

= Mitchell Freeway =

Mitchell Freeway is a 30 @-@ kilometre @-@ long (19 mi) freeway in the northern suburbs of Perth , Western Australia , linking central Perth with the satellite city of Joondalup . It is the northern section of State Route 2 , which continues south as Kwinana Freeway and Forrest Highway . Along its length are interchanges with several major roads , including Graham Farmer Freeway and Reid Highway . The southern terminus of the Mitchell Freeway is at the Narrows Bridge , which crosses the Swan River , and the northern terminus is at Burns Beach Road , which is the northern border of the suburb of Joondalup .

Planning for the route began in the 1950s , and the first segment in central Perth was constructed between 1967 and 1973 . The Mitchell Freeway has been progressively extended north since then . In the 1970s , the first two extensions were completed , up to Hutton Street in Osborne Park . By the end of the 1980s , the freeway had reached Ocean Reef Road in Edgewater . The Joondalup railway line was constructed in the freeway median in the early 1990s . This necessitated the relocation of a section of the southbound carriageway , and the construction of three new bridges . In conjunction with these works , additional lanes were constructed in the realigned section .

Since the 1990s , extensions to the Mitchell Freeway have taken it to Burns Beach Road at the northern edge of Joondalup . During 2013 , two sections of the northbound carriageway will be widened with an additional lane . The State Government have announced that the next extension will be to Hester Avenue , to be constructed between 2014 ? 15 and 2016 ? 17 . Further works are planned , which will take the freeway past Yanchep and Two Rocks to the boundary of the Perth Metropolitan Region .

= = Route description = =

The Mitchell Freeway is the northern section of State Route 2 . It commences at the northern end of the Narrows Bridge , Perth , continuing from Kwinana Freeway , and terminates just north of the satellite city of Joondalup at Burns Beach Road , Currambine . All intersections with the freeway are via grade separated interchanges . The speed limit is 100 kilometres per hour (60 mph) except in central Perth , where the limit is reduced to 80 kilometres per hour (50 mph) as the freeway interchanges with Graham Farmer Freeway and Mounts Bay Road . South of Hepburn Avenue , the freeway has 3 to 5 lanes in each direction . From that point north , there are mostly two lanes in each direction , expanding to three lanes between Hodges Drive and Shenton Avenue . The median strip of the freeway also houses the Joondalup railway line , with all but two of the line 's stations also built on the strip . Additionally , a shared pedestrian and bicycle path is built alongside most of the freeway .

= = = Perth and West Perth = = =

The section near the Perth city centre , within the City of Perth local government area (LGA) , features many partial access interchanges . The Narrows Interchange is located just north of the Narrows Bridge , on the eastern edge of Kings Park . This is a hybrid interchange connecting the freeway with Mounts Bay Road and Riverside Drive , over a distance of 800 metres (2 @, @ 600 ft) . There is complete access to and from Mounts Bay Road via a standard northbound exit ramp and looped ramps for the other movements . There is a partial Y @-@ Interchange incorporated for direct access to and from Riverside Drive via a southbound exit ramp and a northbound entrance ramp . All other traffic movements must be made via Mounts Bay Road . The Riverside Drive entrance ramp merges with the Mounts Bay Road northbound entrance ramp . The southbound exit ramp is similarly shared , before diverging for three destinations : Mounts Bay Road , Riverside Drive , and the Perth Convention and Exhibition Centre car park . The main northbound exit to Hay Street is via an access road , which begins on the Mounts Bay Road exit ramp . The access road rejoins the freeway as an outside lane on the shared Riverside Drive and Mounts Bay Road entrance ramp . The Hay Street exit ramp , a short distance later , can be accessed from the two

outermost lanes . This allows the traffic entering the freeway from the ramp to continue north or exit at Hay Street without weaving .

The freeway continues north @-@ westerly for 240 metres (790 ft) , splitting Mount Street in half , and passing under Malcolm Street . After this , it turns north @-@ easterly for 500 metres (1 @,@ 600 ft) , and lines up with the city blocks between George and Elder streets , a pair of one way frontage roads . The freeway also marks the boundary between Perth and West Perth . Partial access is provided to or from all the roads that the freeway crosses over (or under in the case of Hay Street) , with the exception of Roe Street . North of Roe Street , the freeway turns north @-@ west towards Glendalough over the course of 1 @.@ 1 kilometres (0 @.@ 68 mi) . In this section the freeway marks the boundary between the City of Perth and City of Vincent LGAs . There is a full Y @-@ Interchange here with Graham Farmer Freeway , which bypasses the Perth city centre via a tunnel , and provides access to Perth Airport . Combined with this interchange is a partial Y @-@ Interchange with Charles Street . The southbound entrance ramp merges with , and northbound exit ramp diverges from , the Graham Farmer Freeway ramps . There is a traffic light controlled intersection with Newcastle Street at the northern end of these ramps . Charles Street is the start of State Route 60 , an alternative route to Perth 's northern suburbs and areas north of the Perth Metropolitan Region . Located in the vicinity of these interchanges are the Sutherland Street northbound entrance ramp , from West Perth , and a southbound exit ramp to both James Street , Northbridge , and Wellington Street , Perth . The Loftus Street overpass , near the northwestern end of the Graham Farmer Freeway ramps , is the edge of the City of Perth LGA ; beyond this point the freeway is the boundary between West Leederville in the Town of Cambridge and Leederville in the City of Vincent .

= = = Northern suburbs of Perth = = =

In the northern suburbs of Perth , most of the interchanges are standard diamond interchanges , and the rest are modified versions , which have ramps missing or replaced with loop ramps . The first interchange 0 @.@ 9 kilometres (0 @.@ 56 mi) north @-@ west of West Perth , is with Vincent Street and Lake Monger Drive . This interchange has a looped southbound entry ramp , so that Leederville Parade can join to the south side of intersection with Vincent Street and the southbound ramps . The northbound exit ramp terminates at Southport Street , 200 metres (660 ft) south of Vincent Street and Lake Monger Drive . The freeway then proceeds northwest for 1 @.@ 9 kilometres (1 @.@ 2 mi) alongside Lake Monger 's eastern edge , after which there is a half diamond interchange with Powis Street , with only a northbound exit ramp and a southbound entrance ramp . The freeway continues north , now within the City of Stirling LGA , through Osborne Park , until it reaches Hutton Street after 2 @.@ 4 kilometres (1 @.@ 5 mi) . There are several local roads in Osborne Park that have T @-@ Junction intersections with the freeway ramps south of Hutton Street . These are McDonald Street West and Hector Street West , with the northbound exit ramp ; and Cape Street , Hector Street , and McDonald Street with southbound entry ramps . The freeway has an S @-@ curve after Hutton Street , moving to an alignment further west that does not bisect any suburbs . The interchanges with Cedric Street on the S @-@ curve , and Karrinyup Road at the end of the S @-@ curve , are diamond interchanges . There are slight modifications to the entrance and exit ramps between these roads , which merge for 500 metres (0 @.@ 31 mi) , requiring traffic to weave . The curved section is the boundary between Stirling to the east of the freeway , and Osborne Park and Innaloo to the west .

The next interchange , after 1 @.@ 6 kilometres (0 @.@ 99 mi) , is with Erindale Road . It is another half diamond interchange , with only northbound exit and southbound entrance ramps . Beyond Erindale Road , the suburb to the east of the freeway is Balcatta , and 1 @.@ 3 kilometres (4 @,@ 300 ft) further north is Reid Highway , with the southbound entry ramp looped . Balcatta Road joins the intersection of the southbound ramps with Reid Highway . Reid Highway , together with Tonkin Highway , provides a limited @-@ access route to Perth Airport . North of Reid Highway , Mitchell Freeway divides Carine to west from Hamersley to the east . There is no access to next major road , Beach Road . It forms the border between the City of Stirling and City of Joondalup

LGAs ; as well as between Carine and Duncraig west of the freeway , and Hamersley and Warwick to the east . However , Warwick Road 's interchange is only 2 @. @ 1 kilometres (1 @. @ 3 mi) north of Reid Highway . It is a standard diamond interchange , but weaving is required between Reid Highway and Warwick Road due to the short distance between the interchanges . Greenwood is located north of Warwick Road and east of the freeway .

The following two interchanges , after 2 @. @ 6 kilometres (1 @. @ 6 mi) and 2 @. @ 1 kilometres (1 @. @ 3 mi) respectively , are with Hepburn Avenue and Whitfords Avenue . The Hepburn Avenue interchange is located at the corners of Duncraig , Greenwood , Kingsley , Western Australia , and Padbury ; while the Whitfords Avenue interchange is located at the corner of Kingsley , Padbury , Cragie , and Woodvale . Each interchange also provides access for the railway stations in the median (Greenwood and Whitfords respectively) via the southbound entry ramps , which are two @- @ way north of the carparks ' entrances . North of here , over a distance of 7 kilometres (4 @. @ 3 mi) , are standard diamond interchanges with Ocean Reef Road , Hodges Drive , and Shenton Avenue , which provide access to Joondalup city centre , and Joondalup Health Campus , east of the freeway . West of the freeway are the suburbs of Heathridge , Connolly and Currambine . After 700 metres (2 @ , @ 300 ft) the freeway passes under Moore Drive , and then terminates at Burns Beach Road , 1 @. @ 3 kilometres (0 @. @ 81 mi) further north . Until the freeway is extended , access to areas further north is provided by Marmion Avenue to the west of the terminus , or via Wanneroo Road to the east .

= = History = =

The Mitchell Freeway began as a highway proposed in the Metropolitan Region Scheme in the mid @- @ 1950s . The original plan took the route , then known as Yanchep Highway , inland from what is now known as Karrinyup Road to the intersection of Wanneroo Road and Balcatta Road . However , the first gazetted edition of the Metropolitan Region Scheme , from 1963 , shows a controlled @- @ access highway along the current freeway alignment . The later plan only detailed the route up until a point east of Sorrento , at a proposed east @- @ west controlled @- @ access highway on the modern day Hepburn Avenue alignment .

Detailed design on the first stage of the freeway , from the Narrows Bridge to Sutherland Street at the northern edge of the city , began in 1960 , and took several years to be completed . The design included a complex interchange at the Narrows Bridge that was to be built on reclaimed land that was mostly soft mud . Ground improvement works , which included the installations of 43 @ , @ 000 sand drains , began in 1964 ; demolition of buildings in the freeway 's path commenced in 1965 . The freeway was completed in three sections , under three separate contracts . Construction on the central section from Mount Street to Wellington Street started on 18 November 1966 , following a groundbreaking ceremony conducted by Premier David Brand . It was opened to traffic two years later , connected to the Narrows Bridge via a temporary Bailey Bridge over Mounts Bay Road . The new road carried up to 1400 vehicles per hour during peak hours .

Work on the section north of Wellington Street , known as the Hamilton Interchange , began in October 1969 . It was partially opened on 17 November 1971 , but was not completed until 4 October 1972 . The final part of the project to be completed was the Narrows Interchange . Construction began in 1970 with the installation of thirteen caissons , which would house foundation columns . Placement of the caissons was difficult ; as well as sinking vertically as intended , they also tilted and slid horizontally . Corrections were made by selective excavation , blasting bedrock , and applying tension via guy @- @ wires . Following the foundation works , construction proceeded swiftly ; most of the work was completed by 1972 . Premier John Tonkin opened the interchange on 30 November 1973 . This initial section functioned only as a distributor for Narrows Bridge traffic accessing Perth 's central business district or adjacent areas to the north @- @ west . Whilst initially referred to as the " Western Switch Road " , it was renamed after the former Western Australia State Premier and Governor Sir James Mitchell , on 5 June 1963 .

Several stages were built through the late 1970s , 1980s and early 1990s . The first extension of the freeway was nearly a mile long (1 @. @ 6 km) , taking the freeway to Vincent Street . This

stage also included a long , curving bridge , eight @-@ span bridge connecting northbound traffic to Charles Street . The construction of this stage , which began in February 1974 , resulted in the suburb of Leederville being split in two . Residential and industrial buildings were demolished , and streets were cut off on both sides of the freeway 's path . The extension opened to traffic on 8 March 1976 , having cost \$ 15 @. @ 15 million . It was opened by the state Minister for Transport , Mr R J O ? Connor , MLA . A commemorative plaque was located under the bridge leading to Charles Street .

The design of Stage 3 of the freeway , a 4 @. @ 8 @-@ kilometre (3 @. @ 0 mi) section extending to Hutton Street , was completed in 1974 . The existing soil was not suitable for construction , as the area generally consisted of soft peat and old landfills . In 1975 , the ground was consolidated with 720 @, @ 000 cubic metres (25 @, @ 000 @, @ 000 cu ft) of sand . Construction took place between 1976 and 1978 , with the section opened by the Minister for Transport , David Wordsworth , on 2 June 1978 . A commemorative plaque was unveiled at the Powis Street bridge . This stage cost \$ 12 @. @ 5 million , and received the Institution of Engineers Australia 's Western Australian Division Engineering Excellence Award in 1978 .

After a four @-@ year gap , construction of Stage 4 began , which would take the freeway to Erindale Road . The first half of the stage , up to Karrinyup Road , opened on 12 December 1983 , while the project wasn 't complete until 21 September 1984 . It was opened by the state Minister for Transport Julian Grill , MLA . This section completed 24 kilometres (15 mi) of freeway in Perth , from Bull Creek to Balcatta . The next two stages were constructed together , extending the freeway to Hepburn Avenue . Stage 5 was from Erindale to Warwick Road , and involved excavating a large quantity of material , including 600 @, @ 000 tonnes (590 @, @ 000 long tons ; 660 @, @ 000 short tons) of limestone . That stage cost \$ 22 @. @ 73 million , while Stage 6 only cost \$ 8 @. @ 06 million . Both stages were opened together , on 6 August 1986 . The first stage of Reid Highway (then known as the North Perimeter Highway) was built at the same time , and opened on 16 May 1986 . A further extension to Ocean Reef Road was opened on 2 July 1988 by the Federal Minister for Transport , Peter Morris , at a cost of \$ 17 @. @ 5 million . The state and federal governments provided most of the funds , \$ 9 @. @ 7 million and \$ 5 @. @ 2 million respectively . The City of Wanneroo contributed \$ 1 @. @ 3 million , Joondalup Development Corporation \$ 1 million , and land developers \$ 300 @, @ 000 , as they wanted the freeway built ahead of schedule to stimulate local development .

In 1991 and 1992 , the median strip of the entire freeway was significantly widened to accommodate the Joondalup railway line , being built under the Northern Suburbs Transit System project . The line was to be located in the middle of the road reserve , between the freeway carriageways . At the time , the northbound and southbound carriageways , between Loftus Street and McDonald Street , were positioned next to each other , with space for future widening located on the eastern side of the road reserve . Initially , three new road bridges were constructed over Vincent Street , Powis Street , and Scarborough Beach Road . Once the road bridges had been completed and surfacing works completed , the southbound carriage was relocated , creating the required space for the railway line construction . Additional lanes were constructed in the realigned section , funded from regular road funding sources , whilst the bridges and some associated works were included as part of the costs for the Northern Suburbs Transit System project .

After a 7 @-@ year @-@ hiatus , a 3 @-@ kilometre (1 @. @ 9 mi) extension to Hodges Drive was opened by the Premier Richard Court in December 1999 , two months ahead of schedule . The project also included widening the section between Karrinyup Road and Hepburn Avenue to three lanes in each direction . The latest extension was a 4 @-@ kilometre (2 @. @ 5 mi) stretch to Burns Beach Road , with a diamond interchange at Shenton Avenue and an overpass for Moore Drive . Local residents were opposed to aspects of the initial plans , such as the design of a section near a primary school and the clearing of native vegetation . The state government therefore established the Community Consultative Working Group and later the Construction Reference Group , composed of members of the local community . The input from these groups resulted in several changes to the design . The project was managed by Main Roads in conjunction with Macmahon Contractors . Construction of the extension was initially planned for May 2006 , but

began on 14 December 2006 . By July 2008 , 90 % of the works had been completed and the new section was predicted to open in September 2008 . However , the official opening was not until 2 November 2008 , when the road was opened by Western Australia 's Minister for Transport , Simon O 'Brien , and the previous Minister for Planning and Infrastructure Alannah MacTiernan . The \$ 160 million project was completed \$ 10 million under budget . The opening was celebrated with a procession of vintage cars along the new freeway segment .

= = Future works = =

= = = Widening = = =

In its 2011 / 12 budget , the State Government committed \$ 30 million for the widening of Mitchell Freeway northbound between Hepburn Avenue and Hodges Drive from two to three lanes . Traffic volumes in the preceding years had increased rapidly , almost reaching the previously projected 2016 traffic volume of 40 @, @ 000 vehicles per day . The resulting congestion in the afternoon traffic peak increases the chances of rear @-@ end crashes as well as driver frustration . Construction of the third lane began in February 2013 , and is scheduled to be completed by the end of the year . A 4 @.@ 5 @-@ kilometre (2 @.@ 8 mi) section from Hepburn Avenue to Ocean Reef Road opened in August 2013 . As part of the project , the existing lanes will be resurfaced afterwards , during the summer months of 2013 ? 14 . The design of the freeway is such that no bridgeworks will be required on overpasses , and rail services in the median will not be affected .

The freeway has also been expanded with an extra lane northbound between Perth and Hutton Street , in conjunction with works to increase the capacity of the Graham Farmer Freeway tunnel . Works progressed in two stages , with Vincent Street as the midpoint . As part of the project , the overpasses at Powis Street , Vincent Street and Scarborough Beach Road have been widened . An additional slip lane has been constructed , from Graham Farmer Freeway 's Loftus Street exit ramp to Mitchell Freeway northbound , to access Vincent Street without changing lanes to the left lanes of Mitchell Freeway northbound . The project commenced in February 2013 and was completed in December 2013 .

= = = Extensions = = =

The Mitchell Freeway is planned to continue north to the Metropolitan Region Scheme 's boundary , beyond Yanchep and Two Rocks . The state government announced in March 2012 the formation of the Mitchell Freeway Extension Community Working Group . The group worked with Main Roads Western Australia to investigate options for relieving congestion , with a focus on the next freeway extension . Several options were considered , before the group released a strategic business case in November 2012 . The report recommends a staged approach , starting with intersection improvements between 2013 and 2015 . This would be followed by a freeway extension to Hester Avenue , by 2017 and then an expressway standard extension to Romeo Road , Alkimos by 2021 . Half @-@ diamond interchanges are suggested for Neerabup Road and Hester Avenue .

In December 2012 , the State Government announced the freeway would be extended to Hester Avenue between 2014 ? 15 and 2016 ? 17 , over a distance of 6 kilometres (3 @.@ 7 mi) . The extension will include interchanges at Burns Beach Road and Neerabup Road . Work on the extension began with a ground @-@ breaking ceremony on 20 May 2015 , and is expected to be completed in 2017 . The projected cost is \$ 261 @.@ 4 million , with the federal government contributing \$ 209 @.@ 1 million and the state government funding the remaining \$ 52 @.@ 3 million . The project scope includes a six @-@ kilometre (3 @.@ 7 mi) dual carriageway extension to Hester Avenue , Clarkson , with grade @-@ separated interchanges at Burns Beach Road , Neerabup Road and Hester Avenue . Other roads in the area will be upgraded , including widening Hester Avenue and Wanneroo Road , and extending Neerabup Road east to the intersection of Flynn Drive and Wanneroo Road .

= = = Interchange upgrades = = =

In October 2012 the state government announced that the freeway 's diamond interchange with Reid Highway will be upgraded with the installation of extra turning lanes and traffic lights . The project is an interim solution to lower congestion and reduce the volume of traffic using local roads to avoid the interchange . The longer term plan is to upgrade Reid Highway to a dual carriageway near the freeway interchange , including a second overpass bridge . The dual carriageway works are scheduled for construction in 2014 ? 15 .

= = Interchanges = =

The entire freeway is in the Perth Metropolitan Region .