1. Introduction

The purpose of this report is to detail the planning evaluation for the trunk route alignment alternatives for the proposed Lansdowne Wetton Corridor. This evaluation will primarily focus on the alternatives to the Wynberg destination as the Claremont trunk route options are limited to only Iman Haroon Avenue towards Claremont.

The Wynberg bound trunk alignment evaluation will be done at two levels, namely:
- **Strategic Corridor level** which will determine the spines of the corridor, i.e. Wetton Road vs Ottery Road option
- **Localised Corridor level** testing how the corridor accesses the Wynberg Node i.e. Rosmead Avenue & Broad Road vs Old Ottery Road vs South Road and the proposed Wynberg Couplet assuming Ottery Road is the preferred spine

2. Policy Contextual Analysis - Comprehensive Integrated Transport Plan (CITP) & Integrated Public Transport network (IPTN) guiding framework

The Lansdowne Wetton integrated corridor forms part of the approved 2032 Integrated Public Transport Network (IPTN) plan. The City’s 2032 IPTN, which was approved by Council on the 25th of June 2014, is a network of integrated public transport routes that are served by a variety of transport modes. The development of the 2032 IPTN was guided by the IPTN Framework contained within the 2013-2018 CITP. The CITP, together with the IPTN framework, was approved by Council in December 2013 after undergoing a public participation process.

Both the CITP and the IPTN identified the two major public transport missing trunk links in the Metropolitan area, namely the Metro South East (MSE) to Wynberg Claremont and the MSE to Bellville links. Accordingly the Lansdowne Wetton Corridor was identified as the next BRT Corridor and the MSE to Bellville link will be served by the proposed Blue Downs Rail link. The existing public transport services along these corridors currently compete with private transport for road space resulting in unnecessary delays for current road based public transport users. Both these projects aim to reduce travel time for public transport users travelling along these corridors.
The dominant mode of public transport currently operating in the Lansdowne / Wetton Corridor is the mini bus taxi service followed by the Golden Arrow Bus Service. There is no direct east-west rail link between the Metro South East and Wynberg and Claremont. Lansdowne Wetton Corridor comprises two road based trunk routes, namely, T11, which is the route that links Khayelitsha to Wynberg, and T12, which links Mitchell’s Plain to Claremont. In addition to these trunk routes, a number of feeder/distributor routes will be planned to serve the trunks and to serve the local areas within the corridor. Feeder routes will cover the following communities:

- Khayelitsha
- Mitchells Plain
- Philippi
- Cross Roads
- Nyanga
- Guguletu
- Manenberg
- Hout Bay
- Hanover Park
- Wetton
- Lansdowne
- Ottery
- Claremont
- Wynberg
- Constantia
- Imizamo Yethu

In addition to these two major public transport links, the IPTN proposes 10 road based trunk corridors to address the public transport demand in the metropolitan area.

3. Trunk Route Alignment Evaluation

3.1 Strategic Corridor Level – Wetton Road vs Ottery Road

The Lansdowne / Wetton Corridor trunk routes as approved in the IPTN consist of 2 trunk routes linking Khayelitsha with Wynberg (route No T11) and Mitchells Plain with Claremont (T12). These routes share a common alignment for the portion of Govan Mbeki Road (formerly Lansdowne Road) between Stock Road to the east and Strandfontein Road to the west. This shared portion allows for transfers between the 2 routes which enable all possible movements between the 4 origins and destinations of Wynberg, Claremont, Khayelitsha and Mitchells Plain. This BRT corridor connects with both north-south rail corridors, namely Cape Flats and the Southern Suburbs line in the west and therefore with efficient transfers, this service provides improved connectivity with the rest of the metropolitan area. The proposed route as contained in the approved IPTN is shown below in Figure 1.
Towards the west the proposed route alignment forks, north and south, at the intersection with Jan Smuts and Strandfontein Road. North towards Claremont as depicted in blue and south towards Wynberg as depicted in red in Figure 1 above.

The alternative option for the Wynberg bound route is a more direct east-west route along Wetton Road as shown on the dotted line in Figure 2 below. This report evaluates these two Wynberg bound options.

Figure 1: LWC Trunk Route Alignment

Towards the west the proposed route alignment forks, north and south, at the intersection with Jan Smuts and Strandfontein Road. North towards Claremont as depicted in blue and south towards Wynberg as depicted in red in Figure 1 above.

The alternative option for the Wynberg bound route is a more direct east-west route along Wetton Road as shown on the dotted line in Figure 2 below. This report evaluates these two Wynberg bound options.

Figure 2: Alternative trunk option to Ottery Road

Key criteria used to evaluate between these two trunk routes options are:

- Passenger demand
- System Coverage
- IPTN alignment
- System operational efficiency
- Land-use integration
3.1.1 Passenger demand

Existing road based public transport modes (busses and taxis) along this corridor use the more direct Wetton Road to access the Wynberg Public Transport interchange (PTI). A recent transport study around the Wynberg PTI highlighted the following movement patterns in and around the PTI:

- Approximately 15,000 passengers arrive at the Wynberg transport hub of which 10,600 passengers alight on the eastern side of the railway line and walk to the western side of the Southern Suburbs rail line to their work and education activities. Percentage of these further transfer to other taxis, buses and rail. Further breakdown of these trips can be seen in the Figure 3 below.
- Volumes in yellow denote taxi passengers and bus in red.

![Wynberg Transport Hub Morning Peak Period Arrivals by Mode](image)

*Figure 3: Peak Period Public Transport Trip arrivals at the Wynberg PTI*

- Figure 4 below shows how these passengers depart from Wynberg PTI during the same time period.
By far the majority of the departures leave from the west side of the railway line with a third walking beyond the PTI towards the west. This predominant east-west pedestrian movement is seen on a daily basis in the morning peak period under the existing Broad Road under Southern Suburbs railway line. Figure 5 shows this movement from the East to West under the existing road underpass.

A more detailed analysis of the walking trips from the PTI shows destination along Wynberg Main Road and upper Wynberg as can be determined from the Figure 6 below:
In summary the existing public transport operations do not adequately respond to passenger needs and therefore cannot be used to accurately indicate where passengers would like to be. As shown above, the majority of passenger’s desire to be on the western side of the railway line where they either walk to their destination or transfer to another mode of transport towards areas further south along Main Road, or towards Hout Bay, or towards Claremont.

**So how do the alternatives support the passenger demand and desire for movement?**

Alternative 1: Wetton Road (via Broad Road)
The Wetton Road alternative mirrors the existing public transport routes and operations and therefore poorly responds to passenger demand and movement desires for reasons already discussed above. Figure 7 below shows system coverage, showing a 250m, 500m and 750m walk, for this alternative:

The Figure clearly shows that with a 750m walking distance the greater Wynberg area is out of reach and either requires an additional transfer to another mode of transport or a lengthy walk.
The coverage of this alternative can only be improved by extending to the west side of the railway line which is physically near impossible to achieve through the existing underpass.

Alternative 2: Ottery Road
The Ottery Road (incl. South – Wynberg Couple) option allows a more ‘direct’ service for passengers without the need for a transfer at the PTI to access destination along Wynberg Main Road and the greater Wynberg area. This is clearly shown in the system coverage map of the Ottery Road alternative below:
Figure 8 clearly shows that within a 750 - 500m walk the majority of destination along Wynberg Main Road and the greater Wynberg area can now be reached directly with the Ottery Road alternative.

3.1.2 System Coverage

System coverage refers to the area reached by the proposed corridor and it is a function of trunk route location and supporting feeder route design.

So how do the alternatives respond to system coverage?

Alternative 1: Wetton Road (via Broad Road)
This alternative has a narrower width and requires longer feeder services to match a similar coverage of the Ottery Road alternative.

Alternative 2: Ottery Road
This option includes a feeder service along Wetton Road and with this in place the coverage far exceeds the Wetton Road alternative by stretching further south towards Grassy Park and Lotus River.

3.1.3 IPTN alignment

In the approved IPTN 2032, there are two north-south trunk routes intersecting with Lansdowne Wetton Corridor trunk routes within this vicinity of the metropolitan area, namely

- Strandfontein trunk corridor stretching from Strandfontein to Cape Town via Strandfontein Road and Jan Smuts Drive. Shown in green in Figure 9
- Retreat to Bellville North East diagonal Corridor. Shown in black in Figure 9
These trunk routes intersect along Strandfontein and Jan Smuts Drive between Ottery and Turfall Roads and provide direct connection between the following communities to Wynberg and Claremont, namely

- Strandfontein
- Pelican Park
- Lotus River
- Grassy Park
- Lansdowne
- Crawford
- Athlone
- Thornton
- Pinelands
To ensure seamless and closed transfers, these transfers must take place within closed station environment. For this to happen, trunk routes need to overlap and share a common station as depicted below.

Closed and seamless transfers are not possible where trunk routes intersect perpendicularly as shown below:
Routes that intersect perpendicular cannot share a common station and transfers between these services are open which requires passengers alighting one service and walking to another bus stop to board another service.

**So how do the alternatives respond to IPTN alignment?**

**Alternative 1: Wetton Road**
This option intersects with the future north south road trunks perpendicularly and requires an open transfer where passengers would have to cross intersecting roads to catch the next public transport service. To overcome this, the north south trunk route needs to be re-routed off its direct alignment to provide this close transfer along Lansdowne Road.

**Alternative 2: Ottery Road**
This alternative provides the route overlap required to provide the closed and seamless transfers as shown in Figure 10 below:

*Figure 10: Alternative 2 Closed transfers*

Alternative 2 avoids any open transfers which risks passengers to conflicting private vehicle and public transport vehicles

3.1.4 System Operational efficiency
A key indicator for public transport operational efficiency is average operating speed. Average operating speed determines route cycle time which influences fleet size. In summary the higher the operating speed, the shorter the cycle time and less the vehicles you need to provide a certain level of service.

The average operating speed is directly proportional to the Right of Way categories of the public transport system and the class of road it operates on.

- A public transport system that operates on a physically separated right of way (Phase 1A red roads) can achieve much higher average operating speed than a bus travelling in mixed traffic.
- A higher class or order of road is characterised by wider road reserves, longer intersection spacing’s, reduced private erf access which results higher operating speeds. The average bus operating speed is an essential indicator that determines ridership and reduces system operational costs. To achieve this performance it is preferred that trunk routes operate along higher Class 2 order roads. However at the start and end of routes, accessibility outweighs mobility and therefore lower order roads are preferred at trip ends or where there is key accessibility segment along the route.

So how do the alternatives respond to System Operational Efficiency?

Alternative 1: Wetton Road
The section of Wetton Road between Wetton Circle and Chukker Road operates as a Class 3 facility with regular intersecting roads and direct erf access.

![Figure 11: Pictures along Wetton Road - All Pics are in a westbound direction](image-url)
This route has significant congestion with daily private vehicular commuter trips travelling eastbound and then via Chukker Road to access the M5 towards Cape Town.

To ensure the trunk operates at an acceptable travel speed, dedicated bus lanes will be required along this route. This will significantly impact:

- **Road access arrangements**: Numerous intersecting roads and private erf access along Wetton Road will be restricted to left in and left out access.
- **Road reserve requirements**: Section of Wetton Road between Plantation and Chukker Road is too narrow to provide dedicated bus lanes and possibly require expropriation.
Alternative 2: Ottery Road

The City’s approved road classification map identifies Ottery Road as a Class 2 facility which inherently supports mobility by having sufficient access road spacing and no direct erf access. The proposed South Road scheme has also been identified as an extension to this Class 2 facility to Wynberg. The only confined segment is between De Wet Road and Strandfontein Road which is an accessibility segment serving Ottery Hyper market, Makro and China Town development. Along this short segment accessibility outweighs mobility and therefore concept design has responded accordingly.

Figure 12: Pictures along Ottery road - All pics are in a westbound direction
3.1.5 Land-use integration

An essential element to ensure sustainable public transport operations is a mutualistic land-use mix and arrangement that will ensure a two way flow ridership along this corridor. To achieve this appropriately located dense mix-use development is required. This evaluation assesses the alternatives readiness to respond this type of development.

So how do the alternatives respond to Land-use integration?

Alternative 1: Wetton Road

The Wetton Road alternative option is primarily residential with a portion of commercial and industrial between Plantation Road and Cape Flats Railway line. Beyond the Cape Flats Railway line towards the west, there is Kenwyn residential area on the north of Wetton Road and Youngsfield Military base on the South. Further west towards Wynberg, the rest is Sportsfield and the Kenilworth Racecourse until Rosmead Avenue. With an exception of the Plantation industrial area which only spans a short length, there is very low trip attracting land-use which will encourage more two way flow along the corridor.

Alternative 2: Ottery Road

The Ottery Road alternative currently consist of the following trip attracting land-use activities, namely Macro, Ottery Hypermarket, China Town and the Plantation Industrial area which will provide some degree of two way flow along the corridor.

In addition the Lansdowne Wetton Corridor Land-use strategy has identified Ottery Road for mixed use intensification ranging from residential, retail, light industrial, commercial and institutional.

3.1.6 Strategic Corridor Level - Conclusion
<table>
<thead>
<tr>
<th></th>
<th>Alternative 1: Wetton Road</th>
<th>Alternative 2: Ottery Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger Demand and Desire</td>
<td>Does not respond to passenger demand and requires an additional service (either walk or another mode) to access final destination</td>
<td>Responds directly to passenger demand</td>
</tr>
<tr>
<td>System Coverage</td>
<td>Poorer system coverage compared to Alternative 2</td>
<td>Better System Coverage compared to Alternative 1</td>
</tr>
<tr>
<td>IPIN Alignment</td>
<td>Requires open transfer with intersecting trunks</td>
<td>Closed seamless transfer is achieved</td>
</tr>
<tr>
<td>Efficient Public Transport Operations</td>
<td>On average slower operating speeds</td>
<td>On average higher operating speeds</td>
</tr>
<tr>
<td>Land-Use Integration</td>
<td>Predominantly residential</td>
<td>More retail and trip attracting land-use and better opportunity for future Transit Orientated Development</td>
</tr>
</tbody>
</table>

*Red shade* denotes relatively negative impact & *Green Shade* denotes relatively positive impact

Therefore, Alternative 2: Ottery Road is the preferred alternative

### 3.2 Localise Corridor Level

Assuming Ottery Road is the preferred trunk route there are three options to access Wynberg end from Ottery Road, namely:

- Option 1 - Rosmead and Broad Road (Yellow route below)
- Option 2 - Old Ottery Road (Purple route below)
- Option 3 - South Road Road and Wynberg Couplet (blue route below)
Similar criteria and process, as for the strategic evaluation, was followed to assess the three (3) options. Option 3 scored relatively better and is therefore the preferred option. The results are summarised in table:
<table>
<thead>
<tr>
<th></th>
<th>Option 1: Rosmead &amp; Broad Road</th>
<th>Option 2: Old Ottery Road</th>
<th>Option 3: South Road &amp; Couplet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Passenger Demand</strong></td>
<td>Option 1 takes passengers to the existing Public transport interchange (PTI). Option 1 has similar results as Alternative 1 as detailed in 3.1.1</td>
<td>Option 2 takes passengers to the existing PTI. Option 1 has similar results as Alternative 1 as detailed in 3.1.1</td>
<td>Option 3 takes passengers directly to their destination without the need on any additional transfer or walk</td>
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<td>and Desire for movement</td>
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<tr>
<td><strong>System Coverage</strong></td>
<td>Option 1 coverage is marginally less than Option 2 and Option 3 and is limited to east of the railway line. In terms of coverage, options score similarly.</td>
<td>Option 2 is marginally more than Option 1 but is still limited to east of the railway line. In terms of coverage, option score similarly.</td>
<td>Option 3 stretches across the railway and with a feeder can also add the coverage reached by option 1 and 2. In terms of coverage, option score similarly.</td>
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<tr>
<td><strong>IPTN Alignment</strong></td>
<td>All options align with the IPTN Network</td>
<td>All options align with the IPTN Network</td>
<td>All options align with the IPTN Network</td>
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<tr>
<td><strong>Efficient Public Transport Operations</strong></td>
<td>Due to Rosmead and Broad being a lower class of road, frequent road and private erf access contributes to slower operating speeds. Most of the on-board passengers will be bound to the PTI so mobility is still essential.</td>
<td>Due to Old Ottery Road being a lower class of road, frequent road and private erf access contributes to slower operating speeds. Most of the on-board passengers will be bound to the PTI so mobility is still essential.</td>
<td>The approved Road Network Plan identifies the future South Road as Class 2 facility. Along the Wynberg Couplet, since passengers are alighting closer to their destination, accessibility is now essential and therefore along the couplet mixed traffic bus operations is required.</td>
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<tr>
<td><strong>Land-Use Integration</strong></td>
<td>Mainly residential, sports and recreation, Civic and commercial</td>
<td>Mainly residential, educational and small retail</td>
<td>The Wynberg Couplet is planned for appropriate Transit Orientated Development</td>
</tr>
</tbody>
</table>

- Relative negative impact
- Relative medium impact
- Relative positive impact