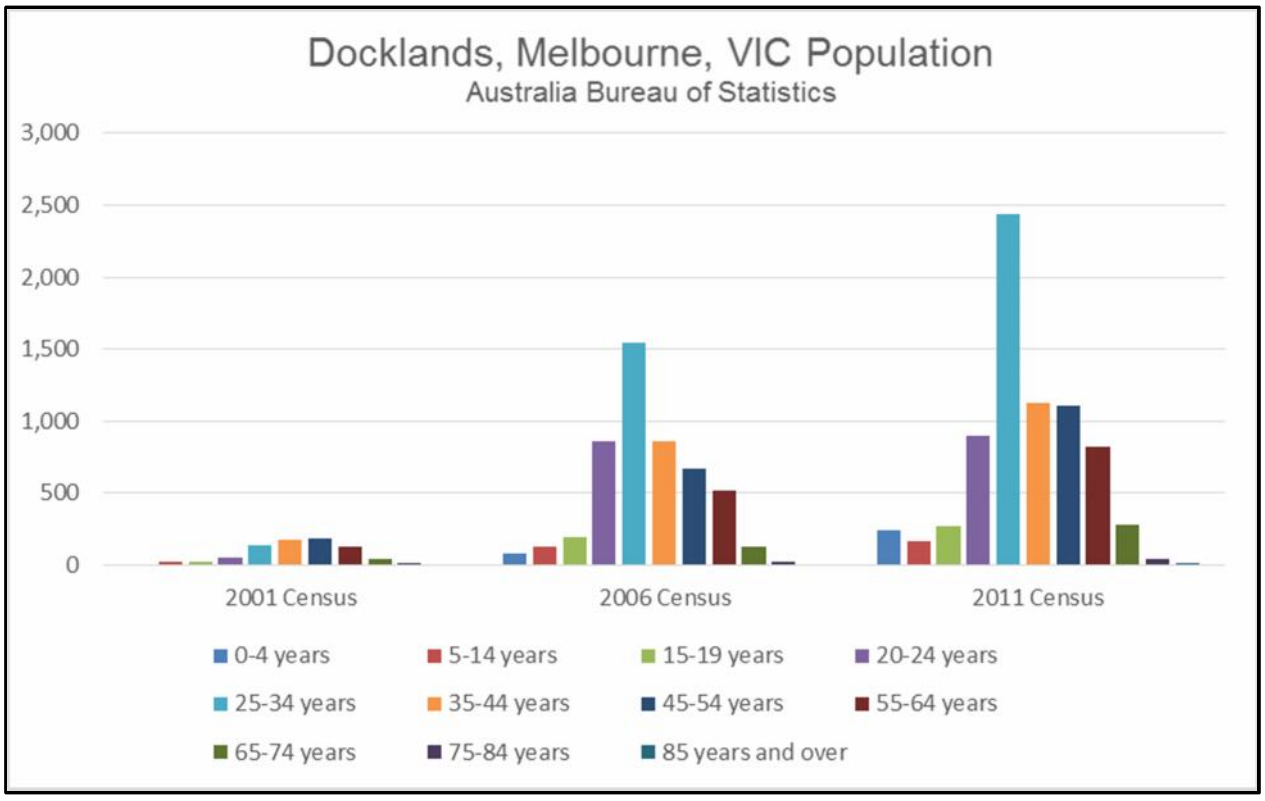

Figure 13: Population growth since 2001[81]

[80] City of Melbourne Places Victoria, "Access Docklands: A Strategy for the Docklands Transport Network," March 2013, http://www.places.vic.gov.au/__data/assets/file/0007/9178/Access_Docklands_Final_April2013,0.pdf.
[81] Australian Bureau of Statistics, "2011 Census Community Profiles," n.d., http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/SSC20402.

Challenges & Lessons Learned

The Atocha and St. Pancras projects are great examples of how government support for these projects was enhanced by broader national government policies. In both instances the rail station redevelopment projects were framed within a broader national objective that bolstered the strategic and economic value of the projects.

The Atocha project expanded the capacity of the largest rail station in Madrid and a key hub for the government's stated goal to dramatically increase access to high-speed rail service. The Spanish government was able to expand its domestic goal by tying it to the EU's goal to increase EU interconnectivity with high speed rail service. As a result, the EU actually helped in financing the project.

The vision for Atocha was not as grand as the vision at Union Station. Atocha's redevelopment was expected in order to accommodate the high-speed rail industry in Spain. There appears to have been little focus on redeveloping the surrounding area for business. Atocha was the smaller part of a larger plan, and had less of a chance to not meet expectations as a result. The Union Station redevelopment appears to be designed and backed locally by parties who have a stake in Union Station and its surrounding land. Atocha's redevelopment benefits greatly from the participation of the Spanish government. As a result, the vision and expectations became a reality.

The St. Pancras station redevelopment project was designated as the main hub for HS1. Redevelopment projects around the station were considered a major component of the national and local government's long-term economic plans for the region.

The Poznań Główny and Southern Cross Station redevelopment projects provide examples of linking infrastructure projects to popular social or cultural events. The popularity among the public creates a receptive political environment for infrastructure improvements needed to accommodate event participants. The combination of national pride, promised economic benefits and political gains enhance cooperation and likelihood of success.

For instance, when the announcement came in 2007 that Poland and the Ukraine had been selected to host Euro 2012, efforts began immediately at the national and local level to prepare city facilities to host the influx of foreign visitors. The Poznań Główny redevelopment project was considered a strategic improvement to prepare for the event. The popularity of the event provided the political cover and incentive for national and local governments to cooperate to ensure that the project was completed on time. The popularity that came with hosting the games ensured that no one in government wanted to be held responsible for delays resulting in the rail station project not being completed on time.

In the push to complete the station by the Euro 2012 deadline, Poznań Główny faced a number of challenges. Some of the challenges included a lack of governmental support, bottlenecks and red tape, but there was also a critical structural issue that occurred after project completion.

The Southern Cross project is another example in which a major project was catalyzed around an upcoming event. Planning to upgrade the Southern Cross station began in the late 1990s. Once Melbourne had been awarded the Commonwealth Games for 2006, completing the project prior to the games became a significant focus. The popularity of the games, the desire to maximize the economic value of hosting the games and the political fallout if the project was mishandled helped to focus government agencies and private-sector partners to ensure that the project was completed on time.

Southern Cross is a great example of what happens when support from a local entity wanes. The state required the redevelopment consortium to keep the station at full operation capacity throughout the project, meaning work could only occur for three hours at night. This proved even more daunting than originally expected as construction crews struggled to move equipment in place, complete daily tasks, and leave enough time for clearing the tracks, cleaning the site, and re-electrifying the system before the morning rush.[82] Because of the dangerous work and undesirable hours, construction crews had to be paid much more than normal, often just to sit and wait.

Though there were difficulties related to the P3 and timeline pressures that resulted in the construction not being completed until after the Commonwealth Games, the event itself served as a significant catalyst to moving the project forward.

Even after the station was completed in 2006, it has suffered from design issues. Its award-winning roof caused concerns in the form of complaints from workers and passengers alike that the station is not circulating air quickly enough to prevent the buildup of train exhaust on the platforms.[83] In 2011, the state agreed to front the funding for fitting large fans onto the roof, although many believe that more needs to be done to fix the problem.[84]

In addition, the new station layout has resulted in significant inconvenience to thousands of passengers who use the station every day, and the station has been criticized in urban design circles for poor connections to secondary streets surrounding the station and awkward pedestrian junctures.[85]

---

[82] Ewin Hannan, "Nightmare on Spencer Street," *The Age*, July 17, 2004, http://www.theage.com.au/news/general/nightmare-on-spencer-street/2004/07/16/1089694560006.html.
[83] Greg Thom, "Headaches at Melbourne's Southern Cross Station," *The Herald Sun*, February 13, 2012.
[84] Clay Lucas, "Southern Cross Station to Act on Diesel Fumes," *The Age*, June 29, 2011, http://www.theage.com.au/victoria/southern-cross-station-to-act-on-diesel-fumes-20110628-1gp60.html.
[85] "Station's Curves Prove Real Head-Turner," *The Age*, July 14, 2007, http://www.theage.com.au/news/national/stations-curves-prove-real-headturner/2007/07/13/1183833774723.html?page=fullpage#contentSwap1.

Conclusion

Rail station redevelopment projects are hard to effectively develop and manage under the best of circumstances. Effective projects link successful redevelopment to strong political, cultural or economic conditions that exaggerate the value of the project in order to meet other objectives. P3s create additional incentives for projects to be completed on-time and within budget. The intertwining of rail station redevelopment to commercial development goals turns station project success into a key component of the private sector development. This intertwining of goals serves as a catalyst for various government and private sector entities to monitor and accelerate project completion.

Rail station redevelopment projects are some of the highest profile infrastructure projects. Largely funded by government revenues they involve various levels of political risk for elected officials and fiscal risk for private sector partners. Building public and government support for such projects in the development phase is a key aspect of ensuring that projects can sustain support throughout the design, contract and construction phases. The political risk of high-profile projects is amplified by the inverse of the maxim popularized by President John F. Kennedy that "victory has 100 fathers and defeat is an orphan."[86] When it comes to transportation infrastructure projects the public barely remembers or rewards leaders for successful projects, but a mere mention of the "Big Dig" in Boston or the Channel Tunnel that connects England with France is enough to send elected officials running. When the easy answer from government leaders is to oppose a project, successful project leaders manage political risks throughout the development, design and construction phases.

While differences in national governmental structures and processes exist between the case study nations and the United States, each project benefitted from strategic economic, cultural or political realities that bolstered public and government support. Valuable lessons from each provide insights regarding how to position projects to maximize political and financial support and minimize vulnerabilities. When applying these lessons, it is important to remember that current trends in U.S. national policymaking create unique challenges. As Brookings' Patrick Sabol and Robert Puentes stated: "Political dysfunction, a challenging fiscal environment, greater project complexity, and the sheer size of the need across different sectors are forcing leaders across the country to explore new ways to finance the investments and operations that will grow their economies over the next decade."[87]

[86] The American Presidency Project, "John F. Kennedy: 'The President's News Conference,'" April 21, 1961, http://www.presidency.ucsb.edu/ws/?pid=8077.
[87] Robert Puentes and Patrick Sobol, *Private Capital, Public Good: Drivers of Successful Infrastructure Public-Private Partnerships*, December 17, 2014, http://www.brookings.edu/~/media/Research/Files/Reports/2014/12/17-ppp/BMPP_PrivateCapitalPublicGood.pdf?la=en.

Major infrastructure projects that rely heavily on government funding, multi-jurisdictional permitting processes and cooperation with private-sector actors are fraught with political and structural challenges. It is not enough to have a project that meets a public need. When framing the project's benefits, it is important to demonstrate how the project fits into the political environment for each government agency involved in project financing, oversight and approval. The rail station redevelopment project case studies all benefitted from political and economic factors that amplified the value of the projects beyond the sheer analytics. Finding those strategic benefits and maximizing their value catalyzes legislative and regulatory processes and enhances the likelihood of project support. Good project political risk assessments require a strategic evaluation of the political drivers and external issues motivating each government entity involved in the process, an assessment of how the project fits within the goals and objectives of government actors and development of clear, transparent and accountable project legal frameworks and reasonable project timelines.

Major infrastructure rail projects funded primarily through government appropriations benefit from strategic management of political risks. Aligning rail station redevelopment projects with political realities amplifies the likelihood of support. Ignoring these realities leaves otherwise worthy projects vulnerable. The four case study projects all benefited from strategic political calculations that aligned the projects with popular social events or strategic political and economic realities. This amplified the value of the project beyond the calculable economic benefits and framed the projects within a broader political and economic context.

Appendix A - References

"Administrador de Infraestructuras Ferroviarias." *Wikipedia*, n.d. http://en.wikipedia.org/wiki/Administrador_de_Infraestructuras_Ferroviarias.

"Atocha Railway Station, Spain." *Railway Technology*, n.d. http://www.railway-technology.com/projects/atocharailwaystation.

"Atocha Train Station." Tourism. *Go Madrid*, 2015. http://www.gomadrid.com/transport/atocha.html.

Australian Bureau of Statistics. "2011 Census Community Profiles," n.d. http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/SSC20402.

———. "Population Growth: Capital City Growth and Development," June 24, 1996. http://www.abs.gov.au/AUSSTATS/abs@.nsf/2f762f95845417aeca25706c00834efa/924739f180990e34ca2570ec0073cdf7!OpenDocument.

"AVE (Alta Velocidad Espanola)," n.d. http://en.wikipedia.org/wiki/AVE.

"AVE High Speed Train." Railway. *Eurail*, 2015. http://www.eurail.com/trains-europe/high-speed-trains/ave.

Banister, David, and Mark Thurstain-Goodwin. "Quantification of the Non-Transport Benefits Resulting from Rail Investment." *Journal of Transport Geography* 19, no. 2 (March 2011): 212–23. doi:10.1016/j.jtrangeo.2010.05.001.

Blanco, Victor, Justo Puerto, and Ana Ramos. "Expanding the Spanish High-Speed Railway Network." *Omega* 39, no. 2 (June 11, 2010): 138–50.

"Botanical Garden Inside Atocha Train Station." Environmental/Nature. *Amusing Planet*, n.d. http://www.amusingplanet.com/2012/09/botanical-garden-inside-atocha-train.html.

Cichla, Aneta. "When It All Caves in Crisis Situations in Shopping Centres: Case Study of Poznań City Center." *Eurobuild CEE*, June 2014. http://english.eurobuildcee.com/?page=edition&id=1279&id_article=2647.

"Conexion AVE Atocha Chmartin," June 21, 2011. http://www.eib.org/projects/pipeline/2009/20090633.htm.

Davidoff, Ian, and Jose Gomez-Ibanez. *Partnerships Victoria: The Public Sector Comparator*, October 4, 2006.

Del Valle Serrano, Matilde. "Spain: European Investment Bank and Public Works Ministry Sign Agreement to Provide EUR 5 Billion for High-Speed Rail Projects." *European Investment Bank*, October 29, 2009. http://www.eib.org/infocentre/press/releases/all/2009/2009-212-espagne-la-bei-et-le-ministere-de-lequipement-signent-un-accordcadre-portant-sur-loctroi-de-5-milliards-deur-en-faveur-de-projets-du-reseau-ferroviaire-a-grande-vitesse.htm?lang=en.

Department of Infrastructure, State of Victoria. *Public Transport Partnerships: An Overview of Passenger Rail Franchising in Victoria*. Melbourne: Victorian Government, March 2005. http://ptv.vic.gov.au/assets/RailFranchsingOverview.pdf.

DesignBuild-Network. "Southern Cross Station, Melbourne, Victoria, Australia," 2015. http://www.designbuild-network.com/projects/southerncrossstation/.

Dovey, Kim. *Fluid City: Transforming Melbourne's Urban Waterfront*. 1 edition. Sydney, NSW, Australia : Abingdon, Oxfordshire ; New York: Routledge, 2005.

Easton, Mark. "A Monument to the British Craftsman." *BBC*, May 5, 2011. http://www.bbc.co.uk/blogs/legacy/thereporters/markeaston/2011/05/a_monument_to_the_british_craf.html.

"EIB and Spain Ink 5bn Funding Agreement." *Railway-Technology.com*, October 29, 2009. http://www.railway-technology.com/news/news68341.html.

Google Earth. "Southern Cross." Image. Melbourne, Australia: DigitalGlobe, July 3, 2001.

Hannan, Ewin. “Nightmare on Spencer Street.” *The Age*, July 17, 2004. http://www.theage.com.au/news/general/nightmare-on-spencer-street/2004/07/16/1089694560006.html.
Heddebaut, Odile, and Derek Palmer. “Multimodal City-Hubs and Their Impact on Local Economy and Land Use,” 2014. https://hal.archives-ouvertes.fr/hal-01073030/.
Hwang, Minhye, and Yekyeong Shin. “Comparative Study on Urban Regeneration Strategy through the Utilization of the Old Railway Station Cases.” *Advanced Science and Technology Letters* 32 (Architecture and Civil Engineering 2013) (2013): 54–57.
Koncz, Ernő. “New Poznań Główny Train Station, Developed by TriGranit Holding Ltd and Europa Fund III, Officially Opened by President Bronisław Komorowski of Poland.” TriGranit Development Corporation, May 29, 2012. http://www.europacapital.com/europa/en/news/press-releases?id=84.
———. “‘The Award Winning Poznan City Center Opens Its Doors.’” TriGranit Development Corporation, October 25, 2013. http://trigranit.home.pl/home/www/tr//en/download/dlaprasy/Poznan-City-Center-press%20release.pdf.
Lane, Thomas. “Sleeping Beauty Awakes: The St Pancras Midland Grand Hotel.” *Building*, May 22, 2009. http://www.building.co.uk/sleeping-beauty-awakes-the-st-pancras-midland-grand-hotel/3141089.article.
Lisiecki, Tomasz. “Poznan City Center, An Integrated Transport Centre.” 2013.
Lucas, Clay. “Southern Cross Station to Act on Diesel Fumes.” *The Age*, June 29, 2011. http://www.theage.com.au/victoria/southern-cross-station-to-act-on-diesel-fumes-20110628-1gp60.html.
“New Fares Boost High Speed Rail Traffic.” *Railway Gazette*, March 21, 2014. http://www.railwaygazette.com/news/passenger/single-view/view/new-fares-boost-high-speed-traffic.html.
Places Victoria. *Access Docklands: A Strategy for the Docklands Transport Network*, April 2013. http://www.places.vic.gov.au/__data/assets/file/0007/9178/Access_Docklands_Final_April2013,0.pdf.
———. “Docklands,” April 2015. http://www.places.vic.gov.au/precincts-and-development/docklands.
Places Victoria, City of Melbourne. “Access Docklands: A Strategy for the Docklands Transport Network,” March 2013. http://www.places.vic.gov.au/__data/assets/file/0007/9178/Access_Docklands_Final_April2013,0.pdf.
Polish National Railways - Polskie Koleje Państwowe S.A., PKP S.A. “Poznań Central Station,” 2015. http://rozklad-pkp.pl/en/terminal/poznan-glowny.
“Problems down the Line.” *The Economist*, January 10, 2015. http://www.economist.com/news/business/21638109-high-speed-networks-are-spreading-fast-face-rising-competition-problems-down-line.
Public Transport Victoria. “Early History of Public Transport,” 2013. http://ptv.vic.gov.au/about-ptv/victoria-s-pt-network/history/early-history-of-public-transport/.
Puente, Fernando. “Where next for Spanish High-Speed Rail?” *Www.railjournal.com*, July 15, 2013. http://www.railjournal.com/index.php/high-speed/where-next-for-spanish-high-speed-rail.html.
Puentes, Robert, and Patrick Sobol. *Private Capital, Public Good: Drivers of Successful Infrastructure Public-Private Partnerships*, December 17, 2014. http://www.brookings.edu/~/media/Research/Files/Reports/2014/12/17-ppp/BMPP_PrivateCapitalPublicGood.pdf?la=en.
“Rail Terminal Extension Opened in Spain,” December 17, 2010. http://www.railway-technology.com/news/news105359.html.

Reeves, Simon, David Wixted, and Suzanne Zahra. *Survey of Post-War Built Heritage in Victoria: Stage One*, 2008. http://www.dtpli.vic.gov.au/__data/assets/pdf_file/0010/219268/Post_War_Study_volume_1.pdf.
REP, Europe Real Estate. "Poznan City Center," n.d. http://europe-re.com/poznan-city-center/41682.
Riot, Etienne. "A European Perspective on the Planning of Major Railway Stations: Considering the Cases of St Pancras Station and Paris Gare Du Nord." *Town Planning Review* 85, no. 2 (January 1, 2014): 191–202. doi:10.3828/tpr.2014.12.
Sindle, Andy, Robert Oag, Peter Evans, and John Turzynski. "Super Subterranean Hub: Updating King's Cross St Pancras." *Proceedings of the ICE - Civil Engineering* 164, no. 2 (May 1, 2011): 73–80. doi:10.1680/cien.2011.164.2.73.
"Southern Cross Station, Melbourne, Victoria, Australia." *Design Build Network*. Accessed April 15, 2015. http://www.designbuild-network.com/projects/southerncrossstation/.
Stańczak, Joanna, Agnieszka Znajewska, and Aleksandra Daniłowska. *Population in Poland. Size and Structure by Territorial Division*. Warsaw: Główny Urząd Statystyczny; GUS (Central Statistical Office), June 2014.
State of Victoria. "Design Panel Appointed for Spencer Street Station Redevelopment." *Major Projects Victoria*, April 2, 2002. http://www.majorprojects.vic.gov.au/design-panel-appointed-for-spencer-street-station-redevelopment/.
"Station's Curves Prove Real Head-Turner." *The Age*, July 14, 2007. http://www.theage.com.au/news/national/stations-curves-prove-real-headturner/2007/07/13/1183833774723.html?page=fullpage#contentSwap1.
"St Pancras Closure Is End of Era." *BBC*, April 11, 2004, sec. London. http://news.bbc.co.uk/2/hi/uk_news/england/london/3618213.stm.
"St Pancras International." Accessed May 9, 2015. http://www.architecture.com/RIBA/Awards/RIBANationalAwards/Winners2008/London/StPancras/StPancras.aspx.
"St Pancras - the New Link to the Channel Tunnel." *BBC*, November 15, 2007, sec. 629. http://news.bbc.co.uk/2/hi/in_depth/629/629/6969116.stm.
The American Presidency Project. "John F. Kennedy: 'The President's News Conference,'" April 21, 1961. http://www.presidency.ucsb.edu/ws/?pid=8077.
"The Eight Hundred Million Pound Railway Station - BBC Two." *BBC*. Accessed May 7, 2015. http://www.bbc.co.uk/programmes/b008ct46.
Thom, Greg. "Headaches at Melbourne's Southern Cross Station." *The Herald Sun*, February 13, 2012.
TriGranit Development Corporation. "Poznan City Center, Poznan A New Heart of the City," 2014. http://www.trigranit.com/portfolio/103-poznan-city-center-poznan.
Victorian Auditor General's Office. *Management of the Southern Cross PPP*, November 21, 2007. http://www.audit.vic.gov.au/publications/2007/20071121-Management-of-Southern-Cross-Station.pdf.
Xinhua. "Big Expansion Expected for Spanish High-Speed Rail Network in 2015." *Global Times*, January 6, 2015. http://www.globaltimes.cn/content/900182.shtml.

Appendix B – Biographies

Jeffrey Belton graduated from Weber State University in 2008 with a Bachelor of Science in Automotive Technology. After graduation, he was commissioned in the United States Army as a Transportation Officer and served as a Company Commander in the Utah National Guard for two years. From 2010 to 2013, Jeffrey was assigned to US Army Headquarters in Germany as an Operation Officer. While there, he was responsible for tracking all personnel and equipment moving in and out of Europe, in support of military operations. He resigned from the Army in 2013 and moved to Virginia to pursue his Master's degree at George Mason. He currently lives in Springfield, Virginia with his wife and three children.

Jacquemiah Brannum of Upper Marlboro, Maryland decided to attend George Mason University after working in the field of transportation & logistics for over a decade. She currently works in Rail Operations at the Washington Metropolitan Area Transit Authority (WMATA). Her professional career there included working as a Station Manager for the past nine years, as a Train Operator from 2003 to 2005, and as a Bus Operator from 2001 to 2003. She has received numerous awards for her contributions while working in the Rail Operations Department. Her logistics experience was gained at the United Parcel Service (UPS). She received a Bachelor of Arts Degree in Spanish from the University of the District of Columbia.

Brittany Comer-Mathis graduated from Old Dominion University in Norfolk, Virginia with a Bachelor of Science Degree in Civil Engineering Technology. As an undergraduate, she managed the women's basketball team for three years, and served as a member of the National Society of Black Engineers. Her interests include addressing roadway safety and researching operational problems across all modes. She is currently employed by the Prince William County Department of Transportation as a Transportation Engineering Intern. She hopes to gain more experience in transportation planning & engineering control measures while at George Mason. Brittany currently resides in Woodbridge, Virginia.

Robert Devadason is an Airbus A320 Pilot for JetBlue Airways based in Boston, Massachusetts. He holds a Bachelor of Science in Aviation from Embry-Riddle Aeronautical University. After graduating, he served as an Instructor Pilot, FAA Pilot Examiner, and Assistant Chief Flight Instructor, before continuing his career at airlines, both as a First Officer and Captain. He has over of 14,000 flight hours in a variety of light and transport category aircraft, having flown to numerous airports around the world. A desire to research and implement solutions to vexing surface transportation problems, to include distracted driving and congestion mitigation, led him to George Mason University. He lives in Arlington, Virginia.

Robert Dingess is President of the Geospatial Transportation Mapping Association (GTMA). He holds a Bachelor of Science degree from Brigham Young University. After three years as a legislative aide on Capitol Hill, he became Director of Government Relations for the American Traffic Safety Services Association (ATSSA). In 2005 he started Mercer Strategic Alliance, a transportation policy consulting firm. During his time at ATSSA he worked on policy initiatives surrounding the creation of the Highway Safety Improvement Program (HISP). In his current role he leads an organization focused on the collection, visualization and application of transportation data. He lives in Stafford, Virginia.

Logan Ferree currently works as the Senior Legislative Assistant to Congressman Jared Huffman of California, handling work on both the Transportation & Infrastructure Committee and the Natural Resources Committee. His legislative portfolio includes health care, water resources, transportation, and energy. He has also provided on-air analysis for Virginia Public Radio on redistricting and the Voting Rights Act in Virginia during the 2011 redistricting process. He graduated from the College of William and Mary with a Bachelor of Arts in Government, with a minor in Anthropology. He anticipates graduating from George Mason in 2016.

Evan Gross works for the U.S. Department of Housing and Urban Development where he is currently part of a team carrying out the President's Promise Zone Initiative. The interagency initiative began in 2013 and has worked to provide targeted federal resources and coordinated assistance to development projects in underserved areas. His job involves grant reviews, data analysis, and mapping. Previously Evan worked as a Disaster Responder for the American Red Cross, serving in over a dozen local and national disasters, including Hurricane Sandy in 2012. Evan holds a Bachelor of Science degree in Urban and Regional Planning from Michigan State University. He currently resides in Arlington, Virginia.

Lindsay Hansberry works as a program analyst in Human Resource Management for the Federal Aviation Administration (FAA), having previously worked for the Department of Transportation (DOT) in the Office of the Chief Information Officer. She received her Bachelor's degree in International Business & Economics from the University of Denver. Her experience at the FAA includes Air Traffic and Technical Operations. During her time at there, she also served as a leader in workforce analytics and position management. At DOT, she gained experience in IT governance and capital planning, and oversaw annual IT investment reporting to the Office of Management & Budget. Lindsay hopes to attain a role in transportation planning.

Title page image credit: Union Station's 2nd Century." Accessed March 15th, 2015. http://www.usrcdc.com/projects/active/21st-century/.

Justin Jacobs is a Lieutenant Commander in the United States Coast Guard and has spent the majority of his career as a Safety and Security Inspector of vessels and foreign port facilities in over thirty countries. He is currently on sabbatical from the Coast Guard and is a full-time graduate student at George Mason, where he will complete his graduate degree in May of 2015. He holds a Bachelor of Science in Marine Transportation from Texas A&M University at Galveston, and a Master of Arts in Homeland Security from American Military University. He also holds a license as a 3rd Mate, Unlimited Tonnage in the Merchant Marine. He currently lives in Burke, Virginia with his wife and two sons.

Justin John is a Transportation Specialist Trainee in the Office of the Secretary of Transportation at the U.S. Department of Transportation. He holds a Bachelor of Science in Community & Regional Planning from Temple University. After graduating, Justin relocated from Philadelphia, Pennsylvania to the Washington metro area for graduate school, while interning with ITDP and the Alliance for Biking & Walking. Both internships provided him with valuable skills that assist him in his current role: supporting transportation safety research and measuring connectivity in transportation networks. The desire to understand how policy decisions affect planning at various levels of government drove his decision to attend George Mason. Justin resides in Arlington, Virginia.

Sam Lewis graduated from Elon University in 2011 with a Bachelor of Arts in Music and a minor in Business Administration. After graduating, Sam pursued his other passion for rail transportation and went to work for Pan Am Railways, a regional freight railroad outside of Boston, Massachusetts. While employed at Pan Am Railways, he worked roles in both the Marketing and Operations departments. In 2013 he moved to Virginia to pursue his Master's degree at George Mason, in order to further advance his transportation career. He anticipates graduating in May of 2015. He currently lives in Arlington, Virginia with his fiancée and two cats.

Ister Morales is employed as a Transportation Engineer for Dewberry LLC in Fairfax, Virginia. She holds a Bachelor of Science in Civil, Environmental, and Infrastructure Engineering from George Mason University. After graduating, she worked as a Field Engineer for the I-495 Express Lanes project in Virginia, and the first phase of the Dulles Metrorail Project Silver Line. Her experience consists of roadway/highway horizontal and vertical design, drainage, utility relocations, traffic management plans, project constructability, and 3D modeling of proposed design. Her interests include the different aspects and phases of transportation planning, policies affecting the transportation system and the future of transportation. She lives in Vienna, Virginia.

Allison Redmon is a Transportation Researcher at the Japan International Transport Institute (JITI). Previously she served as the Communications Director at freight rail advocacy organization GoRail, and as the Senior Content Developer/Strategist for Airlines Reporting Corporation (ARC), the financial clearinghouse between travel agencies and air carriers. Prior to cutting her communications teeth in various other roles in the software sector, Allison worked for the airlines for several years as both a Flight Attendant and a Station Agent. She received a Bachelor's degree in Journalism from the University of Texas at Arlington. She currently resides in Alexandria, Virginia.