

S U B M I S S I O N

Review of bus services in Manningham, Monash & Whitehorse

seven day service

modern operating hours

direct & legible routes

high frequency

harmonised headways

serves major trip generators

better connections

area & corridor planning

Paul Nicholson

Peter Parker

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Introduction

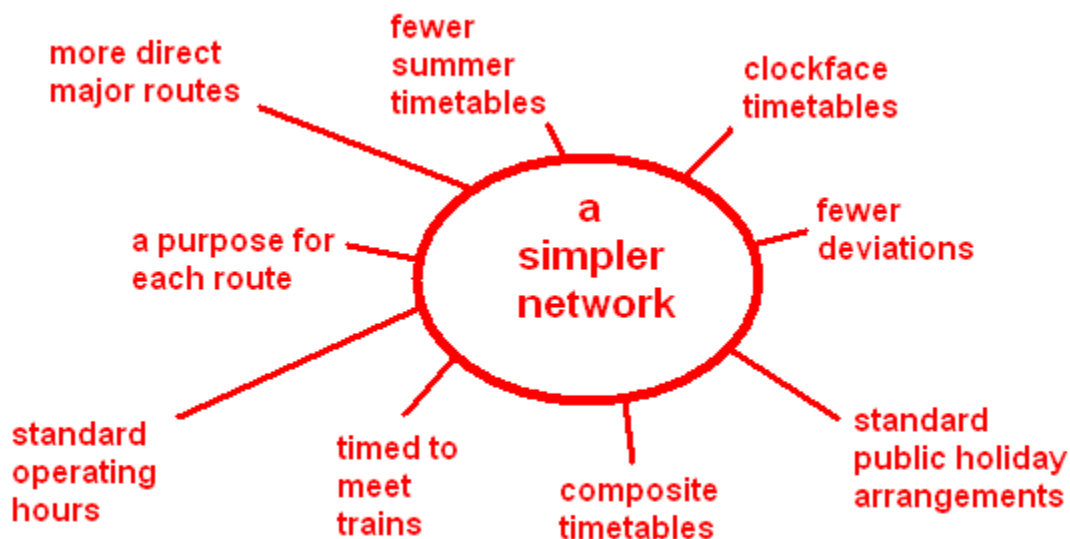
The recently-announced area reviews of metropolitan bus services are welcome. They potentially present a 'once in a generation' opportunity to make public transport a mode of choice for the sixty per cent of Melburnians beyond walking distance of fixed rail services.

This submission makes several recommendations to make buses in Manningham, Whitehorse and Monash simpler, more convenient and better connected.

Our general recommendations advocate a network of major and local routes with a purpose and status for each. We advocate a simpler network with fewer variations in service levels and public holiday arrangements. Connections and frequencies are improved though headway harmonisation with trains and co-scheduling related routes along combined corridors.

This submission recommends improved access through local route changes which are listed in detail later. We reserve our biggest improvements to a dozen or so existing major non-SmartBus routes as increased services on these will be the major driver of future patronage growth.

Contained in the appendices is an introduction to the area, an approach to service planning, an appraisal of SmartBus and a list of major trip generators.



General recommendations

We make the following nine recommendations, to apply across the study area:

1. Unlike some other areas reviewed, Manningham/Whitehorse/Monash comprises mostly established residential areas with little population growth. For this reason we mainly recommend improved existing routes rather than the wholesale introduction of additional routes. We believe that this will allow available resources to be more effectively used on boosting service frequencies on primary routes.

Recommendation 1: Propose improvements to existing routes rather than wholesale introduction of new routes.

2. All timetables in the study area were reviewed. We found that the existing network is too complex and discourages passengers. The major sources of this were (i) indirect routes and (ii) occasional deviations or variations on a route. Some routes (eg the U-shaped 736 from Box Hill to Mitcham via Glen Waverley) are not conducive to legibility and we recommend splitting them for clarity and better connections with trains. We found cases where removing deviations and modifying adjacent routes to make them more direct could make a simpler network without sacrificing coverage and provide examples later.

Recommendation 2: Untangle the existing bus network by straightening routes and reducing the number of route deviations.

3. Routes appear to have grown organically and their rationale for existence may have been lost or obscured by later alterations. Routes may also have multiple purposes incompatible with each other making it hard to provide a legible network or set an appropriate service level (eg 742 or 765). A major part of this review should be to assign a function or purpose for each route (eg local service for suburb A connecting with B and C).

Recommendation 3: Each route has a purpose

4. At the moment there is no consistency between operating days, hours and service frequencies across routes. For example, one route might have service until late on weeknights but nothing on a Sunday, while another might run 7-days but not evenings. This confuses passengers and makes concise service information hard to provide. It also means that bus services are perceived as uniformly low quality when that is not the case.

We accept varying service levels as not all routes are equal. For example, a direct main-road route to a university or large shopping centre justifies more service than one serving a small residential pocket or semi-rural area. However the number of service variations needs to be cut from dozens to about three to simplify the network. We propose that the more important routes be designated 'primary' status. Most of the others would be labelled 'secondary'. A few routes that serve special needs (eg peak-only or serve an isolated pocket) would be 'tertiary' with a lower service level.

Recommendation 4: Each route has a status: primary, secondary or tertiary

5. Once we know a route's purpose and status, we can then determine its service level, choosing from a small menu of spans and frequencies compatible with trains. As a general rule more direct routes and/or those serving major trip generators or corridors would have a higher status than local routes. Primary routes could be at train service frequencies to provide reliable connections while secondary routes could mesh with every second train as per the table below:

Suggested service frequency menu of bus routes by status

Route	M-F day	M-F even	Sat day	Sat even	Sun day	Sun even
Train	15	30	20	30	20	30-40
Primary	15	30	20	30	20	30-40
Secondary	30 or 60	60	40 or 60	60	40 or 60	40 or 60
Tertiary	varies	-	-	-	-	-

Spans: Primary: finishes midnight approx, Secondary: finishes 9pm (ie MOTC), Tertiary: varies

We propose that spans would be broadly similar within each status group. The only exception would be for secondary routes that serve a major area that is very remote from trains or other primary routes; in this case some after 9pm services are recommended. There could be more flexibility with frequencies but they would almost always be from the above menu to properly connect with trains. For example, a popular secondary routes serving a major shopping centre might run every 20 minutes on the weekends. Conversely two closely related secondary routes in low-density areas could each operate every 60 minutes, providing a combined 30 minute service in most areas. Service on the small number of tertiary routes would vary according to need.

Recommendation 5: Introduce consistent operating hours across primary and secondary routes with frequencies set to harmonise with trains. Operate primary routes to meet every off-peak train and secondary routes to meet every second off-peak train Monday to Sunday.

a method of service review

- 1. identify major trip generators & nodes**
- 2. assess major routes & linkages needed**
- 3. examine local routes for coverage & directness**
- 4. give each route a purpose**
- 5. assign status - primary/secondary/tertiary**
- 6. set service levels based on purpose & status**

6. Further reducing usability is the proliferation of varying timetables at different times of the year. Manningham has more variations than any other part of Melbourne; some routes have three different timetables per year. The differences are not confined to peak period or school services either; some routes feature reduced off-peak service as well.

Recommendation 6: Abolish or limit reduced-frequency summer timetables; if these are to exist at all, apply to peak services only and standardise the normal timetable resumption date with trams.

7. Further adding complexity is the lack of standard arrangements for public holiday services. While the MOTC standard recommends Saturday services on most public holidays, even for quiet local routes, many major routes (including most SmartBuses) continue on a Sunday timetable. This means waiting times of up to 32 minutes on Melbourne's busiest route (700).

Recommendation 7: Standardise public holiday arrangements on all routes to MOTC standards, with priority given to non-compliant SmartBus services and major routes in Manningham.

8. As part of this study, we audited staffed suburban railway stations for bus timetable availability. We found 'in-stock' rates as low as 40% meaning that passengers would probably not be able to obtain a desired timetable. In addition the latest timetable was not always stocked. This falls short of best-practice as seen in Perth where near 100% availability was observed during a transport study there in 2007.

Recommendation 8: A proper bus timetable distribution system backed by regular in-stock and currency audits be instituted at all premium and host railway stations.

9. Paper timetables examined were in either pocket or DL size. Pocket timetables pose considerable problems in storage and display for railway stations, and so are often concealed from passengers. Similarly brochure racks at community facilities almost invariably support DL-format but not any other size. For the widest possible distribution of timetables we therefore advocate that all appear in DL-format only.

Recommendation 9: DL-format be adopted as the Melbourne-wide standard for all bus timetables, with all to be in that size from 2009.

10. A difficulty we found with scheduling connections were differences in train service frequency between various lines, particularly on Sunday nights. These are a historical remnant and are unrelated to actual or potential patronage. As an example, the high-patronage Ringwood line receives a 40 minute Sunday evening frequency, while the low-patronage Williamstown and Upfield lines get 30 minutes. The 40 minute frequency makes it impossible for 30 minute or hourly buses (the minimum standard) to connect with trains, especially where the routes also serve other lines that run every 30 minutes.

We also found that the 20 minute service frequency on weekends made it difficult to provide consistent 'memory timetables' for buses 7 days a week. For instance a 30 minute off-peak service might be fine for a local route on weekdays but is unsuitable on weekends as it is incompatible with trains every 20 minutes. Similarly, 15 minute evening frequencies on the key lines (Ringwood and Dandenong) would also permit improved connections with buses, particularly those serving stations on three or more lines.

Recommendation 10: Standardise basic off-peak service frequencies on all railway lines. Upgrade Sunday evenings to 30 minutes on the Burnley group. On all groups upgrade weekend services to 15 minutes and evening services to 15 minutes to improve the ability to provide good bus connections.

Recommendations by aim

We propose the following to make buses more direct and provide a more effective network:

Aim of change	Achieved by
MANNINGHAM	
Simplify services to Warrandyte by removing occasional extensions.	<p>Operate only 304 and 364 from Manningham to Warrandyte. Seek to co-schedule 304 and 364 for optimum service frequency.</p> <p>Remove 286, 301, 305 & 308 occasional runs to reduce route number confusion. Where necessary add extra services as shortened 304 or 364.</p> <p>Make The Pines an interchange point for other routes to ensure good access from Warrandyte is maintained.</p>
Simplify services to the Serpells Rd and Templestowe Village area by removing occasional extensions and creating a dedicated local route.	<p>Delete 279 and 286 occasional trips in the area.</p> <p>Maintain coverage of Serpells Rd and Templestowe Village through a new local route (296 suggested) operating Doncaster Shoppingtown, Williamsons Rd, Tuckers Rd, Serpells Rd and Templestowe Village.</p> <p>Make 295 more direct and improve coverage by routing via Tucker Rd and Serpells Rd (instead of Browning Dr).</p>
Simplify 200-series routes between City and Doncaster.	<p>Abolish 203 and 205 routes. Use resources to provide primary service on Route 200.</p> <p>Operate Route 207 as TramLink service from Tram 48 to Mitcham to reduce duplication with tram.</p>
Simplify network by abolishing peak-only services.	<p>Abolish 205, 303, 306 (truncated), 316 & 319.</p> <p>Use freed buses to boost frequency on full-time routes (see later).</p>
<p>Provide a primary freeway service between CBD, Doncaster Shoppingtown and Mitcham Rd.</p> <p>Provide a primary (TramLink) service between 48 Tram, Doncaster Shopping Town and Doncaster Rd.</p> <p>Improve services along Doncaster Rd.</p>	<p>Upgrade services on routes 207 & 307 to primary status.</p>
Provide a frequent north-south link between Box Hill and Doncaster Shoppingtown via Middleborough Rd.	<p>Provide this service via the existing route 279 and delete Serpells Rd and Templestowe Village deviations.</p>
Improve coverage by providing a full-time service via Lynwood Pde & King St.	<p>Upgrade 308 from peak-only service to secondary status. Abolish 319 peak-only service.</p>
Remove duplication of services along Station St, Box Hill North.	<p>Delete portion of 295 between Box Hill and Doncaster Shoppingtown. Operate 295 as local route only between Shoppingtown and The Pines.</p>
Remove duplication of services along Springvale Rd.	<p>Delete Route 309 between Pine Hill Dr and Mitcham/Springvale Rd.</p>

Aim of change	Achieved by
Improve coverage of Pine Hill Dr.	Operate Route 309 via Pine Hill Dr to provide local coverage.
Provide a direct peak-period service from Park Orchards to Mitcham Station.	Operate 306 between Park Orchards and Mitcham Station only and remove direct CBD service. Increase frequency and span if required.
Create suburban interchange points	Identify Doncaster Shoppingtown, Doncaster Park & Ride, The Pines, Templestowe Village and Springvale/Mitcham Rd as principal interchange points and upgrade passenger information and facilities.
Ensure a high-frequency service zone between Melbourne CBD and Doncaster Shoppingtown. Set service standards of every 7.5 minutes weekdays (until 9pm), 10 minutes weekends and 15 minutes night.	Re-schedule existing routes if necessary. Strategically position bus bays, upgrade passenger information and improve pedestrian access so this higher service level can be exploited.
WHITEHORSE	
Better legibility by straightening routes in the Blackburn North area, involving 270, 271, 273, 279 and 286.	Route 270 and Route 271 are straightened to run between Box Hill and Mitcham. Route 270 serves Springfield Rd, 271 via Katrina St and Junction Rd. Mitcham to Ringwood section is served by a new route (272). Co-scheduling of 270 and 271 provides a more frequent combined service. Redefine 273 as the major service between Blackburn Station and The Pines and operate as a primary route. Operate via Goodwin St to replace rerouted 286 and reduce delays at Springvale Rd/Nunawading Station. Remove Junction Rd deviation – this is covered by 270 and 271. Remove 286 from Goodwin St and operate direct along Surrey Rd. Delete Route 279 deviation to Blackburn Station.
Creation of a major direct route (765) along Canterbury Rd linking Box Hill, Forest Hill Chase and Ringwood.	Modifying Route 765 to operate directly along Canterbury Rd. Coverage of Blackburn South is retained by diverting existing routes and extending Route 735 northwards to Mitcham Station.
The elimination of the confusing U-shaped route 736 via Glen Waverley.	Splitting Route 736 into two at Glen Waverley. Retain 736 route number for Box Hill – Glen Waverley.
Improved train connections by reducing the number of stations connected to.	Portion from Glen Waverley to Mitcham is added to Route 740, renumbered as 740 and routed via Hawthorn Rd to improve coverage.
Providing a purpose for the short, poorly served and poorly used route 740.	Incorporated into a modified Route 736 (see above).
The creation of a direct and fast north-south link (742) from Monash University/Glen Waverley/Vermont South to	Start Route 742 from Mitcham instead of Ringwood and operate direct to Vermont South via Mitcham and Terara Rds. Operate route to Monash University Bus Interchange. Delete Chadstone –

Aim of change	Achieved by
Mitcham.	<p>Monash University portion.</p> <p>Define as a major route with primary service levels.</p> <p>Deleted Ringwood portion is covered by the extended Route 735, 740 and 765 routes. Deleted Chadstone – Monash University section is covered by upgraded</p>
Provide local coverage of area south of Canterbury Rd missed by straightened 742 and 765 routes (extended 735).	Extend Route 735 northwards from Burwood East to Mitcham Station via Forest Hill Chase.
Create a north-south link from Doncaster to Burwood via Surrey Hills from 284 and 766.	<p>Retain Route 284 along Doncaster & Greythorn Rds. Delete portion that duplicates 109 tram.</p> <p>Join routes 284 and 766.</p> <p>Suggest renumbering revised route as 284.</p>
Improved usefulness and legibility on Route 285.	Reduce number of deviations on route.
<p>Ensure a high-frequency service zone between Box Hill, Box Hill TAFE, Box Hill Hospital and Doncaster Shoppingtown.</p> <p>Set service standards of every 7.5 minutes weekdays (until 9pm), 10 minutes weekends and 15 minutes night.</p>	<p>Re-schedule existing routes if necessary.</p> <p>Strategically position bus bays, upgrade passenger information and improve pedestrian access so this higher service level can be exploited.</p>
MONASH	
<p>Remove duplication and improve legibility in the Oakleigh/Clayton area.</p> <p>Straighten route and reduce train interchange points to improve connections with trains from route 733.</p>	<p>Delete the Oakleigh-Clayton portion so that Route 733 becomes a simple north-south route only.</p> <p>Reroute 704 to replace the existing 733 along Golf Links Rd (north of North Rd). 704 then runs North Rd, Huntingdale Station and as per existing route to Clayton.</p> <p>Delete 704 and 742 from Burlington St and Huntingdale Rd as this is now served by 900.</p> <p>Delete Chadstone – Oakleigh – Monash portion of 742 to cut duplication with Route 693 and other routes.</p>
Provide a purpose and a logical eastern terminus for the poorly used Route 704.	<p>Extend Route 704 to operate via existing route 824 to Keysborough.</p> <p>Existing eastern portion of 704 is served by a rerouted 824, extended to Waverley Gardens.</p>
Provide a fast, direct service between Waverley Gardens and Clayton Station.	<p>Operate Route 824 as per existing route from Moorabbin to Clayton then extend via Centre/Police Rd to Waverley Gardens Shopping Centre.</p> <p>(This route replaces eastern portion of 704, which in turn replaces the Clayton -</p>

Aim of change	Achieved by
Provide a strong east-west connection to Moorabbin via the existing route 824.	<p>Keysborough portion of 824)</p> <p>Note: Routing via Main & Westall Rds may be advisable to avoid the Centre Rd level crossing. If done, effort should be made to allow interchange with trains at Westall and serve the new housing estate.</p> <p>Note: roadworks or priority may be required to allow proper access across the Springvale Rd/Princes Hwy intersection.</p>
Improve legibility of Driver Bus Lines routes in the Chadstone/Oakleigh area	<p>Split 624 at Chadstone into two separate routes.</p> <p>Split 627 at Chadstone into two separate routes.</p> <p>Make other changes to these routes outside the study area (see route list below)</p>
Provide a direct link to Chadstone Shopping Centre from Ferntree Gully Rd Improve services along Ferntree Gully Rd.	<p>Extend Route 693 to Chadstone (in lieu of deleted 742)</p> <p>Upgrade Chadstone – Ferntree Gully portion of 693 to primary level to fill a major service gap and compensate for the deletion of 742.</p>
Simplifying the network	<p>Abolish Route 691 Monash University peak-only extension as Route 900 has made it redundant. Add 631 services if extra capacity between Waverley Gardens and Monash University is needed.</p> <p>Abolish different peak and off-peak running patterns on Route 754. Instead operate 754 on a new, direct route for fast travel throughout the day.</p> <p>Renumber Route 862 to 803 since it is part of the 802 and 804 group.</p> <p>Make 753 and 754 more similar to one another, and thus provide fast and frequent service along Ferntree Gully Rd to Glen Waverley.</p>
Reducing duplication in the Glen Waverley/Mulgrave area.	<p>Remove Route 754 off-peak service from Wellington Rd as this service is now duplicated by Route 900. Run all 754 services via Ferntree Gully Rd full-time, as currently done during the peak.</p> <p>Delete Route 814 between Waverley Gardens, Police Rd, Springvale and Springvale South to eliminate duplication with 813. Police Rd is provided with a direct service via the extended Route 824. Use rerouted 704 to serve Springvale Plaza.</p>
Better coverage in underserved parts of Glen Waverley	<p>Operate 753 via View Mount Rd instead of Watsons Rd (Glen Waverley) to serve Oak Tree Hill Retirement Village.</p> <p>Operate 754 direct via Waverley and Jells Rd to Ferntree Gully Rd at all times and abolish special peak route. Serve Marykirk & Garnett Rd area (Wheelers Hill) with a rerouted 804 operating via a local interchange point at Jells/Ferntree Gully Rd.</p> <p>Extend 848 From Brandon Park to Glen Waverley via via Watsons Rd, Gallaghers Rd and High Street Rd. Operate 848 via Brandon Park Dr to replace straightened 850. Replaces diverted 753 and provides a new N-S link to Brandon Park.</p> <p>Delete 850 from Brandon Park Drive and Brandon Park (now served by</p>

Aim of change	Achieved by
	rerouted 848). instead operate 850 direct via Lum Rd to Waverley Rd and then to Glen Waverley.
Provide a frequent link between Glen Waverley and Stud Rd via Ferntree Gully Rd.	<p>Reroute 753 and 754 as described above to provide a fast combined service along Ferntree Gully Rd.</p> <p>Co-schedule 753 and 754 from Glen Waverley to provide an 'every train' connection to the Ferntree Gully Rd/Knox area, 7 days a week (routes each 30 min weekdays/ 40 min weekends).</p> <p>Provide high quality interchange point with 693 and 901 at Stud/Ferntree Gully Rd.</p>
Provide fast north-south link from Dandenong/Waverley Gardens to Glen Waverley	<p>Extend 814 from Waverley Gardens direct to Glen Waverley via Jells Rd and Waverley Rd.</p> <p>(The existence of this route allows limited stop operation of 754 via Jells Rd and Waverley Rd during peak hour if desired)</p> <p>Consider extending southern portion to Noble Park Station and Parkmore Keysborough to provide the only direct north-south link between Springvale Rd and Stud Rd. (optional)</p>
Create suburban interchange points	<p>Identify Oakleigh, Clayton, Glen Waverley, Monash University, Chadstone Shopping Centre, Waverley Gardens and Stud/Ferntree Gully Roads as principal interchange points and upgrade passenger information and facilities.</p> <p>Consolidate the two bus interchanges at Chadstone Shopping Centre into one to improve interchange.</p>
<p>Ensure a high-frequency service zone between Chadstone and Oakleigh Station.</p> <p>Set service standards of every 5 minutes during the day until 9pm (7 days a week) and 10 or 15 minutes at night.</p>	<p>Re-schedule existing routes if necessary.</p> <p>Strategically position bus bays, upgrade passenger information and improve pedestrian access so this higher service level can be exploited.</p> <p>Where existing services already exceed these levels and there is spare capacity, consider reducing the number of routes that operate through both interchanges (ie forcing a transfer) if this permits the non-duplicated part of a route to be made more frequent.</p>
<p>Ensure a high-frequency service zone between Monash University and Clayton, Huntingdale and Oakleigh stations.</p> <p>Set service standards of every 7.5 minutes weekdays (until 9pm), 10 minutes weekends and 15 minutes night.</p>	<p>Re-schedule existing routes if necessary.</p> <p>Strategically position bus bays, upgrade passenger information and improve pedestrian access so this higher service level can be exploited.</p> <p>Co-site east-bound bus stops for 630 and 901 at Huntingdale Station.</p>
ALL AREAS	
Create a grid of high frequency routes within 30 minutes walk of most residents by upgrading selected main road routes.	Upgrade service levels on major non-SmartBus routes to primary level. Routes recommended for upgrade are identified as 'P' in the next section. Where no suitable primary routes are nearby, make use of two or more secondary routes to provide the required frequency and add some after 9pm services to the most important of these routes.

Recommendations by route

The following are the above amendments, but in a more detailed route-by-route form. As advocated previously we also assign a purpose and status for each route or related group.

Our main thrust has been to provide more direct and frequent services between major centres, extend service to currently under-served areas and rationalise routes where these are considered too close.

Route	Purpose	Status*	Recommendations
200	Redefine as primary route to Doncaster via Kilby/Bulleen Rds.	P	
201	Defined as City – Doncaster local route via Belmore Rd	S	
202	Defined as Box Hill – Kew local route via Belmore Rd.	S	Retain co-scheduling with 302
203	-	-	Abolish. Use resources to boost services on Route 200.
205	-	-	Abolish this peak-only route. Use resources to boost services on Route 200.
207	Redefine as primary TramLink service between terminus of 48 tram, Doncaster Shoppingtown and Doncaster Rd.	P	
270	Redefine as local Box Hill – Springfield Rd – Mitcham service.	S	Operate to minimum standards. Straighten route to operate direct along Springfield Rd. Mitcham – Ringwood portion to operate as 272 along existing route. Co-schedule with 271 to provide more frequent combined service.
271	Redefine as local Box Hill – Katrina St – Junction Rd – Springfield Rd – Mitcham service.	S	Operate to minimum standards. Straighten route to operate as described. Co-schedule with 270 to provide more frequent combined service.
273	Redefine as local route The Pines – Blackburn Station	S	Provide fast link from The Pines to Blackburn Station Operates via Goodwin St to Blackburn Station to replace straightened 286 and reduce delays caused by congestion at Springvale Rd/Nunawading Station. Remove Junction Rd deviation – this is covered by 270 and 271.
279	Define as primary route	P	Remove Blackburn Station deviation.

Route	Purpose	Status*	Recommendations
	between Box Hill and Doncaster Shoppingtown via Middleborough Rd.		Operate all services via Middleborough Rd, Victoria St, King St and Williamsons Rd to Doncaster Shoppingtown. Operate new local route (296 suggested) to operate Doncaster Shoppingtown, Williamsons Rd, Tuckers Rd, Serpells Rd, Templestowe Village to replace deleted 279 and 286 deviations.
281	Retain as local Doncaster SC – Eltham route	S	
283	Retain as local route	S	Remove informal 'hail & ride' arrangement and install bus stops along route.
284	Redefine as new north-south local route: Burwood – Union Rd – Greythorn Rd – Doncaster Shoppingtown.	S	Doncaster & Greythorn Rd portion retained and added as part of extended 766 to provide new N-S linkage. Portion of route that duplicates 109 tram deleted. Schedule to connect with trains at Surrey Hills.
285	Retained as Camberwell – High St – Manningham Rd – Doncaster SC route	S	Reduce number of service deviations at Camberwell end.
286	Defined as major route Box Hill – Blackburn – The Pines SC	P	Operate all services to The Pines – delete Serpells Rd/Templestowe Village deviation. Remove 286 service from Goodwin St and operate directly via Surrey Rd. Coverage of Surrey Rd is provided by diverted 273. Coverage of Serpells Rd/Templestowe Village is provided by proposed new local route 296 to operate Doncaster Shoppingtown, Williamsons Rd, Tuckers Rd, Serpells Rd, Templestowe Village to replace deleted 279 and 286 deviations.
289	Redefined as local route Box Hill – Box Hill Hospital – Doncaster Shoppingtown – George St – Tunstal Sq SC - Dunlavin Rd – Mitcham.	S	Extend to Mitcham Station to serve Dunlavin Rd. Operate at good service frequency to recognise important link between Box Hill Hospital and Doncaster Shoppingtown.
291	Retain as major route.	P	
293	Retain as major route.	P	
295	Redefine as local route between Doncaster Shoppingtown and The Pines.	S	Remove Box Hill – Doncaster portion along Station Rd as it duplicates 291 and 293. Make more direct by operating via Serpells instead of Browning Dr.
301	Defined as City – Pines service via Thompsons Rd and Porter St	P	

Route	Purpose	Status*	Recommendations
302	Defined as City – Box Hill local route via Belmore Rd.	S	Retain co-scheduling with 202.
303	-	-	Abolish Resources used to upgrade services on 270.
304	Defined as City – Pines service via Blackburn Rd	S	
305	Redefined as primary route via George St.	P	
306	-	-	Abolish in current form. Replace with a new peak-period route that operates as per current 306 but terminates at at Mitcham Station instead of going into the CBD. Increase frequency and span compared to existing 306.
307	Redefined as primary route to Mitcham.	P	
308	Redefined as King St local service.	S	Upgrade to secondary status to provide King St with a full-time service. Abolish 319 peak-only service.
309	Redefined as City – Reynolds Rd – The Pines – Pine Hill Dr local service.	S	Delete Pine Hill Dr – Springvale/Mitcham Rd portion – duplicates 273.
313	Define as Templestowe Village peak service.	T	
315	Define as Greythorn Rd peak service.	T	
316	-	-	Abolish Resources used to improve services on 305 and 307.
319	-	-	Abolish Resources used to upgrade 308 to secondary status.
364	Retain in current role	S	
365	Retain in current role	S	
578		S	Retain co-scheduling with 581
579		S	Retain co-scheduling with 581
612	Retain as local Chadstone – Camberwell – Canterbury Rd – Box Hill route	S	Reduce number of service deviations. Eliminate the confusing separate school day/school holiday timetables.
623	Retain as east-west route from Glen Waverley to St Kilda and Chadstone feeder.	S	Upgrade weekend daytime frequency to 20 or 40 minutes to cater for Chadstone Shopping Centre patronage.
624	Redefine as two routes: Local service for eastern part of Chadstone (625). Important north-south Caulfield – Camberwell area –	S	Split route at Chadstone for legibility. Delete Chadstone – Caulfield portion (both Carnegie and East Malvern parts) as these largely duplicates other routes. Operate remainder as two routes: 624: Kew –

Route	Purpose	Status*	Recommendations
	Kew link (624).		<p>Caulfield & 625: Chadstone – Oakleigh. Run occasional extensions to Glen Eira College on school days.</p> <p>Consider diverting 624 to Camberwell to provide missing Camberwell – Caulfield link and upgrade frequency.</p>
627	<p>Redefine as two local routes:</p> <p>N Brighton – Carnegie – Chadstone (626).</p> <p>Elsternwick – Ormond - Chadstone route (627).</p>	S	<p>Split route at Chadstone for legibility.</p> <p>Operate as separate routes: 627: Elsternwick – Ormond – Oakleigh – Chadstone & 626: Brighton – McKinnon – Carnegie – Chadstone.</p> <p>Extend 626 to North Brighton Station to provide improved E-W link and Chadstone connection.</p>
630	Redefine as primary route Elsternwick – Ormond – Huntingdale – Monash Uni	P	Extend to Elsternwick to provide interchange opportunities with train, train and buses.
631	Define as Southland – Clayton – Monash - Waverley Gardens local route (unchanged)	S	No change
672	Define as local route	S	No change
691	Redefine as Boronia - Ferntree Gully – Napoleon Rd – Kelletts Rd – Stud Park – Waverley Gardens local route.	S	<p>Delete Monash University peak extension – the need for this has diminished with new 900 SmartBus service.</p> <p>Provide additional capacity between Waverley Gardens and Monash University (if required) through additional 631 services.</p>
693	Primary route via Ferntree Gully Rd	P	Extend to Chadstone to provide direct Chadstone access from Ferntree Gully Rd and replace deleted 742 in area.
700	Retain as primary route Box Hill – Mentone	P	<p>Operate Saturday timetable to a consistent 20 minute service frequency to headway harmonise with trains.</p> <p>Improve Sunday frequency from 32 min to 20 minutes to headway harmonise with trains.</p> <p>Reschedule night services to connect with trains at Oakleigh (this is at the centre of the route and connections are possible with both up and down trains).</p> <p>Truncate route to operate between Box Hill and Mentone only. Poorly patronised Mentone – Mordialloc section could be served by proposed Route 702, operating at half the current frequency but optimised for train connections at Mentone.</p> <p>Delete Mordialloc - Chelsea Route 700 extension and provide service either on an extension of the proposed 702 or revised 889.</p>

Route	Purpose	Status*	Recommendations
701	Retain as local route Bentleigh – Oakleigh (unchanged)	S	Review need for route deviation on this service.
703	Retain as primary route Blackburn – Clayton – Bentleigh – Brighton (unchanged)	P	<p>Increase Saturday service frequencies from a non-harmonised 30 minutes to a harmonised 20 minutes.</p> <p>Increase Sunday service frequency from a non-harmonised 45 minutes to a harmonised 20 minutes.</p> <p>Implement bus priority along entire route but particularly where buses turn in to Monash University. Ensure bus priority measures apply to all buses, not just SmartBuses.</p> <p>Extend Sunday service to Brighton to be consistent with rest of week.</p>
704	Redefine as local Oakleigh – Keysborough service.	S	<p>Amalgamate with part of deleted 733 between Oakleigh and Clayton and run along North Rd to Clayton. Extend eastern end to Keysborough to replace deleted routes 814 & 824 and to provide a logical terminus.</p> <p>(Existing portion of route along Centre Rd near Westall is served by extended 824 to Waverley Gardens)</p>
732	Retain as primary route Box Hill – Burwood – Knox – Ferntree Gully (unchanged Tramlink)	P	No change
733	Redefine as primary route Box Hill – Clayton (only)	P	<p>Upgrade to train service frequency and extend operating hours beyond minimum standards.</p> <p>Delete portion of route between Oakleigh and Clayton (part covered by rerouted 704).</p>
734	Retain as local route Glen Iris – Glen Waverley	S	No change
735	Redefine as local route Mitcham – Forest Hill Chase – East Burwood – Box Hill	S	Extend to Mitcham to provides coverage of area served by deleted portion of existing 765 south of Canterbury Rd.
736	Redefine as local route Glen Waverley – East Burwood – Forest Hill Chase - Blackburn	S	<p>Split original U-shaped route into two to improve legibility and train connections.</p> <p>Western portion Blackburn – Forest Hill Chase – East Burwood - Glen Waverley as per existing route 736.</p> <p>{Eastern portion of exiting 736 (Mitcham – Vermont South – Cathies Lane - Glen Waverley) is covered by extended route 740 which incorporates parts of existing route 742 and 736 beyond Vermont South SC. }</p>

Route	Purpose	Status*	Recommendations
			{Mitcham – Vermont South SC portion of existing 736 is covered by straightened 742}
737	Define as primary service providing link between Monash Uni/Glen Waverley and Knox area.	P	One of Melbourne's top ten routes despite having one of its lowest service level. Upgrade to meet every train at Glen Waverley and run beyond 9pm.
738	Define as local route Mitcham – Knox City	S	No change
740	Redefined as local route Mitcham – Vermont South – Glen Waverley	S	Service extended to incorporate deleted portion of 742 and 736.
742	Redefine as primary route Mitcham – Vermont South – Glen Waverley – Monash Uni.	P	Provides more direct service between Mitcham and Vermont South/Glen Waverley using existing 736 route. Deleted portion of 742 in Mitcham area is serviced by extended 740. Ringwood link is provided by straightened 765. Delete Monash Uni – Chadstone – Oakleigh portion as this duplicates other services.
753	Define as local route with important Stud Rd link role.	S	Co-schedule with 754 to provide frequent service between Stud Rd and Glen Waverley via Ferntree Gully Rd.
754	Define as local route with important Stud Rd link role.	S	Operate via a more direct route (Jells & Ferntree Gully Rd) to remove duplication with Route 900 and allow the peak express route (View Mount Rd) to be abolished. Co-schedule with 753 to provide frequent service between Stud Rd and Glen Waverley via Ferntree Gully Rd. Have limited stop operation along Jells and Waverley Rds as this area is served by extended 814.
765	Redefine as primary route for Canterbury Rd: Box Hill – Forest Hill Chase – Ringwood.	P	Provides high quality link between Box Hill, Forest Hill Chase and Ringwood Local Blackburn South service provided by revisions to other routes.
766	Redefine as local route: Burwood – Union Rd – Greythorn Rd – Doncaster Shoppingtown. Renumbered as 284.	S	Operate to minimum hours. Extend to Doncaster Shoppingtown and renumber as 284. Delete portion of route along Mont Albert Rd due to low usage.
767	Redefine as primary route Box Hill – Deakin Uni –	P	Upgrade to train service frequency and extend operating hours to beyond 9pm.

Route	Purpose	Status*	Recommendations
	Chadstone - Southland		Add peak services to portion of route around Deakin Uni to resolve overcrowding.
800	Define as Princes Hwy service (unchanged)	S	Review Springvale crematorium deviation.
802	Define as Chadstone – Wheelers Hill – Dandenong local route (unchanged)	S	No change
804	Define as Chadstone – Wheelers Hill – Dandenong local route	S	Reroute in Wheelers Hill area (Garnett & Marykirk Dr) to compensate for the removal of 754.
813	Define as local route	S	No change
814	Define as local route	S	Delete portion of route via Police Rd to Springvale as this would duplicate proposed extended 824. Extend to Glen Waverley Station via Jells Rd – this would provide a new N-S connection, allow interchange with 900 at Wellington Rd and permit limited stop operation on the revised 754.
821	Redefine as as local Southland – Springvale local route	S	Swap destinations with Route 705 as follows: Operate to Springvale instead of Clayton for a straighter east-west route. Replacement service to Clayton is provided by Route 705 from Mordialloc to provide a straight N-S route via Boudary Rd.
824	Defined as major South Rd and Police Rd service operating Moorabbin – Clayton – Waverley Gardens.	P	Extend to Waverley Gardens Shopping Centre to provide fast frequent link to Clayton Station. (Clayton - Keysborough route is retained as part of an extended 704)
848	Redefined as local route between Dandenong and Glen Waverley	S	Straighten and extend from Lum Rd to Glen Waverley via Gallaghers Rd to replace rerouted 736 and provide local N-S link. Brandon Park remains served by modified 850.
850	Redefined as Waverley Gardens – Brandon Park – Glen Waverley local route	S	Rerouted to serve parts of Glen Waverley west of Springvale Rd and replace altered parts of 848.
862	Define as Chadstone – Wheelers Hill – Dandenong local route (unchanged)	S	Re-number as 803 to show relationship with 802 and 804 in area.
885	Define as local route Glen Waverley – Springvale (unchanged)	S	No change
888	Define as primary Nunawading – Glen Waverley – Springvale – Edithvale - Chelsea	P	Upgrade weekend services to train frequencies (20 minutes) Operate as single route number to improve legibility.

Route	Purpose	Status*	Recommendations
			<p>Introduce bus priority along entire route, but particularly the section south of Glen Waverley that suffers the most delays.</p> <p>Remove or repair real-time PIDs – the current ones are unreliable.</p>
889	Redefine as Chelsea – Edithvale local route	S	<p>Operate as local service only.</p> <p>Consider occasional extension to Mordialloc to replace proposed deleted Route 700 extension.</p>
900	Define as primary Caulfield – Stud Park route	P	<p>Upgrade weekend services to train frequencies (20 minutes)</p> <p>Introduce bus priority to reduce waiting times when turning out of Monash Uni.</p> <p>Extend Sunday services to 11pm or later (at least to Monash Uni) to provide more connections with trains.</p>

(*) Status key: P = primary, S = secondary, T = tertiary. Where routes are in a group the overall service status recommended generally relates the the entire group rather than each constituent route.

Conclusion

Described is an approach with suggested changes that would go a long way to improving public transport service quality and thus patronage in Manningham, Whitehorse and Monash. It advocates an integrated network of frequent routes between major trip generators and timetables that mesh with trains. Special attention has been paid in responding to modern travel patterns, serving local corridors and providing direct feeder services.

Appendix One: A general approach to bus route planning

This submission supports a key performance indicator for public transport service provision along the lines of the following:

- 80 percent of residents (and 90 per cent of workplaces) are within fifteen minutes walk of a public transport service that operates at least every fifteen minutes seven days per week.

Given 20 minute weekend running of trains in the study area, a fifteen minute target requires more than just bus reform. However accepting a looser twenty minute frequency target on weekends is much easier and could be an aim of this review.

As well as good frequency and operating hours, bus routes must be direct and serve major trip generators. This is both for the benefit of passengers (in reduced travel time) and the Department (in operating economies). From our current network (which includes many circuitous routes) it may be possible to extract an 'efficiency dividend' which can be used to provide more frequent services for more hours of the day over more days of the week.

Other planning principles include the desirability of providing access to nearby railway stations and regional shopping centres. Ideally routes should have trip generators at either end so that it can attract patronage in both directions. For example, a local route might operate between Box Hill Station and Ringwood Station.

Except to augment capacity on major corridors or provide short-distance travel in suburban activity centres, route duplications should generally be kept to a minimum. However where they exist there are major opportunities to exploit overlaps to provide a more frequent combined service.

An example would be staggering the timing of two 30 minute routes to provide an even 15 minute service over the combined section. If the combined section is near a railway station, this would result in buses meeting every train, thus strengthening their 'rail feeder' function. If connections are poor, this can be overcome by bringing all services forward or back by ten minutes or so.

Headway harmonisation has similar benefits. If all buses in the area are either every 15, 30 or 60 minutes this provides consistent connections that are not possible with a mix of 25, 40 and 50 minute services (which exists at the moment).

Harmonised headways are no cure; unless all services are frequent some connections may be poor. However this would be a lower risk for connections with major routes (due to their frequency) and at least it would be consistent. In addition there is the possibility of remedy if the connection is deemed important enough. Opportunities for bus to bus connections potentially exist at any point where two routes intersect, but are greatest at railway stations and near major shopping centres.

The following steps are advocated:

1. Identify key regional trip generators, interchanges and corridors
2. Identify the community's transport needs and undeveloped patronage opportunities.
3. Assess the strengths and weaknesses of the current network in relation to needs.
4. Design a network of 'primary' routes between major nodes, providing fast and frequent links from early morning to late at night.
5. Design a local network of well-connected 'secondary' routes catering for trips outside the primary network

6.Examine means to provide superior service. Possibilities include co-scheduling overlapping routes (ie timing two less frequent routes to provide a more frequent combined service), introducing a harmonised headway hierarchy, designing and exploiting connection opportunities, making routes more direct and extending service to a nearby interchange.

The role of various routes is shown in the table below:

Route type	Role	Days & Span	Frequency
Primary	<p>Links key railway stations, major activity centres, regional shopping centres and large education campuses.</p> <p>Also a feeder for major suburban areas remote from railway stations.</p> <p>Fast and direct along main roads.</p>	<p>Early morning until midnight seven days per week.</p> <p>NightRider services may overlap some primary routes, providing later services.</p>	<p>Peak: 10 or 15 min Weekday: 15 min Weekend: 20 min Night: 30 min</p> <p>Services are train frequency at all times with similar operating hours.</p>
Secondary	<p>Links residential suburbs to local railway stations and shopping areas.</p> <p>As direct as possible between and within suburbs.</p>	<p>Early morning until 9pm seven days per week (ie MOTC min standards).</p>	<p>Peak: 15 or 20 min Weekday: 30 or 60 min Weekend: 40 or 60 min Night: 60 min</p> <p>Consistent connections with every train or every second train.</p> <p>Headway harmonised.</p>
Tertiary	<p>Serve localities or destinations that are poorly served by primary and secondary routes.</p> <p>Circular, loop and/or unidirectional routes allowed.</p>	<p>Five or six days per week.</p> <p>May be peak-only or interpeak services.</p>	<p>Infrequent and/or limited hours.</p> <p>Between 2 and 10 services per day.</p> <p>Connections with selected trains only if relevant.</p>

Appendix Two: Historical, social and transport overview of Manningham, Monash and Whitehorse

Manningham, Monash and Whitehorse form a broad north-south arc between 15 and 25km east of Melbourne CBD. It comprises four main communities of interest; Doncaster/Templestowe, Box Hill/Blackburn, Mt Waverley/Glen Waverley and Clayton/Oakleigh.

To many the area exemplifies the postwar Australian suburban dream of home ownership available to most working families. While the grid street layouts are reasonably transit-friendly it was in these areas, just beyond the tramlines, that motorisation first took hold, particularly in Monash. Evidence of this can be seen in the large number of early car-based developments in the 1955-70 period, such as Pinewood Shopping Centre (early drive-in shopping centre), Oakleigh motel (first motel), Chadstone Shopping Centre (major drive-in shopping centre), Oakleigh drive-in (early drive-in theatre) and Monash University (first drive-in campus).

Average incomes fall from north to south and west to east; Doncaster/Templestowe are considered upper class, Blackburn and Glen Waverley solidly middle class and Oakleigh/Clayton working class. It is not so much extremely high incomes that lifts Doncaster's average income, but rather the near absence of people on low incomes. This affects public transport since it means fewer 'captive' passengers compared to elsewhere. Conversely the large numbers of overseas students around Oakleigh, Clayton and Box Hill hugely boost patronage in these areas.

Housing is mainly established (mostly post WWII) and populations are fairly static due to diminished household sizes and population ageing. Due to convenient access and good services units are replacing houses in some areas.

The area is home to several major universities and hospitals of state and even national significance. Major suburban hubs are Doncaster, Box Hill, Glen Waverley all with significant services employment. To this should be added the Clayton/Monash precinct and business parks along Blackburn, Springvale and Ferntree Gully Road. These form part of a major suburban employment complex that went unnoticed by public transport planners until very recently.

Unlike Monash and Whitehorse, Manningham has no railway stations. Hence most of its bus routes run east-west, either directly to Melbourne CBD or connecting with services that do. The main exceptions are routes that link it to the Hurstbridge and Belgrave/Lilydale railway lines.

The most popular bus routes in Monash and Whitehorse run north-south. These connect residential areas to train and tram services and operate as local routes in their own right. Three routes; 700, 703 and 888/9 have been upgraded to SmartBus status and feature amongst Melbourne's ten most popular routes. The grid street layout in Monash and Whitehorse permits particularly direct local routes at a near ideal 1km spacing, but coverage is an issue in some parts.

Almost the entire review area comprises established suburbia. Falling occupancies per household may be offset by unit development but the overall rate of population growth for the area is lower than the metropolitan average. For this reason this submission concentrates on improvements to existing routes (and upgraded services on them) rather than wholesale introduction of new routes.

Appendix Three: Key trip generators in and near Manningham, Monash and Whitehorse

The following are key trip generators and transport nodes within and adjoining the review area.

	Train	SmartBus or TramLink	Min hours bus (9pm finish Mon - Sun)	Limited bus (<9pm finish)
Box Hill Centro	✓	✓	✓	✓
Box Hill Hospital	< 1km	< 1km		✓
Box Hill TAFE	✓	✓	✓	✓
Brandon Park SC		✓		✓
Chadstone SC		✓	✓	✓
Clayton Station	✓	✓	✓	✓
Deakin Uni			✓	✓
Doncaster Shoppingtown			✓	✓
Forest Hill Chase SC		✓		✓
Glen Waverley	✓	✓	✓	✓
Holmesglen TAFE	✓	✓	✓	✓
Monash Uni Clayton		✓	✓	✓
Monash Medical Centre	< 1km	✓		✓
Mt Waverley SC	✓	✓	✓	✓
Oakleigh	✓	✓	✓	✓
Templestowe Village SC			✓	✓
The Glen SC	✓	✓	✓	✓
The Pines SC				✓
Vermont South SC		✓		✓
Waverley Gdns SC			✓	✓

This submission supports seven day service and increased frequency to improve links between these key trip generators.

Appendix Four: An audit of SmartBus services in Melbourne's eastern suburbs

All existing SmartBus routes operate through or near the Cities of Monash, Whitehorse or Manningham. They perform both local and longer distance travel roles. We examined current SmartBus services against three criteria: service levels/connectivity, passenger information and bus priority (which affects travel speed and efficiency).

1. Service levels/connectivity

a. Frequency, hours and holidays. SmartBus routes aim to provide an assured minimum service frequency over a wide span of hours. Minimum SmartBus service standards are as follows: End time: Monday-Saturday: midnight, Sunday: 9pm; Service frequency: Weekdays: 15 minutes, Nights/Weekends: 30 minutes. Two SmartBus routes (703 and 888/889) commonly breached these standards. In addition three of the five routes were found to breach MOTC public holiday standards by running only a Sunday timetable on all public holidays.

Route	M-F day	M-F even	Sat day	Sat even	Sun day	Sun even	Pub Hols (MOTC)
700	15 comply*	30 comply	15 – 20 comply	30 comply	32 breach	30 comply	breach
703	15 comply*	60 breach	45 breach	30 breach**	45 breach	45 breach	breach
888/889	15 comply*	30 – 60 breach	40 breach	40 breach**	40 breach	40 breach	breach
900	15 comply	30 comply	30 comply	30 comply	30 comply	30 comply	comply
901	15 comply*	30 comply	30 comply	30 comply	30 comply	30 comply	comply

(*) Some breaches during peak times (**) Early finishing (9pm)

b. Connectivity with trains. Full connectivity requires identical bus and train frequencies, at least during off-peak times. While every second train connections suffice for local routes, 'every train' connectivity is required for premium 'SmartBus' services. The following table shows that SmartBus connectivity with trains is especially poor on weekends.

Route	M-F day	M-F even	Sat day	Sat even	Sun day	Sun even	Pub Hols (MOTC)
Trains	15	30	20	30	20	30-40*	comply
700	15 comply	30 comply	15 – 20 comply	30 comply	32 breach	30 comply*	breach
703	15 comply*	60 breach	45 breach	30 breach**	45 breach	45 breach	breach
888/889	15 comply*	30 – 60 breach	40 breach	40 breach**	40 breach	40 comply*	breach
900	15 comply	30 comply	30 breach	30 comply	30 breach	30 comply	comply
901	15 comply*	30 comply	30 breach	30 comply	30 breach	30 comply*	comply

(*) Full harmonisation is not possible on Sunday evenings due to incompatible train headways.

2. Passenger information. Printed timetables at SmartBus stops are of acceptable standard. Electronic signs are frequently

inaccurate or do not display real-time information on all services serving a stop. We do not support their use on new orbital routes until these issues are resolved on existing routes.

3. Bus priority. We strongly support effective bus priority at major interchanges, such as Doncaster Park & Ride, Shoppingtown, Box Hill, Forest Hill, Glen Waverley and Monash Uni. Both regular and SmartBus services should benefit.

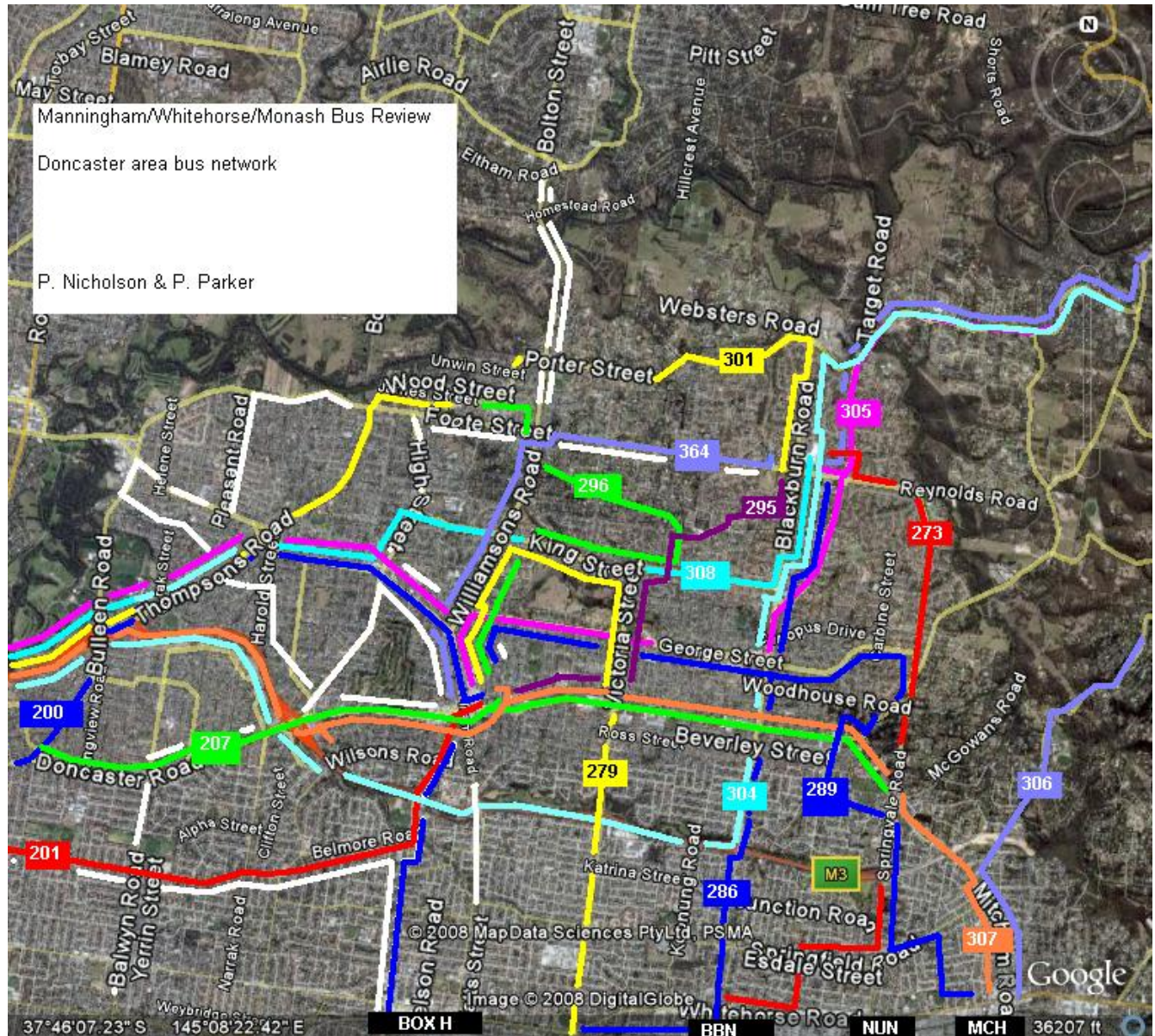
Conclusion: Our analysis shows that especially on weekends SmartBus routes do not meet their own service standards and do not connect reliably with trains. An (i) upgrade of all SmartBus routes to SmartBus standards followed by (ii) an upgrade of the SmartBus standards themselves to match trains is recommended.

Appendix Five: Maps

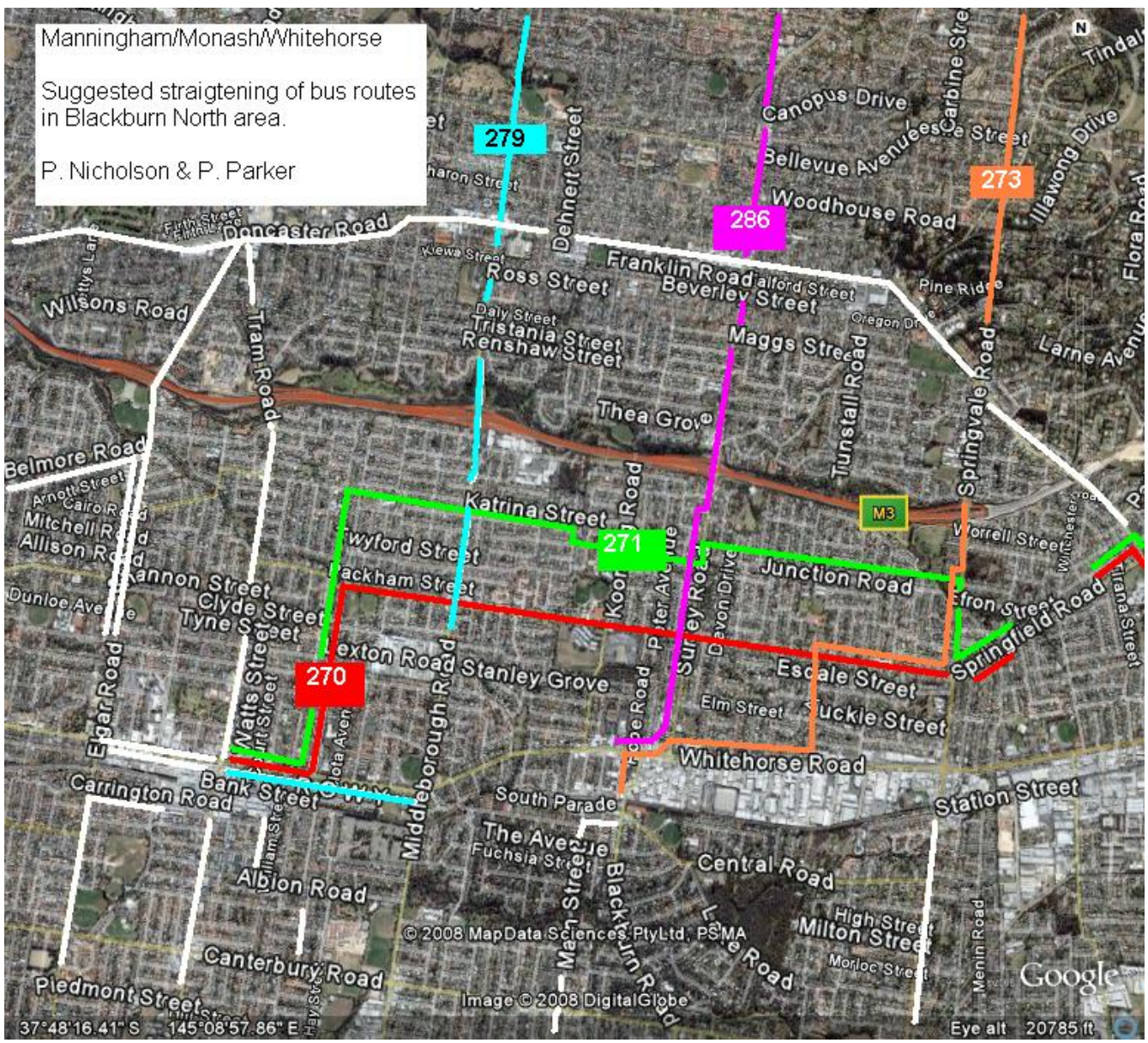
Following are maps of selected parts of the review area to illustrate the more important route changes proposed.

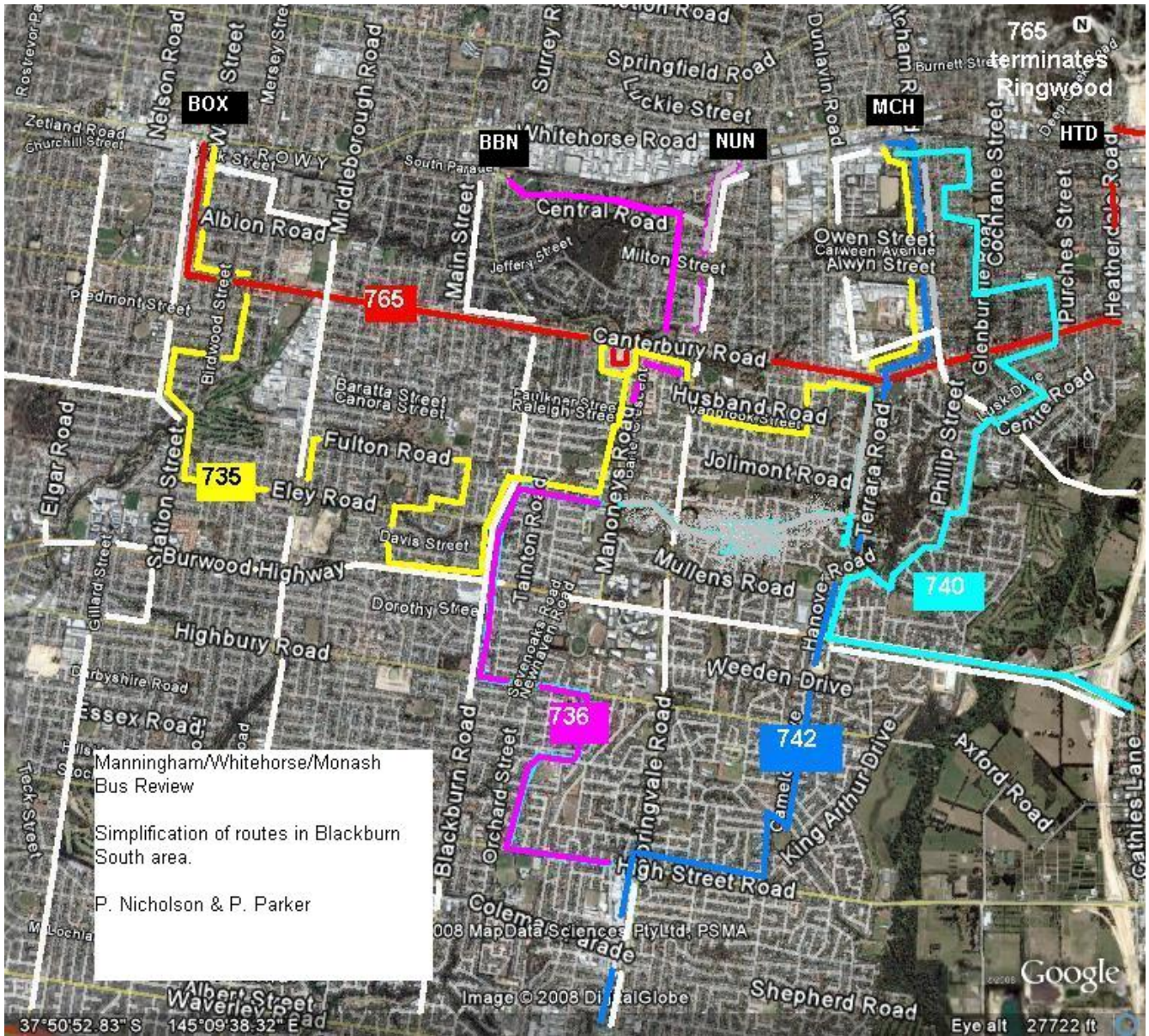
Changed routes are coloured and numbered. Major routes that are not changed are shown in white. The main exception is the Doncaster map, where due to the area's number of routes, some unchanged routes are coloured for clarity.

Somewhat higher resolution maps are available on request.



Manningham/Monash/Whitehorse
Suggested straightening of bus routes
in Blackburn North area.
P. Nicholson & P. Parker





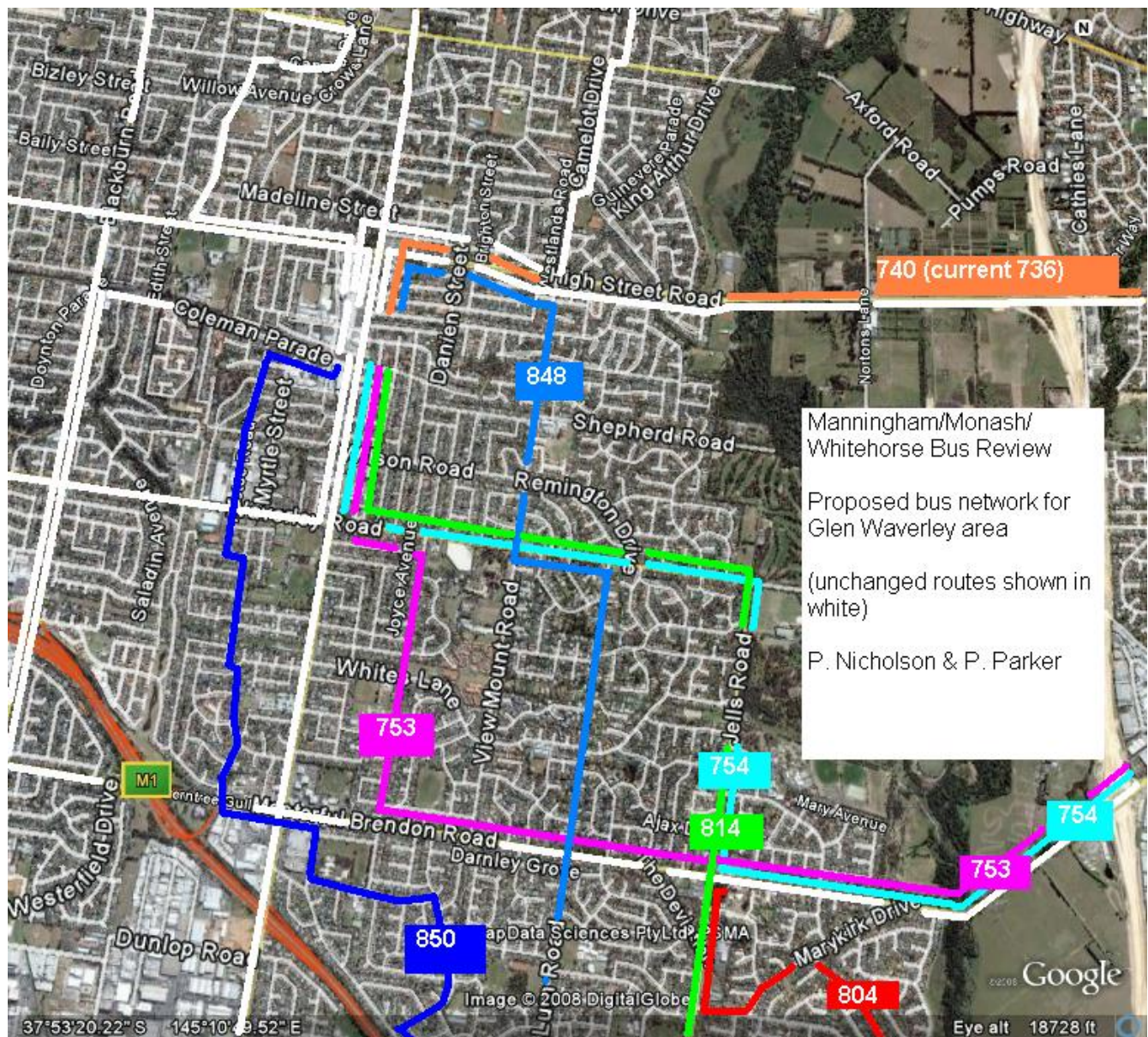
Manningham/Whitehorse/Monash
 Bus Review

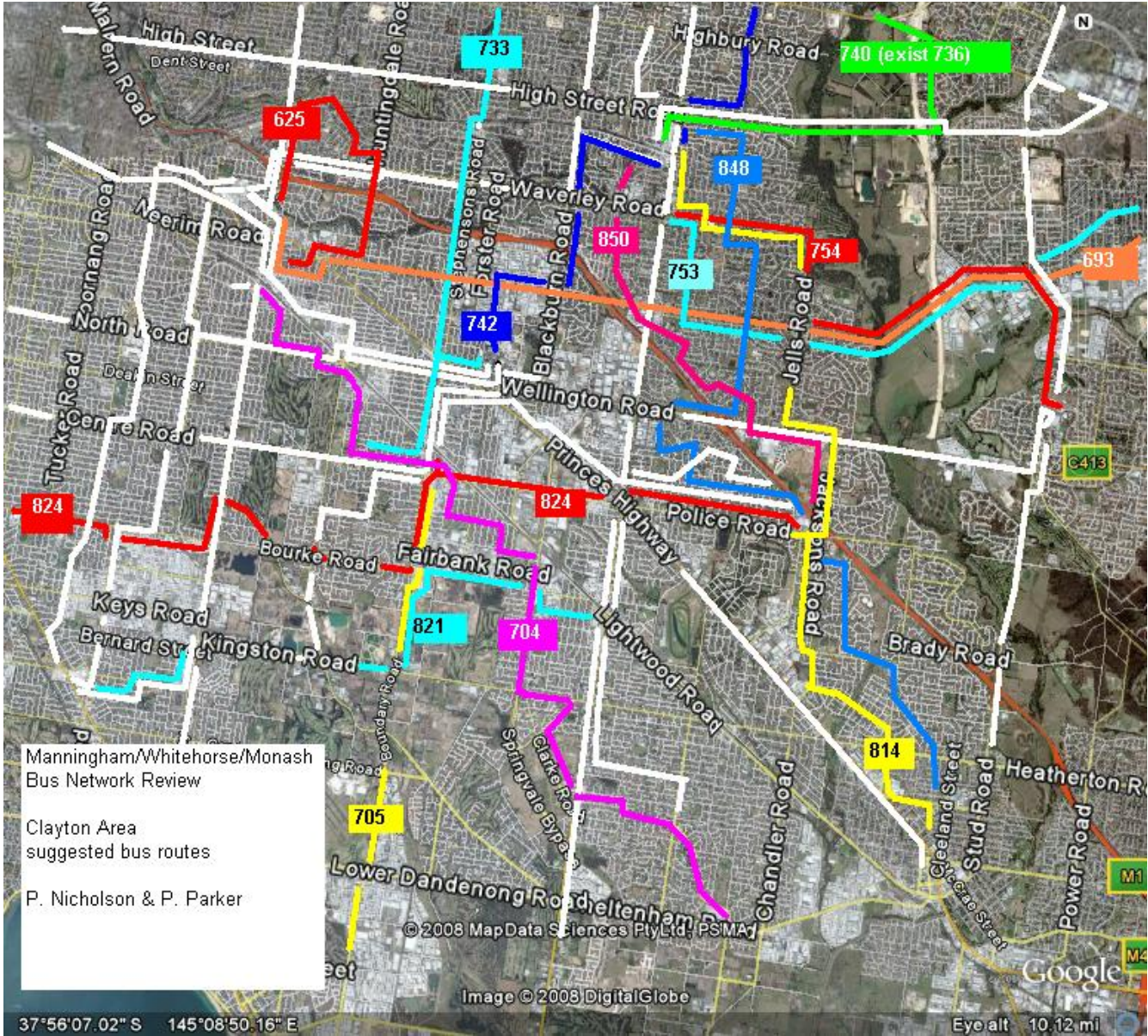
Simplification of routes in Blackburn
 South area.

P. Nicholson & P. Parker

37°50'52.83" S 145°09'38.32" E

Eye alt 27722 ft





Manningham/Whitehorse/Monash
 Bus Network Review

Clayton Area
 suggested bus routes

P. Nicholson & P. Parker

37°56'07.02" S 145°08'50.16" E

Image © 2008 DigitalGlobe

Eye alt 10.12 mi