

Conserving the NZASM: Latent opportunities through heritage-led regeneration

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In 1887 the Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM), a private Dutch enterprise, was founded with the purpose of building the Delgoa Bay Railway from Mozambique to Pretoria. Structures built by NZASM constitute an important part of the founding history of a number of towns across South Africa. Today, the extant legacy of the NZASM finds itself forgotten and neglected. The group of heritage houses along Tulleken and Rider Haggard Streets in the NZASM precinct east of Pretoria Train Station, Pretoria, are just one example of this. Due to the pressures of densification their future is at risk. The goal of this study is to determine a heritage-led regeneration strategy for their preservation. Three objectives are met. The first objective is to generate a theoretical framework which includes theories of heritage and adaptive reuse, resilient and sustainable community development, and heritage tourism. The second objective is to establish the heritage value and cultural significance of the identified houses as examples of NZASM house types B and C. The third and final objective is to formulate a heritage-led regeneration strategy from the theoretical framework and the heritage and cultural significance of the houses. The research was conducted following a multi-method approach with the focus on interpretation and meaning of the primary source in its context. The heritage value and cultural significance of the heritage houses was established. It was found that the theories investigated for the formulation of the theoretical framework are mutually supportive. A sustainable and resilient community will protect the heritage of the built environment, which in turn generates a sustainable tourist attraction. A full sustainable cycle is created through the adaptive reuse of the heritage houses, consequently ensuring the preservation of precious heritage fabric, a resilient and sustainable community, and heritage tourism.

Keywords: NZASM, heritage-led regeneration, adaptive reuse, resilience and sustainability, heritage tourism

Bewaring van die NZASM:

Latente geleenthede deur erfinisgesentreerde vernuwing

In 1887 is die Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM), 'n private Nederlandse onderneming, gestig met die doel om die Delgoabaai-spoorweg van Mosambiek na Pretoria te bou. Die strukture wat deur NZASM gebou is vorm 'n belangrike deel van die stigtingsgeskiedenis van 'n aantal dorpe in Suid Afrika. Vandag is die bestaande nalatenskap van die NZASM egter verwaarloos en vergete. 'n Voorbeeld van hierdie verwaarloosing is die groep erfenishuise in Tulleken- en Rider Haggardstraat in die NZASM-distrik oos van Pretoria Treinstasie, Pretoria. As gevolg van verdigting is hierdie huise in gevaar. Die doel van hierdie studie is om 'n erfenisgeleide herlewingsstrategie vir die behoud van die erfenishuise te bepaal. Drie doelwitte word bereik. Eerstens word 'n teoretiese raamwerk geskep uit teorieë van erfenis en aanpasbare hergebruik, veerkragtige en volhoubare gemeenskapsontwikkeling, en erfenistoerisme. Tweedens word die erfeniswaarde en kulturele belang van die geïdentifiseerde huise as voorbeelde van NZASM huistipes B en C vasgestel. Derdens word 'n erfenisgeleide herlewingsstrategie geformuleer vanuit die teoretiese raamwerk en die kulturele belang van die huise. Die navorsing is uitgevoer volgens 'n multi-metode benadering met die fokus op die interpretasie en betekenis van die primêre bronne in konteks. Die erfeniswaarde en kulturele belang van die erfenishuise word vasgestel. Daar is bevind dat die teorieë wat ondersoek word vir die formulering van die teoretiese raamwerk mekaar ondersteun. 'n Volhoubare en veerkragtige gemeenskap sal die erfenis van die beboude omgewing beskerm, en dit skep weer 'n volhoubare toeriste-aantreklikheid. 'n Volledige volhoubare siklus word

us geskep deur die aanpasbare hergebruik van die erfenishuise. Gevolglik sal dit die behoud van 'n kosbare erfenisskat, 'n volhoubare gemeenskap en erfenistoerisme verseker.

Sleutelwoorde: NZASM, erfenisgeleide herlewing, aanpasbare hergebruik, veerkragtigheid en volhoubaarheid, erfenistoerisme

One of the unappreciated architectural legacies in Pretoria are the structures built by the Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM) about a century ago. These structures shaped Pretoria and several other towns in South Africa. The history of the railway is little known today, and the few remaining buildings are in a state of deterioration. The number of single-family residences remaining in the NZASM heritage precinct, to the immediate east of the Pretoria Train Station, has decreased in recent years. This is due to pressures of the Tshwane Compaction and Densification Strategy (2005) and the addition of high-rise apartment blocks positioned between the houses, which rendered their continued existence precarious. A fragmented urban environment has resulted, which is further exacerbated by the discrepancy in the scale and density of the built structures.

Pretoria, South Africa's capital city, contains many historical sites...These often unappreciated places narrate the city's historical...significance. They contain an architectural legacy that reflects the broader history of South Africa. They also expose the conservation challenges that seem to keep the country's heritage sites suspended between care and neglect (Swart 2020).

Since 1994, the community in the NZASM precinct has developed into a diverse mix of residents in terms of age, nationality, language, and culture. The few remaining houses have been altered in varying degrees to suit the needs of their occupants with little to no regard to their heritage value. The general demise of the area can be related to the perception that railway residences are low cost housing and located on an undesirable side of the railway tracks. All memory has been lost of a time when being employed and housed by the railway company was a desirable and prestigious position in South Africa. Without a regeneration strategy, the future of these remaining heritage structures is at risk (Le Roux 1990: 162).

This article is concerned with the heritage houses along Tulleken and Rider Haggard Streets in the NZASM precinct immediately east of Pretoria Train Station. The article seeks to assess these houses and establish them as NZASM structures, thereby affirming their heritage value and cultural significance. A theoretical framework, distilled from theories of adaptive reuse of heritage buildings, resilient and sustainable community development, heritage tourism, and the aforementioned heritage assessment is synthesised into a heritage-led regeneration strategy that can be used to make their preservation possible.

In this endeavour three objectives are set. The first is to, generate a theoretical framework from theories of heritage and adaptive reuse, resilient and sustainable community development, and heritage tourism, which can be synthesised together with the established heritage significance of the houses into a heritage-led regeneration strategy. The second objective is to establish, through documentation and assessment, heritage value and cultural significance, related to the NZASM architectural legacy, of numbers 15, 17, and 19, Tulleken Street, as examples of NZASM house types B and C. The third and final objective is to formulate a heritage-led cultural regeneration strategy that may be applied in an endeavour to preserve the identified heritage structures and others like them in the precinct.

Significance

Houses and other structures built by NZASM constitute an important part of the founding history of Pretoria and several other towns in South Africa. Recent scholarship and publications on architecture by NZASM underscores the relevance and importance of research and initiatives towards the preservation of extant NZASM structures. Numbers 15, 17, and 19, Tulleken Street, were documented and assessed. The heritage value and cultural significance of the documented houses, and by implication the other heritage houses in Tulleken and Rider Haggard Streets, was established and a statement of cultural significance formulated. In an endeavour to preserve the heritage houses, a heritage-led regeneration strategy was synthesised from the theoretical framework and statement of significance. The regeneration strategy involves the introduction of heritage tourism while simultaneously contributing to the social sustainability of the community, provides an opportunity to conserve the heritage value, and celebrates the cultural identity of the houses and diverse resident community.

Methodology

Working within a qualitative methodology, the research is conducted according to a multi-method approach with the focus on interpreting the collected data in the context in which it is used. A directed review of relevant published works on theories of adaptive reuse of heritage buildings, resilient and sustainable communities, and heritage tourism is conducted. The review is written in a narrative style and endeavours to establish a sound theoretical foundation to the problem. In addition, the review serves to inform a strategy for the preservation of the identified heritage structures, along with the documentation and analysis of these structures.

The heritage of the area was tracked through the study of historical maps and photographs obtained from the University of Pretoria Library's Special Collection. Multiple mapping exercises were conducted of the area surrounding the identified heritage structures. These included the mapping of building typologies, public amenities, transport, pedestrian movement, and the immediate area's physical qualities. The identified houses were documented using a combination of measuring-up, photographic, and journal-drawing observation and assessed from the data gathered during site visits. The heritage features and physical condition of the houses were mapped, and alterations to the structures over time were documented. To verify the data gathered, literature on the history of the NZASM in South Africa as well as experts in the field were consulted.

The Burra Charter (2013), an Australian charter that provides standards on conserving and managing places of cultural significance, is used as a guide to generate a statement of cultural significance for the area and the houses. In turn, it serves to inform the formulation of the preservation strategy.

History of the NZASM

The historic residential structures in the precincts immediately south and east of the Pretoria Station were built by the NZASM, a private Dutch enterprise founded in Amsterdam in 1887 that was tasked with building the Delgoa Bay Railway from Mozambique to Pretoria (De Jong 1990: 53). This was "necessitated by the increase in economic activity in the ZAR after the discovery

of gold on the Witwatersrand” (Barker 2014: 113). The massive competition for rail transport charges between the various republics, served as impetus for the ZAR to seek independent access to a seaport (Barker 2014: 113), which was crucial to Paul Kruger’s government plan for the economic development and autonomy for the Transvaal Republic (Bakker, Clarke, and Fisher 2014: 143). The railway constitutes an important part of the founding history of the old Transvaal. Towards the end of the 19th century, Kruger’s government recruited a host of skilled Dutch immigrants to drive infrastructure development from Pretoria (Bakker *et al.* 2014: 136).

The NZASM completed the Pretoria Train Station around 1892 (University of Pretoria 2013). Almost half of the white personnel were sent from Europe, where they had been recruited and appointed by the company’s head-office in Amsterdam (De Jong 1990: 53). A substantial black labour force was recruited locally and used to construct the railway lines, bridges, and supporting infrastructure (Barker 2015: 32). By 1900, the NZASM was in control of most of South Africa’s railway lines, and small housing settlements could be found around most train stations, for example, Pretoria Central, Volksrust, Waterval-Boven, Heidelberg, and Komatipoort. During the Anglo-Boer War (1899–1902), the company’s properties were confiscated by British authorities and most of its European personnel were deported. The remaining staff of the company and the Boers endeavoured to destroy and dismantle railway bridges, engines, and trucks that were now being used against them by the British. The NZASM was dissolved in 1908 (De Jong 1990: 53; Bakker *et al.* 2014: 133; Clarke and Fisher 2018: 17).

However, before its demise, the NZASM built many houses for its employees. The company’s construction department, *Dienst van Aanleg*, developed standardised designs for housing (De Jong 1990: 54; Barker 2014: 114–119), and the houses for railway employees in Pretoria were built to the south of the Pretoria Train Station in the area today known as Salvokop and also to the east, up to the Apies River (Pelser 2013: 13–14). The extensive railway yard and housing development provided for the personnel introduced a new architectural typology to Pretoria (De Jong 1990:53). The railway management always sought higher ground to build their stations and housing compounds, determining the layout and position of the NZASM establishment around existing towns (Clarke 2014: 172). The planning dictated that property value would rise in the area between the railway and the town, leading to the decision to place staff housing on the other side of the railway tracks (Clarke 2014: 172). This also served as a social boundary, giving life to the stigma of living on the “wrong side of the tracks”.

Three main NZASM housing typologies existed, namely types A, B, and C, with the choice of design dictated by the occupant’s rank, type of work, and marital status (De Jong 1990: 55; Barker 2014: 117–119). Types A to C were only available to white employees, while black staff were usually housed in a long barrack located in a separate area (Bakker *et al.* 2014: 172). Type A was a house resembling a barrack with eight to twelve single rooms suitable for unmarried staff, accessible from a veranda on either side. Each room was equipped with a fireplace. Types B and C (figures 1 and 2) were semi-detached cottages or duet houses for married staff. Both types had a living room, kitchen, and two bedrooms, although type C houses were larger and also had a pantry (figure 2). Formally, the houses had a symmetrical arrangement and in an effort to create a measure of grandeur, a centre gable was incorporated (De Jong 1990: 55; Barker 2014: 117–119).

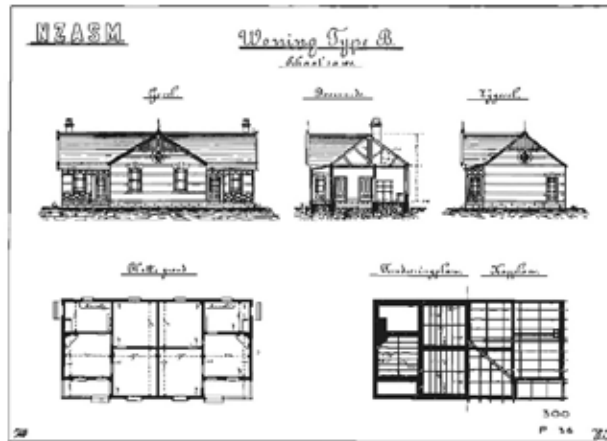


Figure 1
Plan and elevation of Type B: Semi-detached cottage
 (NZASM drawing dated 12 June 1894) (De Jong 1990: 56).



Figure 2
Plan and elevation of Type C: Semi-detached cottage
 (NZASM drawing) (De Jong, Van der Waal and Heydendrych 1988).

The houses were designed following Dutch Neo-Renaissance trends and were constructed either in brick or stone, depending on available materials. All the houses had some form of ornamentation, such as “stonework, roof finial detail, barge boards, veranda edge treatment, [or] gabled ends” (Barker 2014: 119). Coloured tiles in window arches and decorative ventilation louvres were also included (De Jong 1990: 55). According to Barker, “[o]ther typological formal differences resulted from location, occupants’ status, available materials and influence of climate of the local context” (2014: 119). Status dictated the choice of material for the veranda columns, from wood for the prefabricated houses to cast iron in the houses of the higher ranking officials (Barker 2014: 119).

The more highly paid NZASM employees lived outside the Salvokop area in houses comparable to Melrose House in Burgers Park, Pretoria (De Jong 1985: 13). Fisher and Clarke (2016) add that the specific area outside of Salvokop likely became populated between 1910–1920 as railway officials bought land and built their own houses with the assistance of a NZASM fund. A well-known example of one of these houses is House van der Made, better known as NZASM House, located in Rissik Street (today functioning as a guest house). According to

Mears (2017), an archaeologist and heritage consultant, it is assumed that the specific location of the residential area to the east of Pretoria Train Station was determined by the location of the water supply to Pretoria CBD. As illustrated in figure 3, “Timeline of development of the area”, the area, developed from a farm owned by P. Mare, was established around 1910 to become a low density residential area for railway officials. Although an aerial photo from 1949 shows the area mainly populated by houses, consolidated plots are visible on a later 1979 map indicating where the first apartment blocks were constructed.

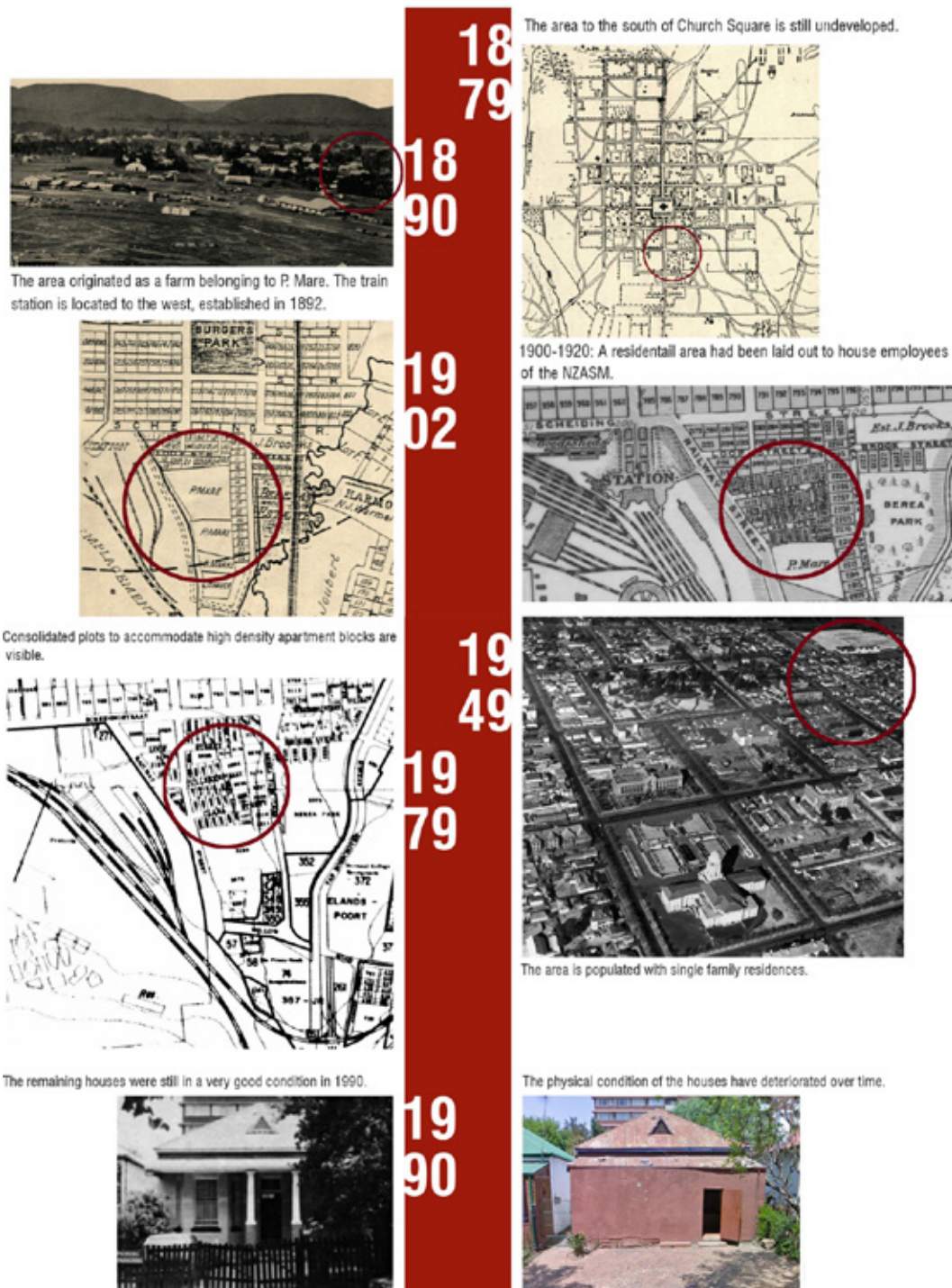


Figure 3
Timeline of development of the area (Brümmer 2017: 14–15)

Despite incremental densification, pockets of NZASM’s physical legacy lives on in Pretoria (Barker 2014: 133). This study is concerned with once such pocket within the NZASM precinct: numbers 15, 17, and 19, Tulleken Street, and number 10, Rider Haggard Street (figure 4). In this area, about ten of the original railway houses still remain. These houses have been altered in varying degrees to suit the needs of their current occupants.



Figure 4
Site plan indicating NZASM houses, in brown with street numbers, and type of occupancy (Brümmer 2017: 17).

Theoretical framework

A theoretical framework and with it a regeneration strategy for the adaptive reuse of the NZASM houses and precinct draws from theories dealing with heritage, resilience and sustainability, and heritage tourism.

In the following sections, the theoretical themes are dealt with separately. Thereafter, connections are drawn and an overarching approach that incorporates all three themes is outlined as a regeneration strategy.

Heritage alteration

Heritage theories determine the appropriate stance to the alteration of heritage fabric where alteration is proposed. A theoretical approach toward heritage and adaptive reuse was first initiated in the late 19th century through a dispute between restoration and anti-restoration (or

conservation) movements. The former was led by Eugène Emmanuel Viollet-le-Duc (1814-1879), who postulated adaptive reuse as a way to preserve historic buildings (Plevoets and Van Cleempoel 2011: 2). According to Viollet-le-Duc “the best way to preserve a building is to find a use for it” (1990). At the same time, across the Channel anti-restorationists were galvanised by the theories of John Ruskin (1819–1900) and his pupil William Morris (1834-1896). Ruskin (1849) passionately decried restoration as “the most total destruction which a building can suffer.” In addition to the issues of reuse and restoration, “the negative impacts of exponential city growth, through densification and possible demolition of historic fabric, and the impact of climate change” also influence heritage practice (Barker and Swart 2019: 57). Heritage practice today is guided by heritage charters and government legislation. This requires a more responsible and deliberate design approach in the alteration of historic buildings (Barker and Swart 2019: 57).

Theories on altering historic fabric from Brooker and Stone (2004), the Burra Charter (2013), and Scott (2008) are investigated. A literature review by Plevoets and Van Cleempoel (2011) on the subject of adaptive reuse as a strategy towards cultural heritage conservation informed this choice of theories. Plevoets and Van Cleempoel (2011) discuss Brooker and Stone’s approach (2004) as an example of a strategic approach toward adaptive reuse, where the original building is the most important and decisive factor in adaptive reuse. Scott’s (2008) approach is identified as a theoretical approach by Plevoets and Van Cleempoel (2011). This approach compares and contrasts theories on architecture and conservation within the framework of adaptation. Scott interrogates the theories of Ruskin and Viollet-le-Duc in relation to reuse.

Respecting the history and preserving the essence of an existing heritage structure is the primary objective of any intended alteration. According to Brooker and Stone (2004: 79), the original building and its relationship with the new is the most influential device in design. The authors introduce three strategies to alteration, namely intervention, insertion, and installation (Brooker and Stone 2004: 79). Intervention can be defined as an alteration that is wholeheartedly accepted by the original building and an intimate relationship established, in which the old and new become one (Brooker and Stone 2004: 79). Insertion is where an intense relationship is established between the old and the new, but each exists independently, and the new draws inspiration from the qualities of the old (Brooker and Stone 2004: 102). Installation is the act of adding the new within the context of the old, where both exist independently, simply touching each other (Brooker and Stone 2004: 127).

This article identifies ‘intervention’ as an adaptive reuse strategy to address the identified problem of the NSAZM houses (heritage buildings) of Tulleken and Rider Haggard Streets. This is due to the level of integration between the heritage buildings and the new densified urban fabric. Intervention results in the original accepting the new and subsequently becoming unified (Brooker and Stone, 2004: 97), leading to a single design product where old and new is read as a whole. Brooker and Stone (2004: 81) discuss the process of intervention when the building is regarded as a narrative, a story to be discovered and retold. Through a process of uncovering, clarification, and interpretation, the place will be revealed and reactivated. The analysis and reading of the structure can often be as destructive as it is constructive, as the designer will strip away, clarify, and undo in order to reveal new and hidden meanings.

Scott (2008) is also concerned with approaches to the alteration of heritage fabric. He argues that the desired state of alteration is ruination, where the ruin has been prepared for inevitable future alterations. Scott (2008: 212) states that incompleteness is the only clear aim of

alteration, as it creates an allusion to the ideal and it allows the building to become an element of continuity. This idea of the ‘perfect incomplete’ can be linked directly to the resilience of a built structure that is able to accommodate future alterations and functions.

The Burra Charter (2013) outlines different conservation processes, some of which move back towards the original design intention of the building or site, while other processes have the freedom to be reinterpreted and move away from the original. For example, maintenance and preservation will always be aligned with the idea of the original fabric, while new work and adaptation can introduce a new intention, thereby re-invigorating the built fabric with a new and more relevant purpose. As set out in the conservation processes, the Burra Charter provides steps in planning for and managing a place of cultural significance. These include gathering and recording sufficient information about the site in order to appreciate its significance, and drawing up substantiated written statements of cultural significance, which are preceded by “analysis of physical, documentary, oral, and other evidence” (Burra Charter 2013: 8).

The cultural significance as defined by the Burra Charter (2013: 4) distinguishes between precious- and non-precious heritage fabric. Precious heritage fabric can be stripped back, removing or exposing past additions to the original, thereby restoring or reconstructing and preserving the original fabric. Non-precious heritage fabric can be dealt with in a less sensitive manner with the objective of preparing it to accommodate a new function: it can be interpreted, stripped back, or demolished as necessary in preparation and altered. In this process the community residing on the site forms part of the cultural landscape, and their spiritual significance should be maintained and conserved through participation.

It is argued that the three different approaches, as outlined above, should be combined into a single strategy toward the heritage alteration and preservation of the NZASM houses.

In summary, Brooker and Stone (2004) provide the strategy for alteration; Scott (2008) identifies a clear outcome for heritage alteration; and the Burra Charter (2013) serves as a tool for identifying precious heritage fabric and establishing the significance.

Resilience and social sustainability

Resilience is defined as the capacity of a city (or precinct) to absorb or adapt to the change that is brought about by slow pressures or rapid pulse disturbances. Cities can experience both positive resilience, brought about through healthy diversity (e.g. alternative roads to avoid a traffic jam) or negative resilience brought about through lock-in (e.g., politics stalling the provision of well-located affordable housing and amenities) (Peres, Barker, and Du Plessis 2015: 2). A social-ecological perspective to resilience, also known as evolutionary resilience, recognises that complex systems are in constant change with no equilibrium state to return to or move forward from following a disturbance (Suárez, Gómez-Baggethun, Benayas, and Tilbury 2016: 2). The focus is on the capacity for learning, being innovative and flexible, with the main idea consisting of an acceptance of the permanent state of imbalance in which systems exist.

In the process of creating a thriving city, it may be necessary for a system to collapse and regenerate (Peres *et al.* 2015: 2). According to Du Plessis (2013: 38), the responsibility is placed on professionals to be “resilient and regenerative” and to identify which aspects may need to collapse to provide room for new possibilities to form from the latent potential of a site.

Identifying heritage fabric to conserve would form part of a site's potential, with the possibility of new work contributing to the historic sense of place, and the relationship between old and new leading to a regeneration strategy. Thus, historic buildings can deliver several services to society and can be considered a resource that is part of the urban ecosystem (Khalil, Hammouda, and El-Deeb 2018: 58).

Sustainability is typically associated with environmental concerns; however, in the context of the triple bottom line it is defined as having three components: social, economic, and environment (Landorf 2011: 471; Khalil *et al.* 2018: 58, Wilkinson 2012: 8). Landorf identifies three dimensions of social sustainability, namely social equity, social cohesions, and satisfaction needs (2011: 468). Within a framework of historic urban environments, Landorf (2011: 471) postulates that social sustainability can be supported by heritage through heritage-led regeneration. Preservation, conservation, and/or adaptation of historic environments hold potential for the enhancement of social capital and the promotion of social inclusion (Landorf 2011: 471) in that heritage buildings create a sense of place, help educate, and provide social cohesion and identity (Khalil *et al.* 2018: 58). Sustainable development is best defined in terms of its core goals of protecting and maintaining natural and cultural resources for the future, and mitigating undesirable change (Lew, Ng, Ni, and Wu 2016: 21). The most important similarity between social sustainability and resilience is the goal of system survivability (Lew *et al.* 2016: 22). Thus, the ideal community is both sustainable and resilient (Lew *et al.* 2016: 20).

Resilience and sustainability can work together in a two-step process. First, a collective understanding of sustainable development needs to be negotiated at a local level. Second, a statement of heritage significance should be formulated as the basis for a collective vision for sustainable development. Landorf (2011: 472) explains that this ensures a common understanding of limits of acceptable change and facilitates the formulation of an acceptable decision-making process for sustainable development. An appreciation for acceptable adaptation to heritage fabric is implicit in this. In terms of the conservation of the NZASM precinct, according to Lew *et al.*, (2016: 20) two questions should be asked of the community. Firstly, in terms of resilience: What does the community want to change and how do they want to do it? Secondly, in terms of sustainability: What does the community want to conserve and how do they want to do it?

All existing communities already possess a certain degree of sustainability and resilience. The community in question has experienced organic changes in the diversity and culture of residents and in the use of the NZASM houses, where some have changed from residential to partly or fully commercial, or to a public community-orientated function. However, the community has not endeavoured to preserve the precious heritage fabric over recent decades, and a strategy is needed to educate the community, particularly the residents of the NZASM houses, regarding heritage value to secure the sustainability of the heritage fabric.

Heritage and cultural tourism

Heritage and cultural tourism is an activity related to cultural and natural heritage as well as to traditions and contemporary cultures (Ursache 2015: 133). A sense of place can be created and evolved into a future identity. Heritage is a key mechanism in the process of how people remember and interpret the past, and how they use it to create their own sense of time and place and transform this into place identity (Ennen and Van Maanen 2014: 50). Place identity is the memory that remains with visitors long after they have left the destination and can be shaped by carefully designing the tourist experience.

Tourism activities raise awareness about the social and cultural values of local residents. Through tourist appreciation of natural and cultural heritage, the community is educated about preserving heritage fabric (Ursache 2015: 133). Tourism has many benefits for a local community, in this case the community of Tulleken and Rider Haggard Streets located in the NZASM precinct. One of the benefits for the local community could be to generate a sense of pride and identity and a desire to develop their resources. A community can be uplifted and sustained through tourism that creates job opportunities and educated through inter-cultural exchanges with tourists.

The management of heritage tourism comprises of a conservation goal with financial and public access constraints (Garrod and Fyall 2000: 684). Financial support for maintenance is even more important in heritage settings, as old buildings are more prone to natural decay and negative user impacts. A balance is required between conservation and contemporary use, the extent of public education, and the relationship between the built heritage, tourists, and the local community (Garrod and Fyall 2000: 702).

Heritage and cultural sites are the focus and drivers of heritage tourism. Heritage is defined as an individual or collective interpretation of elements of the past, and in culturally and ethnically diverse communities the following become pertinent questions: What should be preserved? Whose heritage should be preserved? and For whom should the heritage be preserved? (Ennen and Van Maanen 2014: 45). Heritage is often a manifestation of a dominant group in an attempt to safeguard values, standards, identity, and history (Ennen and Van Maanen 2014: 45). Therefore, broader community engagement is crucial to the development of a heritage tourist attraction. Garrod and Fyall (2000: 703) state that if the present generation is not allowed access to the heritage structures, it will cease to be a relevant part of their heritage. In the case of this article, the community along Tulleken and Rider Haggard Streets is diverse and fluid. When selecting what to preserve, the future of the heritage buildings must be kept in mind. The narrative of the NZASM heritage should be extended to include the new residents, with tourism becoming the link between the past and the present

Culture is also a motivator for tourism. There is a strong consensus in the literature that tangible—intangible, movable—immovable or spiritual cultural assets create competitive advantages and innovation, and become promoters for the regeneration and growth of a destination (Ursache 2015: 133). According to the Euro-barometer report (in Ursache 2015: 135), a quarter of tourists mentioned culture as one of their main reasons for travelling, and nearly half of the respondents said that natural, cultural, and historical attractions would make them return to a destination. Cultural tourists stay longer, visit twice as many places, spend more per day, and thus, have a significantly greater economic impact per trip (Ursache 2015: 135). Thus, tourists seeking a cultural and heritage experience are the most viable target market in the development of sustainable tourism. Through the development of the features embedded in the fabric of the NZASM precinct, an appealing narrative and a successful tourist destination can be established as the main thrust for regeneration strategy for the precinct.

In conclusion, the theories of heritage and adaptive reuse, resilience and social sustainability and heritage and cultural tourism are found to be mutually supportive; by promoting one of the themes, the other two will also be benefited. A resilient and sustainable community is the key to conserving precious heritage fabric, which in turn could promote heritage and cultural tourism to form the core of the proposed regeneration strategy.

Assessment of heritage value

A heritage assessment was conducted in an endeavour to identify the significance and establish the value of the following houses located in the NZASM precinct: 15 and 17 Tulleken Street, 19 Tulleken Street, 10 Rider Haggard Street, and 25 Rider Haggard Street. Number 15 and 17 Tulleken Street are semi-detached. They were assessed together and found to have the same features.

The assessment was conducted according to the processes and steps as set out by the Burra Charter (2013). Similarly, Barker and Swart (2019: 58) recommend that heritage assessment should be conducted by “an architect, related design professional, or even historian” who performs a series of sequential tasks broadly involving operation, action, and reflection. Operation concerns “the collection of relevant information that will define significance, by assessments of value, through statements of heritage significance and the possible development of design attitudes and approaches” (Barker and Swart 2019: 58). Action involves alteration through the use of architectural strategies as well as material and detail expression. Finally, reflection provides “assessment of value judgements and design processes” (Barker and Swart 2019: 58). Although this article is limited to operation, it forms part of a larger Masters study that included action and reflection (See Brümmer 2017).

The identified heritage houses have been documented accordingly. Information in the form of physical evidence was gathered and recorded. Thereafter, a statement of cultural significance, corroborated by supporting evidence, was formulated. This involved a series of site visits where the houses were measured and drawn up to scale. Physical features, including architectural details, construction materials, interior finishes and fixtures, and alterations, were documented. This documentation was assessed in relation to information that came to light in informal discussions with the residents. The heritage features and physical condition were mapped, and alterations to the structures over time were noted in the light of the original documentation (see “History of the NZASM”). In this endeavour the artefacts were considered the primary source. Clarke and Fisher (2018: 18) postulate that “[a] built artefact persists through time...becomes a palimpsest of ‘text’ encoded in its fabric, traces of its existence or memory that it once was or might have been.”

In the section that follows, detailed documentation and analysis of two of the heritage houses is provided. Numbers 15, and 17, and 19 Tulleken Street have been purposely selected as they display similarities in form, order, and ornamentation as well as materials employed in construction and interior finishing to NZASM types B and C respectively. The documentation includes photographic documentation, hand-drawn measured plans and elevations (with hand-written analysis), comparative analysis with NZASM typologies, and a plan diagram mapping heritage and altered fabric.

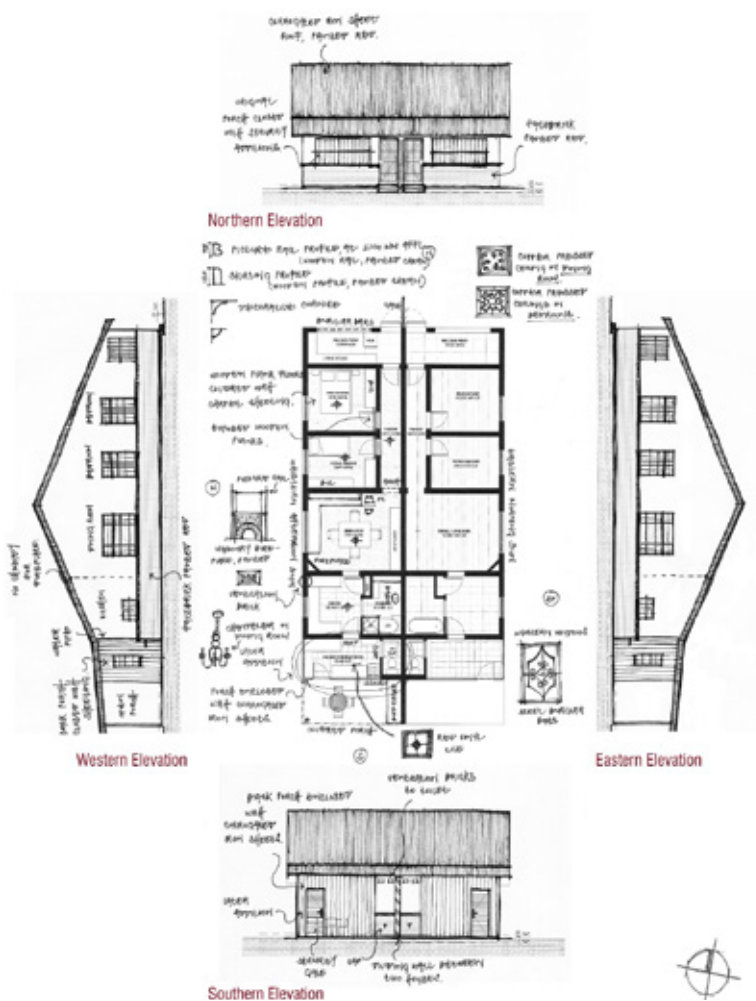
15 and 17 Tulleken Street

15 and 17 Tulleken Street (figures 5.1-4 and diagram 1) is similar to the features of NZASM typology Housing Type B. The house consists of two semi-detached cottages each with two bedrooms, a living room, a kitchen and a veranda. The house is lifted on a plinth and edges of slabs are visible. There are two fireplaces (although the chimneys are no longer present), one per house. The gable roof is of corrugated iron sheeting. The veranda columns are square, plastered

(halfway) brick. Precious heritage features in the interior comprise original pressed copper ceilings with cavetto cornices in the bedrooms, passages, dining rooms and kitchens; cyma recta/ogee wood dado rails; original solid wooden plank flooring in the bedrooms, passages, and dining rooms; original corner masonry fireplaces in stretcher bond, and a decorative plaster ventilation brick in each kitchen (Brümmer 2017: 27).



Figures 5.1 to 5.3:
15 Tulleken Street (1990) (Le Roux 1990: 160), 15 Tulleken Street (2009) (Google Earth 2017)
and 15 Tulleken Street (2017) (Brümmer 2017: 26).



Figures 5.4
15 Tulleken Street: Measured drawings (Plan, elevations and decorative features)
(Not to scale) (Brümmer 2017: 27).

- Previously altered fabric
Proposed action: To be reinterpreted, stripped back and altered as necessary
- Precious heritage fabric
Proposed action: Add-ons stripped back, original fabric restored and preserved.

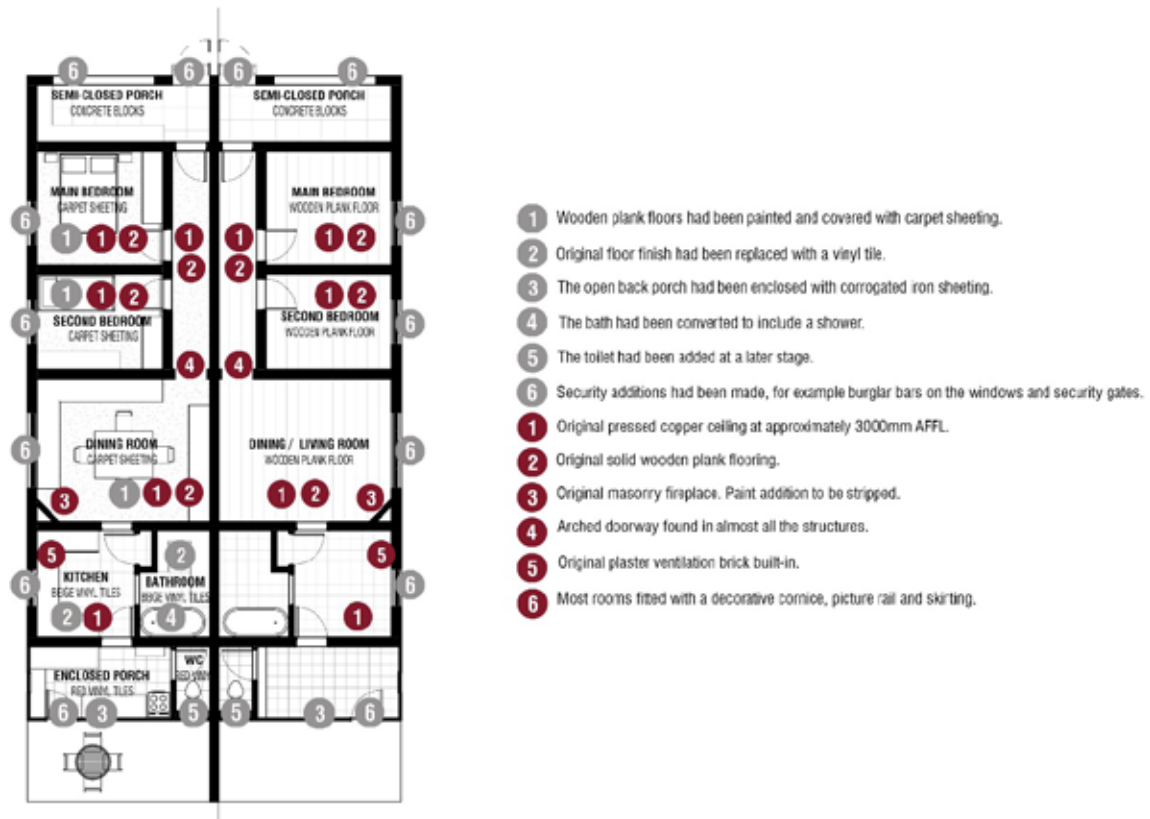


Diagram 1
15 Tulleken Street Mapping precious heritage- and previously altered fabric
(Brümmer 2017: 28).

19 Tulleken Street

19 Tulleken Street (figures 6.1-4 and diagram 2) is similar to NZASM typology Housing Type C as follows: the house consists of two bedrooms, a living room, a kitchen, a pantry and a veranda. The stick work veranda is supported by wooden posts and brackets. The house is raised on a plinth and edges of slabs are visible. Two fireplaces are found at opposite ends of the house. The roof is of corrugated iron sheeting. Precious heritage features in the interior comprise: an original stick work veranda with wooden posts and brackets; original stained glass side- and rectangular-fanlights framing the front door and interior bathroom door; original cast iron fireplaces, wooden mantelpieces with panel decorative details; original solid wooden plank flooring in the passage; black and white chequered tiles on the veranda; and brass light switches, which are original from when electricity was first laid on (Brümmer 2017: 31).

In both instances, previously altered heritage fabric has been mapped and documented (Brümmer 2017: 29, 33) which, in accordance with Scott (2008) could be reinterpreted, stripped back or restored as part of a regenerative strategy.



Figures 6.1 to 6.3:
 19 Tulleken Street (1990) (Le Roux 1990: 160), 19 Tulleken Street (2009) (Google Earth 2017)
 and 19 Tulleken Street (2017) (Brümmer 2017: 30).

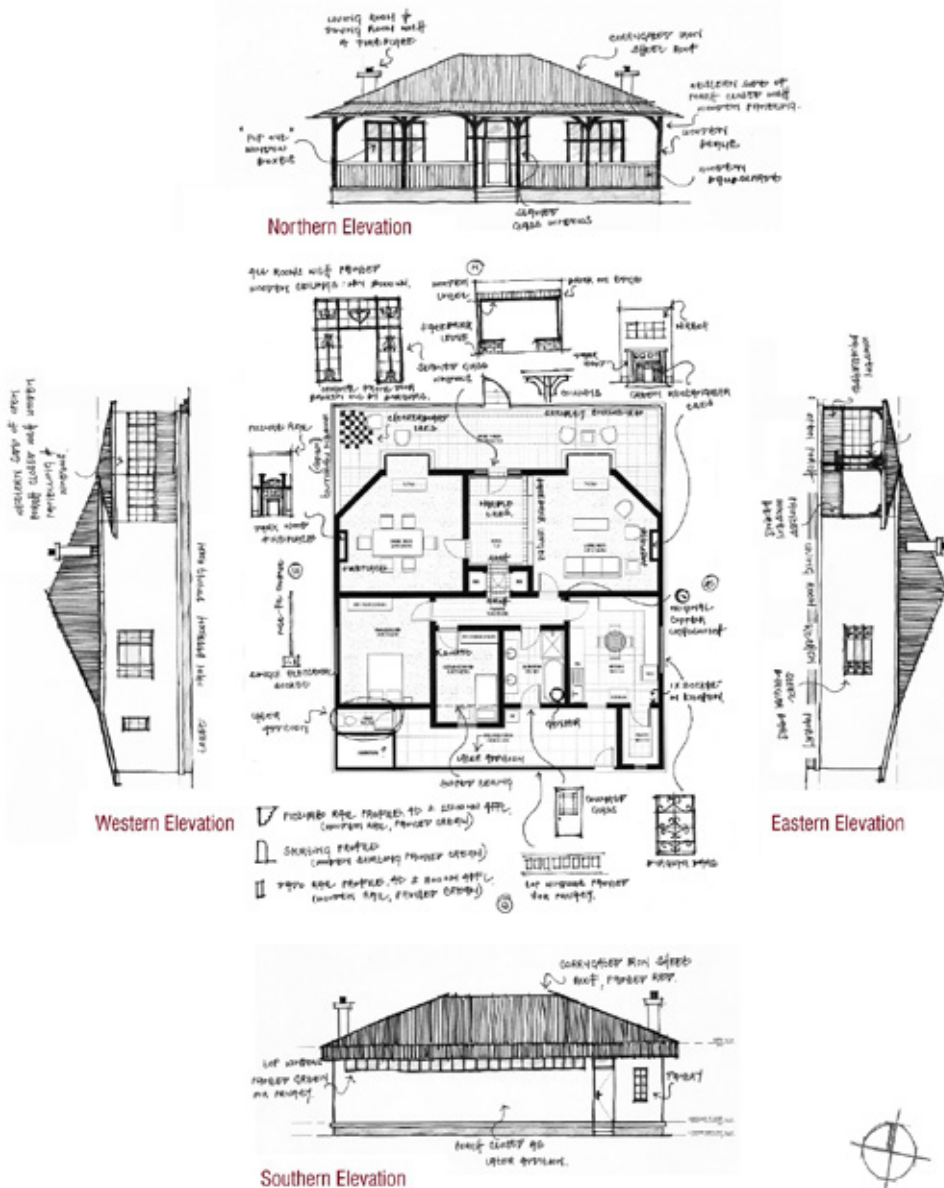
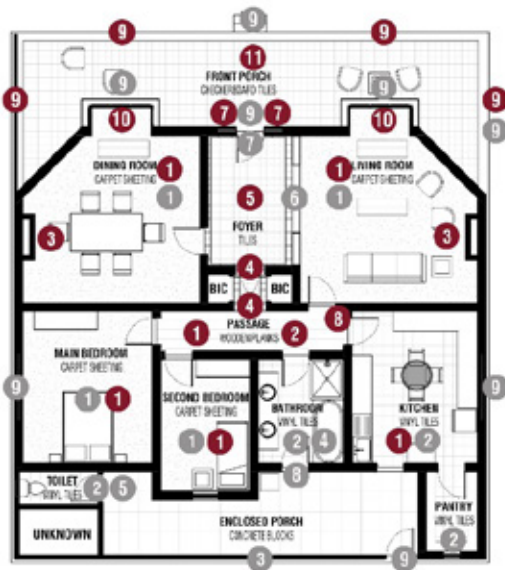


Figure 6.4
 19 Tulleken Street: Measured drawings (Plan, elevations, and decorative features)
 (Not to scale) (Brümmer 2017: 32).

- Previously altered fabric:
Proposed action: to be reinterpreted, stripped back and altered as necessary
- Precious heritage fabric:
Proposed action: Art-ans stripped back, original fabric restored and preserved.



- 1 Wooden plank floors had been painted and covered with carpet sheeting.
- 2 Original floor finish had been replaced with a vinyl tile.
- 3 The open back porch had been enclosed with corrugated iron sheeting.
- 4 The bathroom had been altered to include a shower, bath and double basin.
- 5 The toilet had been added at a later stage.
- 6 An opening was created and finished with facebrick.
- 7 The original front door was replaced with a solid wooden door after a burglary.
- 8 The pattern of the stained glass in the door appears to be a later addition.
- 9 Security additions had been made, for example burglar bars on the windows and security gates.
- 1 High ceiling at approximately 3000mm AFFL.
- 2 Original solid wooden plank flooring.
- 3 Original wooden fireplace with woodcar inlays, metal and tile decoration
- 4 Arched doorway found in almost all the structures.
- 5 Original marble tiles.
- 6 Most rooms fitted with a decorative wooden cornice, picture rail, dado rail and skirting.
- 7 Original stained glass in wooden frame windows.
- 8 Original brass lightswitch (no longer functional).
- 9 An ornate veranda with decorative wooden columns and balustrade.
- 10 Original wooden bay windows with decorative trimmings.
- 11 Porcelain checkerboard floor tiles.

Diagram 2

19 Tulleken Street: Mapping precious heritage- and previously altered fabric (Brümmer 2017: 33).

Cultural significance

According to the processes set out by the Burra Charter (2013), the cultural significance of numbers 15, and 17, and 19 Tulleken Street (which includes the other heritage houses identified on Tulleken and Rider Haggard Streets) is as follows:

The houses possess form, order and ornamentation that is characteristic of the early houses built in Pretoria under Dutch influences according to NZASM's housing typologies. This typology can be observed in the precincts immediately south and east of the Pretoria Train Station, as well as in numerous other railway developments around the country, for example Heidelberg and Volksrust (Bakker *et al* 2014).

The houses hold historic value as a representation of Pretoria's early plot layout and the residential development a century ago. They are older than 60 years and thus protected by the National Heritage Resources Act, No. 25 of 1999 (Republic of South Africa, 1999). Precious heritage features are found in the built fabric, such as the stick work veranda, pressed metal ceilings, decorative ventilation bricks, and masonry or cast iron fireplaces with decorative mantelpiece and chimneys (where still extant). These features are significant and should be preserved because they are true to the era from which they date, original to the structure, and possess a certain rarity. In places where extreme alterations (non-precious features) and degradation have subtracted from the heritage value, the additional fabric should be stripped back and the extant original preserved.

The houses are scientifically informative with regard to late 19th and early 20th century building methods and materials in South Africa. These include solid wood plank suspended floors, wooden cornices, skirting, dado rails and picture rails, double brick interior walls, 3000mm high pressed metal ceilings, natural stone tiles, no interior provision made for toilets originally, and no electrical wiring in the walls.

The social and cultural significance of the NZASM precinct lies in the community who have displayed resilience in the face of a drastic change in the urban context. Residents who have lived in the precinct for up to 50 years are witness to the changing city and play an important role in the cultural significance of the site in terms of their experience and knowledge of the site. The social value of the site also lies in the peaceful co-habitation that exists among the old and the new residents, who are diverse in age, culture, and place of origin.

The statement of cultural significance establishes the heritage value related to the NZASM architectural legacy, of numbers 15, 17, and 19 Tulleken Street (which includes the other heritage houses identified on Tulleken and Rider Haggard Streets) although this is contingent on each house's current condition and cultural significance.

In accordance with the Burra Charter (2013), a combination of the following approaches should guide any regeneration strategy: conservation, maintenance, adaptation, preservation, and restoration. In terms of this study, design guidelines derived from the above-mentioned statement of cultural significance are as follows: the aesthetic and heritage values of the precinct and its buildings should be conserved and maintained; non-precious built features that have been added to the heritage fabric and that do not contribute to the heritage value should be stripped away to expose heritage features; and the informative value of the houses should be recognised, celebrated, and incorporated into heritage education in the public realm.

Toward a heritage-led regeneration strategy

If “heritage is our legacy from the past, what we live with today and what we pass on to future generations” (UNESCO in Khalil *et al.* 2018: 57), heritage is perceived as a cultural resource and it is similar to non-renewable resources that may only be conserved if there is an ethos of stewardship requiring a deliberate strategy toward adaptation and use (Khalil *et al.* 2018: 57; Barker and Swart 2019: 57). Thus, in an endeavour to conserve the NZASM legacy such as the heritage houses along Tulleken and Rider Haggard Streets in Pretoria, a strategy for regeneration is synthesised from the theoretical framework and the assessment of the heritage value and cultural significance.

It was found that the theories of heritage and adaptive reuse, resilience and sustainable communities, and heritage and cultural tourism are mutually supportive:

Adaptive reuse through the application of Brooker and Stone's (2004) “strategic approach” (Plevoets and Van Cleempoel 2011) of intervention and Scott's (2008) “theoretical approach” (Plevoets and Van Cleempoel 2011) of stripping back to reveal the incomplete ruin reveals the inherent resilience of the built structures to accommodate alterations and future use. This requires a process of uncovering, clarification, and interpretation, which is achieved through the conservation processes of the Burra Charter (2013) to assess the heritage value and cultural significance of the studied houses. The heritage statement established the precious heritage

fabric as true to the era from which it dates original to the structure, and possessing rarity as extant remains of the NZASM legacy. This fabric should be preserved and celebrated, both for heritage value and cultural significance, which is supported by a latent opportunity for social sustainability through place- and identity-making and heritage tourism. By contrast, the identified non-precious fabric can either be stripped back or altered to accommodate new programmatic functions, where the intervention (introduction of new built fabric) and the existing heritage fabric become one (Scott 2008; Brooker and Stone 2004).

Resilience (adaptation to change) and sustainability (protecting and sustaining for the future) can work together in a two-step process toward the conservation of the acceptable adaptation (physical and functional change) of the heritage structures (Lew *et al.* 2016). Herein lies another latent opportunity, the social and economic sustainability of the resident community, which could be supported by the heritage houses they currently occupy through heritage-led regeneration (Landorf 2011). The heritage of the houses creates a sense of place, social cohesion, and identity (Khalil *et al.* 2018), which at the same time can educate the public. Education can be achieved through heritage tourism—tourism activities raise awareness about cultural heritage while at the same time promoting the diverse cultures of the resident community (Ursache 2015). In turn, the introduction of tourism into the resident community would also be socially and economically beneficial for the community through the creation of jobs and recreational amenities, as well as the celebration of what is deemed valuable.

The choice of tourism is further supported by the precinct's prime location (figure 7) in relation to other tourist attractions and public transport and the tourism opportunities set out in the *City of Tshwane 2055 Vision* and the *Tshwane Inner City Regeneration Programme* (Department of Public Works 2015). As a catalyst to generate public interest, tourism interventions may be proposed in and around the heritage houses on Tulleken and Rider Haggard Streets. Programmatic changes through adaptive reuse could include a tourist information centre with a NZASM museum, AirBnB accommodation, a youth hostel, spaza-shop and take-away, and a sit-down restaurant serving cuisine representative of the diverse resident community. Furthermore, by making the intersecting sections of Tulleken and Rider Haggard Streets pedestrian friendly, walking tours of the precinct could be offered in addition to cultural events.

In summary, a sustainable and resilient community will protect the heritage of the built environment, which in turn generates a sustainable tourist attraction. A full sustainable cycle is thus created through the adaptive reuse of the heritage houses, thereby ensuring the preservation of precious heritage fabric, a resilient and sustainable community, and heritage tourism.

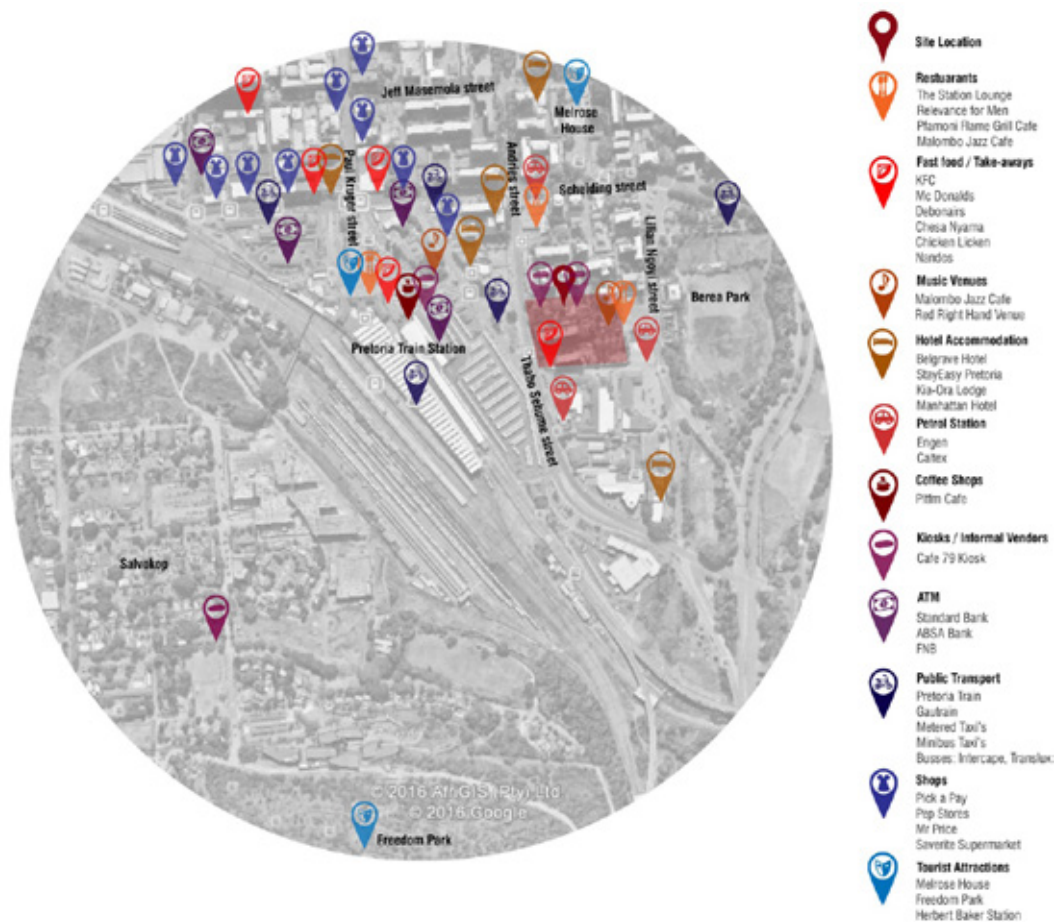


Figure 7
Site amenities relevant to tourists (Brümmer 2017: 40)

Conclusion

It is clear that a heritage-led regeneration strategy provides an opportunity to conserve the NZASM heritage houses east of the Pretoria Train Station. The strategy is a two-step process. The first step is an analysis of the extant heritage fabric and the unique social conditions on site. The second step involves the introduction of an appropriate new use that will promote both the heritage and its resident community's resilience and sustainability.

The heritage value and cultural significance of numbers 15, 17, and 19 Tulleken Street, which includes the other heritage houses along Tulleken and Rider Haggard Streets, is established. Non-precious built fabric can be stripped back to expose precious heritage features, present in form, order, and ornament. The adaptive reuse of the houses to accommodate various tourist attractions and amenities supports a resilient and sustainable community. Heritage tourism contributes to place-making by raising public awareness of the cultural significance of the houses and the resident community, which provide opportunities for social cohesion and identity amongst the diverse resident community.

Heritage-led regeneration, with its latent opportunities, presents itself as a means to conserve the precarious legacy of the NZASM, which remains suspended between care and neglect.

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