# Summary Statement of Evidence

## East West Link

## David Mead

### Introduction

1. In this summary, I provide an overview of the key conclusions of my evidence dated 22 May 2017, clarify some points that I made in that evidence and respond to several points which have been raised in the rebuttal evidence of Mr Lister and the summary statements of Messrs McIndoe and Brown and/or in cross-examination of those witnesses and questions of them from the Board.

2. This summary addresses the following:

   - Overview of key conclusions in my evidence
   - International examples of motorways being removed alongside waterways
   - Walking and cycling conditions with and without the project
   - Land/water interface between the wharf and Taumanu (including Te Hopua)
   - Possible additional mitigation.

3. In paragraph 5 of my evidence I set out my qualifications and experience in planning and resource management. I omitted to include my experience in the field of urban design. Details are now attached as Attachment One.

### Overview of Key Conclusions of Evidence

4. My evidence addressed the Onehunga end of the project (Sector 1). My brief did not extend to a consideration of other areas of the project, or to an overall assessment of it in terms of s104 and 104D of the Act.

5. In my opinion, the East-West Link project in sector 1 – the Onehunga foreshore area - has a number of significant adverse effects on the current and future environment of the area that are not appropriately mitigated. Neither can these effects be readily mitigated by further actions. I also do not accept the proposition that some sort of off-set by way of improvement elsewhere helps to compensate for these unmitigated effects.

6. These effects are:

   a) the further severing of the urban area of Onehunga from its foreshore coastal environment, both in a physical and perceptual sense;

b) the loss of land within Gloucester Park and the lost opportunities for better pedestrian connections into and across this park to the coastal edge;

c) the loss of coastal pohutukawa and the landscape impacts of the elevated motorway structure on the coastal environment from the wharf around to Taumanu;

d) the loss of the open, physical and visual connection between Gloucester Park South / Te Hōpua Outstanding Natural Feature and the coastal edge;

e) the visual and aural impact of the elevated motorway structure on the amenity of the coastal edge and the associated diminished experience for people using the coastal pathway;

f) the physical and visual separation between The Landing and the Port, and the 'stranding' of the Sea Scouts building; and

g) the very poor environment under SH20 (both Onehunga Harbour Road and the underpass at the end of Onehunga Mall).

7. The significance of these un-mitigated effects grows in my mind when reference is made to the relevant statutory documents, both in terms of the future land use changes that they signal in the area (which have the implication of a much larger population base affected than today), as well as in terms of what weight or importance should be attached to resources like coastlines, heritage and open space areas. Section 6 of the RMA is relevant in terms of the weighting of adverse impacts on coastal character, the maintenance and enhancement of access to and along the coast, outstanding landscapes and heritage.

8. I have not undertaken an overall assessment of the project against all relevant objectives and policies, nor attempted a broad judgement under Part 2 of the RMA. However my review of the western (Onehunga) end of the project has raised significant concerns that in my opinion are so substantial that they require a re-assessment of the alignment and design of the East West Link in this area. They are, in my view, fundamental flaws which cannot be addressed by way of adjustments elsewhere along the project corridor, or further mitigation.

**Examples of motorway structures being removed.**

9. I referred in my evidence (paragraph 19) to there being a trend towards removing physical barriers like motorways along coastlines. I referred to Mr Brown's evidence where he made a similar statement. However I did not provide any examples in my own evidence to back up the statement that I made.

10. I should have attached a report entitled "The Life and Death of Urban Highways" (see Attachment Two) as evidence of the moves that have been taken in a variety of cities to remove highways that run beside waterways. This report was sourced from: https://www.itdp.org/the-life-and-death-of-urban-highways/

11. It is noted in this report that one of the reasons for removal of highways is to make waterfronts accessible, particularly as industrial and port areas along waterways decline or are closed. In other cases motorways have been removed because improved accessibility, open spaces and mixed use development generates more benefits to a community that the transport benefits of the motorway.

12. Examples that I am aware of that involve motorways beside water (coast or rivers) being removed include:

- Embrcadero Freeway, San Fransico
- Cheonggyecheon, Seoul
- Harbour Drive, Portland
- Rio Madrid, Madrid
- Alaskan Way, Seattle
- I 93 Boston (The big dig), Boston
- George Pompidou Expressway, Paris.

13. I acknowledge that each case is context specific and that many of them are inner city areas. There may well also be cases where new motorways have been built alongside coastal edges (an example is Takatimu Drive (SH 2) beside an inlet of Tauranga Harbour that connects to the port).

14. The point of the above examples is that cities are dynamic environments within which what is seen to be beneficial or not constantly changes. Short term benefits can be easily overstated and long term costs understated. This is especially so for areas that are in transition. As areas redevelop and regenerate, then different sets of values come to the fore.

15. To my mind this is an important issue for the EWL and Onehunga. As I stated in my evidence, the Onehunga area is in a state of transition towards a more densely developed, mixed use community. This can be seen in the data on zoning, employment and population for the Onehunga area, which I attach as Attachment Three. This analysis shows fast population growth, but limited forecast employment growth.

16. In my view it is reasonable to consider the foreseeable needs of current and future generations to access and enjoy open space areas and high amenity coastal areas. There is very little open space in the Onehunga area and so the foreshore environment takes on particular significance. This consideration is separate to any issue of what is the existing environment against which effects may be considered.

**Walking and cycling conditions.**

17. I wish to clarify my view of the benefits of the improved walking and cycling conditions proposed as part of the EWL. I do this because I think it is necessary to place these benefits in context.

18. I acknowledge that my assessment of effects and their mitigation in my Statement of Evidence may not have sufficiently addressed the potential benefits to walking and cycling conditions in the Onehunga area, from the EWL.

19. I have looked at three sub sectors, being:

    1. Onehunga town centre to SH 20 underpass
    2. SH 20 underpass to western end of the wharf
    3. Western end of the wharf to the Cruising Club.

20. Before looking at these three sectors, I wish to make the observation that I would expect any transport project to upgrade and enhance facilities for walkers and cyclists, not just cars, buses and trucks. Pedestrians and cyclists are users of the transport system and should be able to use safe and effective linkages. I am bemused as to how improvements to walking and cycling links can be claimed as 'mitigation' for transport projects. Such improvements are a potential benefit of a project (just like reduced travel times and less congestion for motorists), but I'm not sure they can be added to the mitigation 'pot'.

21. Setting aside that issue, in Attachment Four I attempt to understand the likely benefits of the proposed upgrades.

22. Based on this assessment, in my opinion, in the Onehunga sector, the EWL basically replaces what exists in terms of walking and cycling connections, albeit in a better physical form than presently. Three 'new' shared paths of limited length are added to the existing network that introduce new route choices, but do not add new links:

    a) The new path under SH 20, on the northern side of Onehunga Harbour Road - this may offer an alternative for people not wishing to use the underpass, but the route still requires traversing under the SH 20 Manukau crossing

    b) The land bridge over the trenched section by the port provides for an additional grade separated crossing between The Landing and the port. The existing ped/cycle bridge to the east remains.

    c) The shared path north of the Sea Scouts. This is in addition to Orpheus Drive, where NZTA's own assessment is that the new path will have a minor benefit, given the current low key nature of Orpheus Drive.

23. What does change is the amenity of the three sectors experienced by walkers and cyclists:

a) The link between the port and the town centre along Onehunga Mall Road will see reduced traffic volumes. However the link still relies upon the State Highway 20 underpasses.

b) The amenity around the port and The Landing area must reduce with the EWL, compared to the current situation, with the increased motorway infrastructure and associated traffic in place. The extent of the lid over the trench is important to the extent of change to the amenity in this area

c) To the west from the port around to Taumanu, the amenity benefits of reduced traffic volumes on Onehunga Harbour Road are off-set by the additional traffic in this area and the noise and visual dis-amenity generated by the EWL elevated structure.

24. Overall, my assessment would be that the changed conditions (quality of the environment) for walkers and cyclists is neutral.

**Land / Water Interface**

25. In this part of the Statement I wish to respond to statements made by Mr Lister, Mr McIndoe and Mr Brown in their respective rebuttal statements and hearing summaries in relation to the effect of the EWL on the environment along the stretch of coastline from the existing SH 20 Bridge to the Cruising Club.

26. A component of this environment is Te Hopua, but it is only part of the environment. While effects on Te Hopua as a natural feature are relevant to consider, to my mind the relationship between Te Hopua, Gloucester Park and the coastal edge are also important elements of the environment in this area.

***Current Baseline***

27. In his summary statement, Mr Brown makes the following comment:

*In a related vein, much of the area around the existing port is also blighted by a haphazard array of light to heavy industrial development and the port's own, rather dilapidated state, together with the infrastructure of SH20 and the (new) Mangere Bridge. The EWL, as currently proposed, would compound this incursion and related aesthetic degradation – within and near the Onehunga Wharf area, in particular.*

28. This statement could be taken to mean that the effects of the EWL need to be considered against a 'low' baseline. Mr Lister (para 4 of his summary statement) makes the point that he considers effects in the Onehunga area should be seen in the context of an area already substantially modified and severed by the existing motorway and other historical development.

29. In my view, the current state of the environment should not be the only bench mark upon which changes to that environment should be measured. It is reasonable and appropriate to

take a 'real world' interpretation of the environment as it is likely to evolve. This is ever more so in a dynamic urban environment.

30. Equally, it is not always the case that an existing 'low' quality environment justifies further incursions. Coastal areas are highly valued environments for amenity and recreational purposes. Section 7 of the RMA refers to the maintenance and enhancement of amenity values, for example.

***Te Hopua***

31. At para 5.9 of his rebuttal statement, Mr Lister states:

*A particular aspect raised in* evidence *is physical and visual severance of Te Hōpua from Manukau Harbour. While I acknowledge EWL will have some adverse effects in this regard, I consider they will be low in significance for the following reasons:*

32. He then goes onto list four points which I repeat and then comment upon.

*(a) The EWL road is only moderately elevated where it traverses the gap where the crater formerly connected to the harbour: For instance, between chainage 400 and 525 the design level of the main alignment drops from approximately 4.6m above the existing level of Onehunga Harbour Road to approximately 2m. Views will still remain to the harbour from the rim of the crater as illustrated by the photosimulation from viewpoint 2 (the entrance to Gloucester Park North on Onehunga Mall);*

33. To my mind, the urban amenity / urban design issue of visual and physical severance effects is not about the view from Gloucester Park North across to the sea (although that is still an issue), it is about walking around the foreshore and being able to look into at least part of the Park. Whether views change from viewpoint 2 is irrelevant to this experience.

34. As far as I can tell heading north from the port along the coastal path, there will only be about 25m of the EWL (after it emerges from the trench heading towards the Neilson Street interchange) that is about 1.5m or lower above ground level, after that it will be higher than your average person. My reading of the long sections is that at chainage 525, the difference between ground level and the design level of the road is 3m, while at 400 it is 5.25m. For the majority of the stretch between the wharf entrance and the Neilson Street over bridge, Te Hopua will be hidden behind the EWL embankment, as people walk and cycle along the foreshore. This diminishes its contribution to the wider amenity of the area, and lessens the amenity of this route.

35. Opening up part of the EWL embankment to a bridged structure may help somewhat with visual interaction, but visual connectivity is likely to be only substantially maintained where

any 'bridge structure' will be about 5m or higher. In any case, the structure of the motorway will still dominate.

*(b) The physical and visual connection between the harbour and the northern half of the crater floor (i.e. Gloucester Park North) is already blocked by SH20 and the screening vegetation planted adjacent to the motorway;*

36. I agree that SH 20 does block the link from the north, but there is no current visual block between the harbour and the southern half of the park, which is the critical part when you are on the foreshore.

37. Below is a diagram from page 11 of the Technical Report 4 - Geological Heritage Assessment. It shows the location of the tuff rim in relation to the mapped ONF.

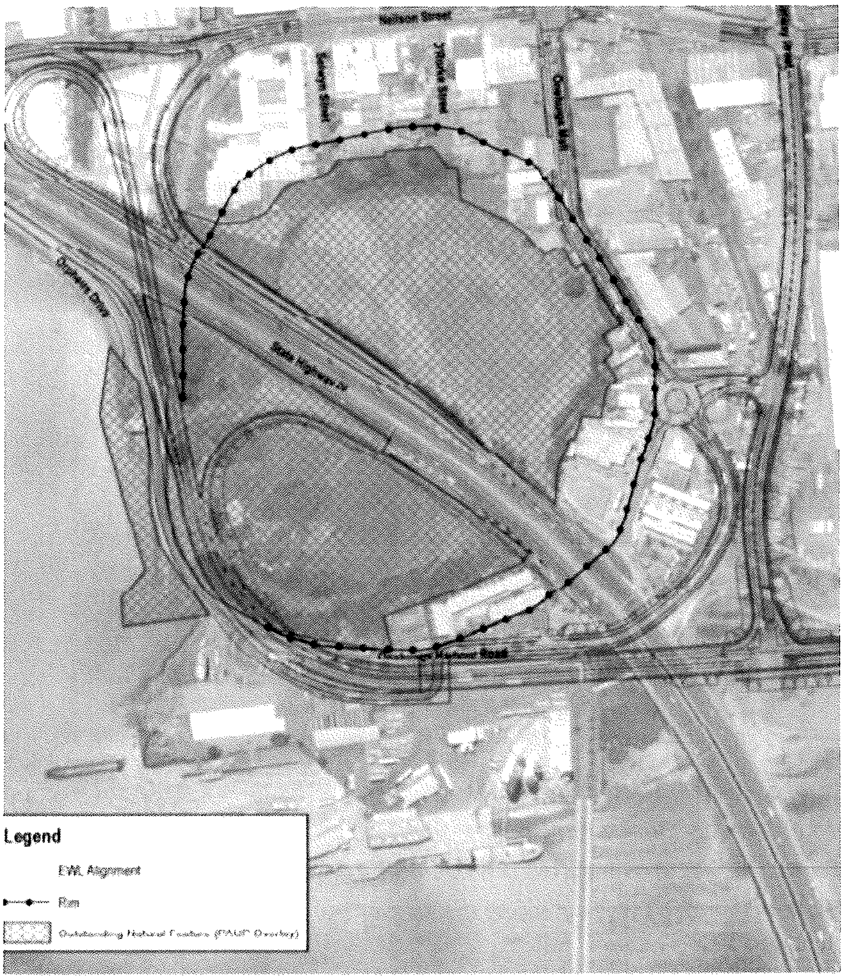



**Figure Five**

38. Effectively the EWL motorway is going to 'complete the rim'. The one section where the crater rim does dip down is the bit that gets 'filled in' by the EWL embankment. The next diagram attempts to show where the motorway becomes an elevated structure.

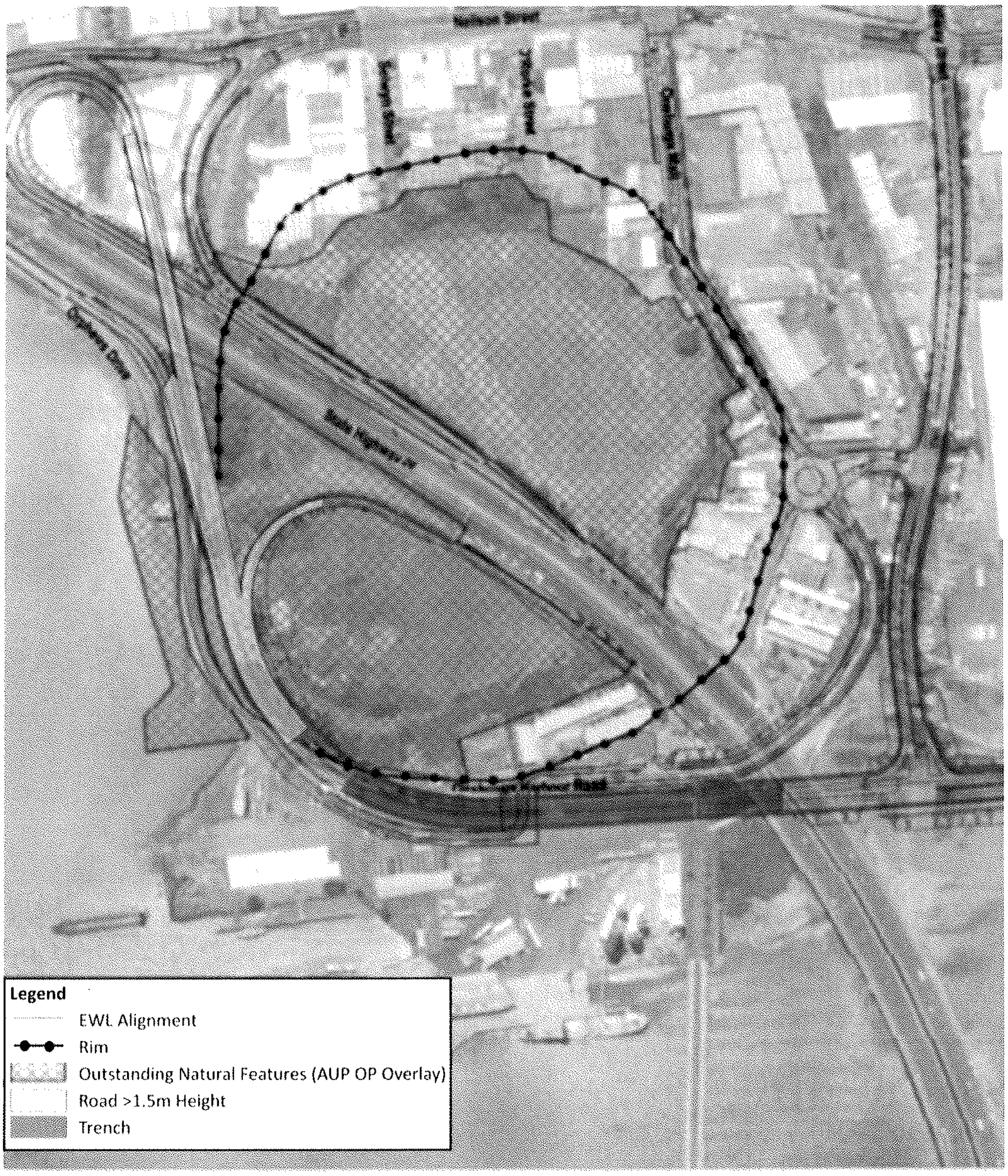



**Figure Six**

*(c) While there is a visual connection between Gloucester Park South and the harbour, the physical connection is hindered by Onehunga Harbour Road which operates as ramps to and from the SH20 motorway. The visual connection is hindered by the planting in the south-west corner of Gloucester Park which is in the location of the former gap to the harbour;*

39. In my opinion, Onehunga Harbour Road does not act as a barrier. The traffic is not that bad on Onehunga Harbour Road, especially on the weekend and after hours when there is likely to be the heaviest use by walkers and cyclists. There is congestion during rush hour, but that is a different issue, and not uncommon across urban Auckland. So there may be a 'hindrance' but it is not a significant hindrance, certainly nothing like the hindrance that the EWL will create.

40. There is about a 600m stretch of the foreshore where the visual and aural effects of the existing SH 20 are present, but of a low background type of effect. At its greatest extent, SH 20 is about 200m away from the footpath on the western side of Onehunga Harbour Road. Even at the east facing off ramp (by the Sea Scouts), there is not a strong sense of a motorway environment, as shown in the photo below.

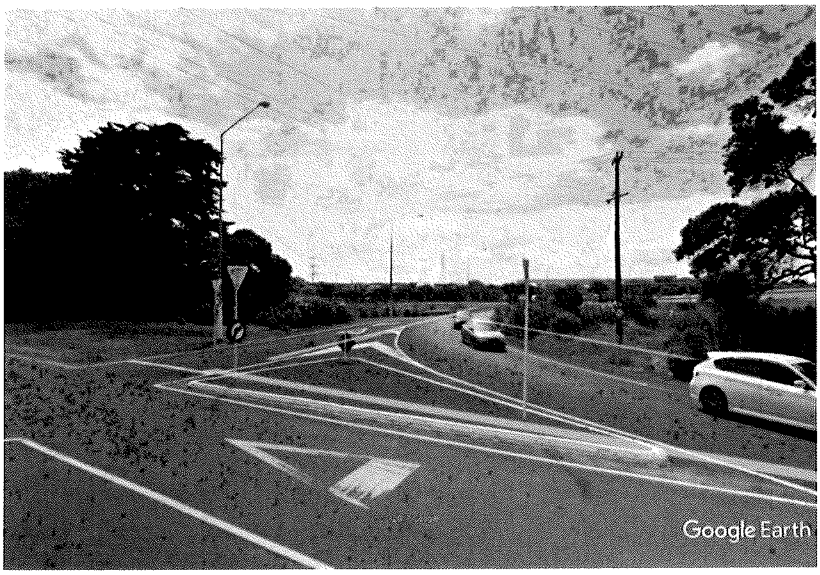
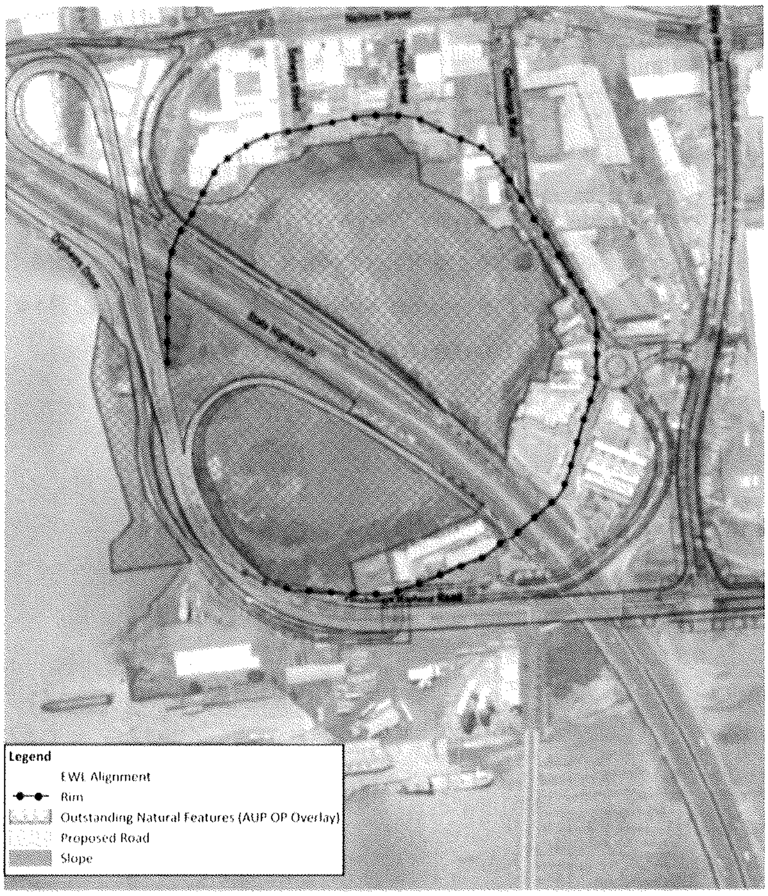



**Figure Seven**

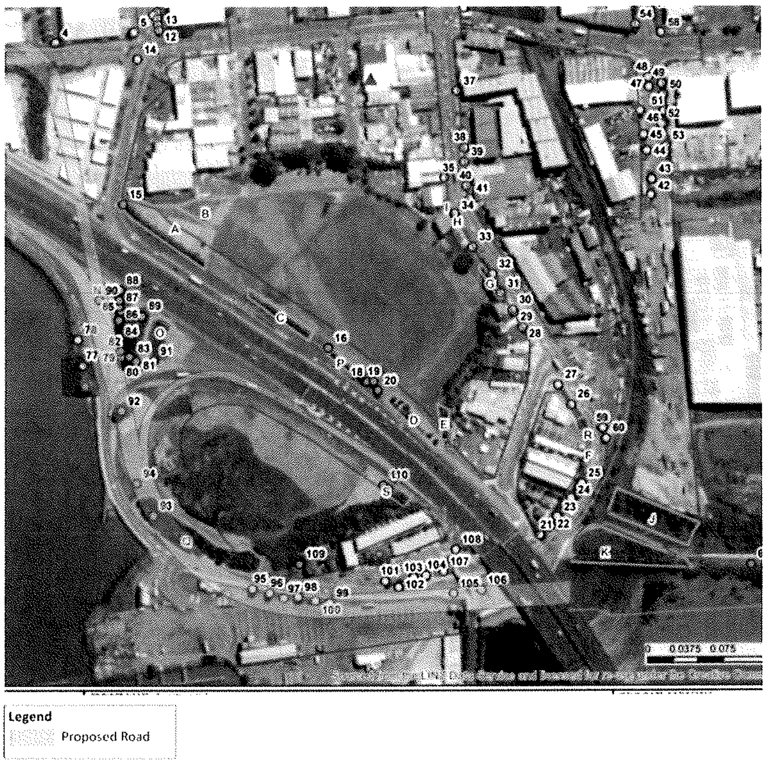
*(d) As discussed above, the connection was more fundamentally severed by the infilling of the lagoon and construction of causeway road.*

41. I do not understand how this justifies taking a further 'chunk' out of the rim and crater floor. Looking at the plan above (Figure Six) of the tuff rim and ONF, my assessment would be that the two ends of the tuff rim that are actually in the ONF identified by the Unitary Plan are the two ends that NZTA wish to 'clip off', that is by the new Neilson Street overbridge and to the south-east.




42. Finally, Te Hopua is a green space with trees. Even if the geological value of the crater and rim has been heavily modified, the EWL motorway will still occupy green space and visually cuts off the green space from the coast. With the EWL, nobody on the coastal path will see Gloucester Park south.

**43.** The diagram below is from the arboricultural assessment that accompanied the NOR.



44. I have attempted to highlight the alignment of the EWL. The following is the schedule of trees that 'may' be removed with the EWL. I have not been able to find any update of this schedule.

Tree Removal EWL: Sector 1: TECHNICAL REPORT 5 ARBORICULTURAL ASSESSMENT

2.3 Specific areas of arboricultural interest

**2.3.1 Sector 1 Neilson Street Interchange**

**Table 2-2: Specific areas of arboricultural interest for Sector 1**

| Location | Tree Description | Special values | Implications |
|---|---|---|---|
| Opposite the Aotea Sea Scouts Hall on the Onehunga foreshore between Orpheus Drive, Onehunga Harbour Road off-ramp and SH20 | Row of pōhutukawa trees (trees 81, 82 & 84-89, map 1) and of particular interest is the large Holm oak (tree 83) in the middle | Visually prominent group of trees | In close proximity to the location of the new bridge over the motorway for the new Neilson Street on–ramp and the stormwater pond. The bridge approach will most likely require the removal of these trees due to the degree of conflict that the scale of construction and site access requires. |
| Northwest corner of Gloucester Park South, south east of the Aotea Sea Scouts Hall on the Onehunga Foreshore | Single large pōhutukawa (tree 92, map 1) specimen tree | Visually prominent tree | Removal likely to be required due to the degree of conflict that the scale of construction and site access requires. |
| Street trees (trees 21-41 & 42-58, map 1) on Onehunga Mall and Galway Street | Multiple trees | Public road reserve assets | Installation of the 3m wide shared path conflicts with trees on the western side of Onehunga Mall and is likely to require removal and replacement. Creation of dual carriageway with footpaths on both sides of Galway Street conflicts with trees on both sides of the street and is likely to require removal and replacement. |
| Gloucester Reserve (South) | Multiple trees | In group plantings adjacent to Onehunga Harbour Road | Some trees are outside of the designation and some on the edge of the proposed eastbound road on onramp. Retention of trees possible where space permits. Selected trees could be utilised in other areas of the reserve if transplantation is feasible. |
| Between the Airport Harbour View Motel and Onehunga Harbour Road | Collection of pōhutukawa trees (trees 101-104, 107-108, map 1) | Visually prominent trees | Within the alignment of the EWL. Could be relocated to other areas to be landscaped or moved to improve separation between the Airport Harbour View Motel and the new road layout if transplantation is feasible. |

45. I acknowledge that the proposed NOR conditions refer to replacement planting, but that replacement planting does not need to be in the vicinity. The concept landscape plans do not demonstrate what planting may be able to be achieved on the seaward side of the EWL. Planting on the inside of the EWL may be helpful, but visually it will be hidden by the EWL structure from the coastal path.

## Possible Additional Mitigation

46. At paragraph 2(a) of his summary statement, Mr McIndoe makes the following comment:

*(a) Questions have been asked about why a land bridge more than 70m wide is necessary. In brief this is to offset the effects of severance caused by the EWL along its length, and specifically in its local sector. This is due to the 'moat' it would create between the Tuff Ring*

*and the Onehunga Wharf area, and the otherwise un-mitigatable effects of severance to the west of the Tuff Ring at Orpheus Drive.*

47. I have highlighted what is to me a very important statement. I agree with Mr McIndoe as to there being effects west of the Tuff Ring at Orpheus Drive, but would add that the effects extend south along Onehunga Harbour Road. What I do not agree with is that these adverse effects can be 'made up for' by a wider land bridge. To my mind a longer land bridge is needed to address the visual and physical effects of the trenched section beside the wharf.

48. In paragraphs 79 onwards of my Statement of Evidence, I discussed the adequacy of proposed mitigation. I noted that mitigation such as additional 'beneficial' reclamation between the wharf and Taumanu to create a new walkway and replacement open space areas, separated from the EWL infrastructure, would be appropriate, but was 'out-of-scope'.

49. Since I prepared that evidence, I have re-read the Board of Inquiry decision on the Waterview tunnel. In that decision, the Board imposed a condition on NZTA for additional works to those that they had sought in the Notice of Requirement. I consider that the model developed by the Board in that hearing has applicability to the EWL.

50. The following is the relevant extract from the Board's decision and condition.

*[1413] Access to open spaces and public reserves occupied a very significant part of the case. Anticipated effects of the project on the communities' access to these has been found to be more than minor and in some cases very significant. Substantial mitigation was offered but was held to be inadequate. Indeed, without further mitigation being undertaken, we were concerned that our ability to grant consents in Sectors 5, 7 and 9 might have been called into question. Considerable further work has been applied to this aspect, and the purpose of the Act will be met if the further mitigation ordered by us is applied. This involves a conditional obligation requiring NZTA to provide a financial contribution of $8 million. This financial contribution is to be used (subject to land being acquired and resource consents gained) to build what has been referred to as the "Alford" and "Soljak" Bridges and for the development of a cycle and pedestrian way between Alan Wood Reserve and Unitec (Sector 8), to ensure connection of passive open space amongst the Waterview and the Owairaka/New Windsor communities, where the inadequately mitigated effects had been found. In addition, we have directed a contingency payment (to be spent in connection with the just mentioned pedestrian and cycleway), should part of a property at 6 Barrymore Road not be made available for reserve.*

51. The actual condition says:

*For the purpose of mitigating significant adverse effects on passive open space and reserves in Sectors 5, 7 and 9, both during the construction years and longer term, particularly in the*

*Waterview, Owairaka and New Windsor communities (other mitigation having been held by the Board of Inquiry not to be adequate) the following applies:*

*(a) The NZTA shall, subject to conditions (b), (c) and (d) below, construct the following:*

*(i) A pedestrian and cycleway to AUSTROADS standards between Waterview and Owairaka/New Windsor (as generally indicated on drawing labelled as "Indicative SH20 Cycleway Route" (refer to Schedule A, Row 40)), subject to any modifications necessary to address design, property or engineering constraints.*

*(ii) The "Alford St Bridge".*

*(iii) The "Soljak Pl Bridge".*

*(b) The NZTA's obligations under condition (a)(i) arise when the NZTA receives certification from the Auckland Council and Auckland Transport that the Auckland Council and Auckland Transport have:*

*(i) acquired all necessary land, or obtained all necessary interests and/or landowner approvals on a permanent basis in respect of the facilities described in condition (a)(i); and*

*(ii) acquired sufficient land to form a cycle and pedestrian way to AUSTROADS standards between Alan Wood Reserve and Unitec; and*

*(iii) obtained all necessary resource consents required for construction and operation of the facilities.*

*(c) The NZTA's obligations under condition (a)(ii) arise when the NZTA receives certification from the Auckland Council and Auckland Transport that the Auckland Council and Auckland Transport have:*

*(i) acquired all necessary land, or obtained all necessary interests and/or landowner approvals on a permanent basis for the Alford St Bridge; and*

*(ii) obtained all necessary resource consents required for construction and operation of the Alford St Bridge.*

*(d) The NZTA's obligations under conditions (a)(iii) arise when the NZTA receives certification from the Auckland Council and Auckland Transport that the Auckland Council and Auckland Transport have:*

*(i) acquired all necessary land, or obtained all necessary interests and/or landowner approvals for the Soljak Pl Bridge either on a permanent basis or on the basis that the Soljak Pl Bridge may be constructed and operated unless and until its continued existence and / or operation conflicts with or compromises future works pursuant to the designation for rail purposes; and*

*(ii) obtained all necessary resource consents required for construction and operation of the Soljak Pl Bridge.*

*(e) The certification from Auckland Council required under conditions (b), (c) and (d) above must be received by the NZTA within 8 years of the designations for the Project being confirmed.*

*(f) Each of the facilities for which certification has been given must be constructed within 1 year of the opening of the motorway, or two years from when certification is given for the relevant facility, whichever is the earlier, subject however to some elements of the facilities towards the northern end needing to await the decommissioning of Construction Yard 7.*

*(g) The value of the construction works to be undertaken by the NZTA pursuant to condition (a) to (d) above shall not exceed a sum equal to $8 million in June 2011 New Zealand dollars (with any construction costs above that figure being met by the Council.)"*

*(h) The pedestrian and cycleway facilities described in condition (a)(i) above are in addition to the cycling and pedestrian facilities required by the other conditions.*

*Advice notes: The intention of this condition is to construct a continuous pedestrian and cycleway with bridges at Soljak Pl and Alford St. To achieve this, the Council and Auckland Transport will use their best endeavours to obtain the necessary consents and landowner approvals, for all three components of the network. The approvals required for the Soljak Pl Bridge reflect the designation for rail purposes of land under the bridge and the possibility that any bridge structure will be approved for a limited length of time only. In the event that, despite their best endeavours, the Council and Auckland Transport cannot obtain all of the necessary landowner approvals, the condition allows each part of the network to be constructed in isolation from the others. That will provide some mitigation of the significant adverse effects on passive open space and reserves in Sectors 5, 7 and 9.*

David Mead

22 August 2017

Attachment One: Urban Design Experience

Attachment Two: Life and Death of Urban Motorways

Attachment Three Zoning, population and employment data: Onehunga

Attachment Four: Assessment of Walking and Cycling Links and Associated Urban Amenity

**Attachment One: Urban Design Experience: David Mead**

I do not have a qualification in urban design, but over my 25 years involvement in planning, I have had considerable involvement in urban design related assessments and analysis.

Urban design related experience includes:

- I am a member of Auckland Council's urban design panel., and am an alternate chair.
- I co-authored one of the first guides to urban design in NZ - People, Places and Spaces, A Design Guide for Urban New Zealand, for the Ministry for the Environment.
- I have given urban design evidence before the Environment Court and in relation to Court assisted mediation on a number of developments for office buildings and retirement villages
- I have helped prepare and review plan changes that have introduced urban design-based analysis and criteria into district plans, including CPTED (Auckland City Council), urban design codes (North Shore City) and urban design-led redevelopment schemes (such as New Lynn).
- I have undertaken urban design reviews of resource consent applications for Auckland Council and others.
- I have participated in many structure planning type exercises for greenfields and brownfield areas, most of which involved a strong element of urban design, starting with the 1995 New Lynn design Charrette.
- I helped set up the NZ Urban Design Forum and was the informal chair for 3 years.
- I have run urban design training courses for the NZ Planning Institute, and facilitated workshops on the NZ Urban Design Protocol and the national CPTED Guide.
- I was a member of the 2005 Auckland City Council Mayoral Taskforce on Urban Design.
- I act as an Independent Hearings Commissioner (and have a current Making Good Decisions certificate), and I am often asked to be part of Hearings Panel due to urban design knowledge and experience.

**Experience: David Mead**

*Strategic / Spatial Planning*

- Urban Development Capacity - National Policy Statement, critical friends working party, Ministry for the Environment, 2016
- External examiner urban economics course, Urban Planning School, University of Auckland, 2013 - 2016
- Three Kings quarry concept plan preparation and consultation, Puketāpapa Local Board, 2013
- Quay Park Land Use Study, for Auckland Council Built Environment Unit, 2012
- Auckland Plan - development strategy, assisted with preparation of the strategy, 2011
- Urban form workstream: Auckland Plan, 2011
- Auckland Spatial Plan working party, 2011
- Flat Bush update: Review and update of development trends, Willis Bond and Co, 2010
- Future housing demands: Peer review of projections of future housing needs, Auckland Council, 2010
- Palmerston North City / Manawatu District planning review, 2009
- Albany business futures: Analysis and evaluation of future land use patterns, for input into NZTA study of long term transport demands, 2009
- New Lynn and Avondale Redevelopment opportunities, 2009
- Urban Development Working Session, Department of Internal Affairs, 2009
- Facilitated Te Atatu Town Centre workshop, Waitakere City Council, 2008
- Part of the council-organised team for Ranui structure plan, Waitakere City Council, 2008
- Northern Strategic Growth Area workshops, Waitakere City Council, 2008
- High Density Centres and Corridors review, Auckland Regional Council, 2007
- Facilitated the preparation of The Learning Quarter concept plan, Auckland City Council, 2007
- Urban growth strategy, Gisborne District Council, 2007
- Review of City Blueprint, North Shore City Council, 2007
- Five Mile Holdings – review of population and growth projections, 2007
- SH 20 Waterview extension – land use options, Auckland City Council, 2007
- Business land needs analysis for Queenstown Lakes District Council, 2007
- Draft Growth Management Strategy for Queenstown Lakes District Council, 2006
- Growth Options study for Queenstown Lakes, 2005
- START (Sustaining the Auckland Region Together) project – co-authored background report on urban form and infrastructure, 2004
- Representation Review – Communities of Interest – background report for Waitakere City Council, 2004
- Review of Urban Change Mechanisms paper, for Ministry for the Environment, 2006
- Housing preferences study, Auckland Regional Council, 2005.

*Social Infrastructure*

- Auckland Unitary Plan – feedback from social/community team on draft plan, 2013
- Auckland Council Housing Strategy - Regulatory issues, 2013
- Housing Choice Study, Kapiti Coast District Council, 2011
- Social Infrastructure Needs for the Northern Growth Area, Waitakere City Council, 2010
- Affordable Housing Strategy for Queenstown Lakes District Council, 2008
- Social infrastructure planning framework, Waitakere City Council, 2007
- Draft Open Space Strategy, North Shore City Council, 2005
- Reserve acquisition strategy, Waitakere City Council, 2004
- CPTED Strategy and Action Plan, Manukau City Council, 2004
- Ministry of Justice: Crime Prevention Through Environmental Design workshops facilitation, 2004.

*District Planning*

- Notice of Requirement, Lincoln Road, 2017
- Notice of Requirement, Glenvar Ridge Road, 2015
- Section 32 evaluation methods - Ministry for the Environment, 2014
- Affordable Housing provisions, Auckland Unitary Plan, 2013 to 16
- Development Bonus Guidelines, Kapiti Coast District Council, 2012
- Ruakaka Racecourse Plan preparation, Whangarei District Council, 2010-2013
- Highbury plan change: review of proposed private plan change, 2010
- Finalisation of Long Bay Structure Plan, 2010
- Anzac Street Phase II, Plan Change preparation to enable residential redevelopment, 2009
- Central Area Accommodation bonus provisions review, Auckland City Council, 2009
- Weiti Forest Park provisions, Rodney District Council, 2009
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ITDP EMBARQ

# THE LIFE AND DEATH OF URBAN HIGHWAYS

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About ITDP
Founded in 1985, the Institute for Transportation and Development Policy promotes socially equitable and environmentally sustainable transportation worldwide. ITDP works alongside city governments and local advocacy groups to create projects that reduce poverty and pollution, and fight climate change. ITDP has offices in Argentina, Brazil, China, Colombia, Hungary, India, Indonesia, Mexico, and the United States; employs more than 70 staff members; and supplements this team with leading architects, urban planners, transport experts, developers, and financiers.

About EMBARQ
EMBARQ catalyzes environmentally and financially sustainable transport solutions to improve quality of life in cities.

Since 2002, it has grown to include five offices, located in Mexico, Brazil, India, Turkey, and the Andean Region, that work together with local transport authorities to reduce pollution, improve public health, and create safe, accessible, and attractive urban public spaces. EMBARQ employs more than 130 experts in fields ranging from architecture to air quality management; geography to journalism; and sociology to civil and transport engineering.

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# Foreword

Peter J. Park served as City Planning Director of Milwaukee under John Norquist and led the effort to replace the elevated Park East freeway with an at-grade boulevard from earliest conceptualization with urban design students at UW-Milwaukee to realization. Because the freeway removal was a priority in the 1999 Downtown Plan, Milwaukee was able to move swiftly when the opportunity to remove the Park East arose.

Cities exist for people; freeways exist for moving vehicles. Cities are centers of culture and commerce that rely on attracting private investment. Massive public spending on freeways in the last century reduced the capacity of cities to connect people and support culture and commerce. While the following report is about urban highways, more importantly, it is about cities and people. It is about community vision and the leadership required in the twenty-first century to overcome the demolition, dislocation, and disconnection of neighborhoods caused by freeways in cities.

This report chronicles the stories of five very different cities that became stronger after freeways were removed or reconsidered. They demonstrate that fixing cities harmed by freeways, and improving public transport, involves a range of context-specific and context-sensitive solutions. This perspective contrasts with the one-size-fits-all approach that was used in the 1950s and 1960s to push freeways through urban neighborhoods. The belief then was that freeways would reduce congestion and improve safety in cities. Remarkably, these two reasons are still commonly used to rationalize spending large sums of public money on expanding existing or building new freeways.

Freeways are simply the wrong design solution for cities. By definition, they rely on limited access to minimize interruptions and maximize flow. But cities are comprised of robust and connected street networks. When limited-access freeways are force-fit into urban environments, they create barriers that erode vitality—the very essence of cities. Residents, businesses, property owners, and neighborhoods along the freeway suffer but so does operation of the broader city network. During traffic peaks, freeways actually worsen congestion as drivers hurry to wait in the queues forming at limited points of access.

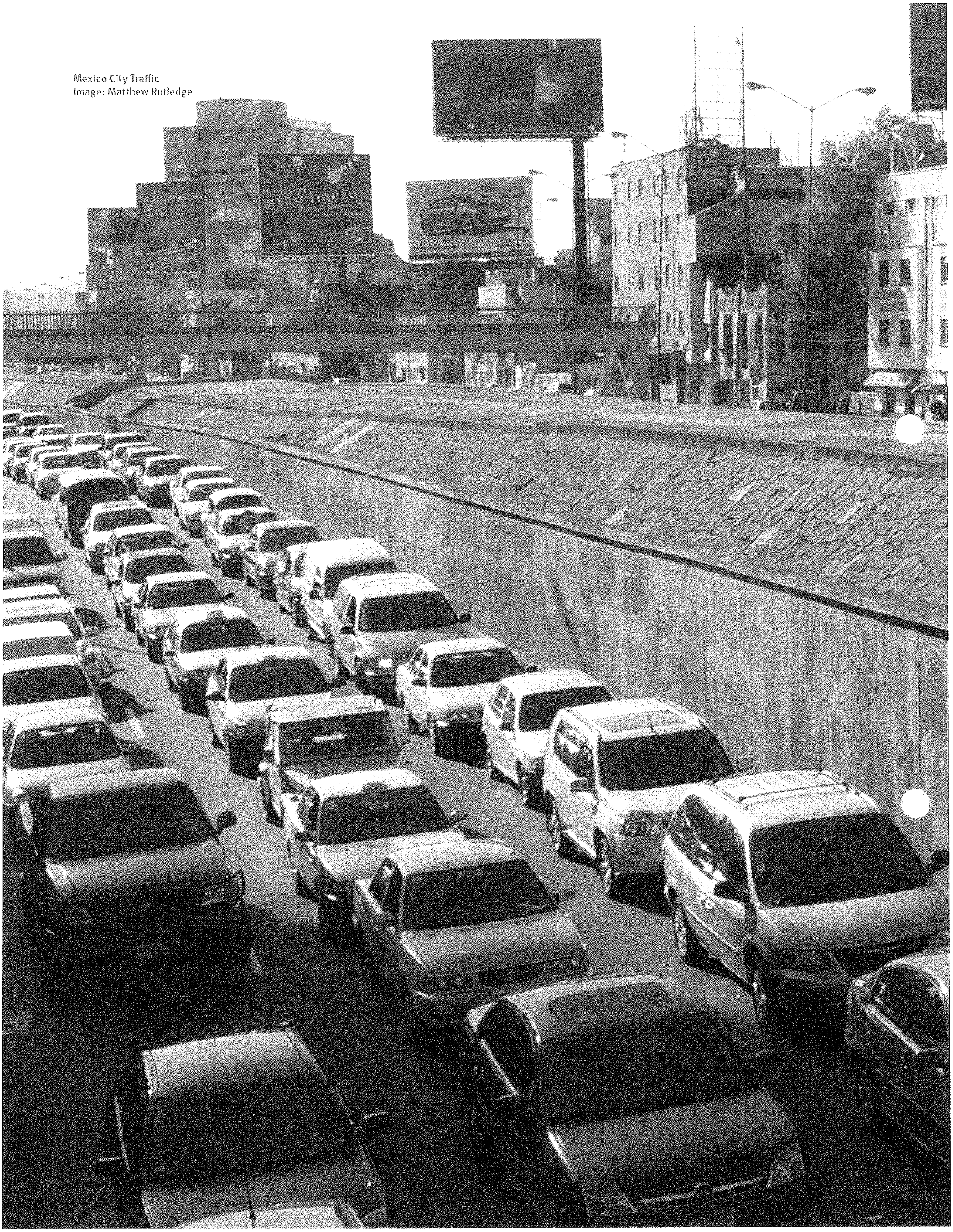
The fundamental purpose of a city's transportation system is to connect people and places. But freeways that cut through urban neighborhoods prioritize moving vehicles through and away from the city. In 1922, Henry Ford said, "we shall solve the problem of the city by leaving the city." While freeways certainly facilitated this, by no means did leaving the city solve the problem of city. In fact, the form and functional priorities of freeways in cities introduced even more problems that still exist today.

The freeway in the city was an untested idea when is it was deployed around the world. Decades of failing to deliver congestion relief and improve safety combined with the hard evidence of damaged neighborhoods have proven that the urban highway is a failed experiment. But failures, especially big ones, can also provide many lessons.

The case studies in this report demonstrate a variety of ways that cities can improve after freeways are removed or just not built. They offer effective design and investment strategies for addressing today's challenges of aging public infrastructure and constrained public funding. They also prove that sacrificing neighborhoods in cities to accommodate traffic "demand" is not only costly but often unnecessary. For example, while removing stub-ends of aborted freeways is often perceived to be more acceptable than removing those that provide "necessary through access," the success of stub-end freeway removals simply provide further proof that the planned freeways that were stopped were actually unnecessary in the first place. Jane Jacobs was right. More significantly, the people who fought freeways to protect their neighborhoods and their cities were right.

The removal of freeways in cities today is less a matter of technical limitations and more a matter of pragmatic response, community aspiration, and political will. This report has much to offer to those who aspire to strengthen cities, regions, and nations.

**—Peter J. Park**




Mexico City Traffic
Image: Matthew Rutledge

# Introduction

**From the 1940s to the 1960s, U.S. cities lost population and economic investment to suburban locations. To compete, many cities built urban highways, hoping to offer motorists the same amenities they enjoyed in the suburbs. Whatever their benefits, these highways often had adverse impacts on urban communities.**

In the United States, federal policy and funding spurred investment in urban highways. The U.S. Highway Act of 1956 set the goal of 40,000 miles of interstate highways by 1970, with ninety percent of the funding coming from the federal government. Fifty percent federal funding was the norm for other transportation projects. By 1960, 10,000 new miles of interstate highways were built and by 1965, 20,000 miles were completed. While most of the investment occurred outside cities, about twenty percent of the funds went into urban settings.

In 1961, Jane Jacobs challenged urban renewal and urban highways in her seminal book, *The Death and Life of Great American Cities*. Jacobs commented on the effects of highways on communities, stating, "expressways eviscerate cities." For the first time, the unintended consequences of urban highways, such as displaced communities, environmental degredation, land use impacts, and the severing of communities, were highlighted. Jacobs went on to successfully fight urban highways in New York City and Toronto, and helped spur the formation of some of the most active community-based organizations in the U.S.

This urban activism had, by the late 1970s and early 1980s, made it nearly impossible to build an urban highway or raze a low-income neighborhood in the United States. New environmental review procedures were put in place to protect communities and parks from the effects of highways. However, the U.S. continued to build and widen highways, moving the construction of virtually all of them to suburban or inter-urban locations. By 1975, the goal of 40,000 miles of new interstate highways had been achieved.

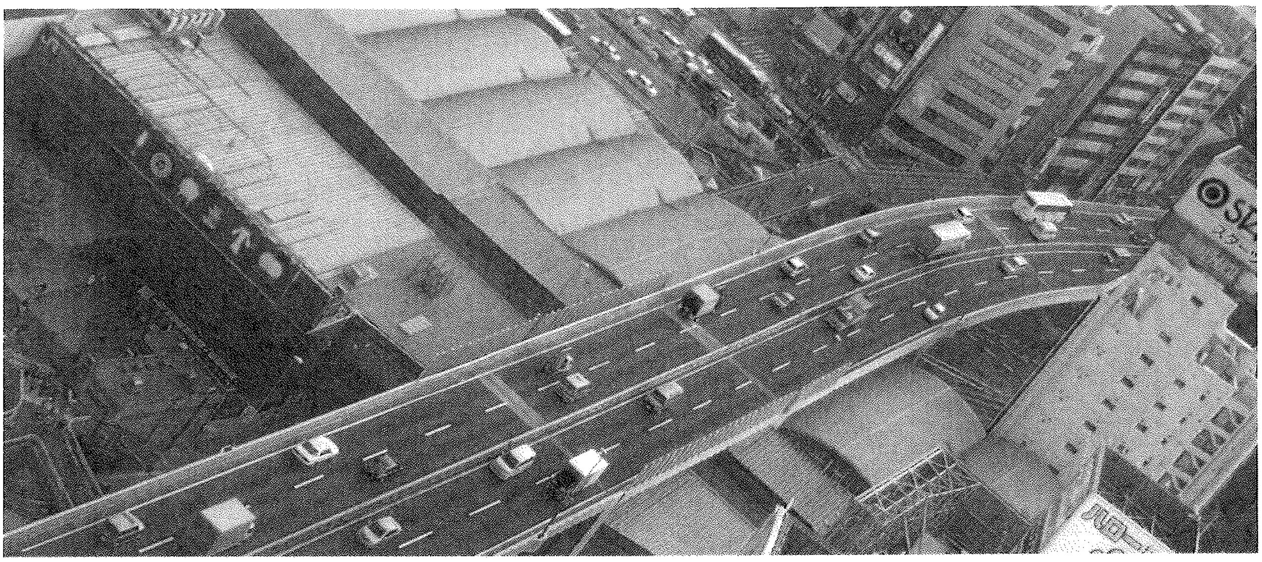


Image: Thomas Wagner via Flickr

Many cities in Latin America, following the Unites States' lead, also began building urban highways in the 1950s and 1960s. A spate of new urban highways were built in Brazil during the dictatorship in the 1960s and 1970s, such as Rio de Janeiro's Rebouças Tunnel and the Freyssinet Viaduct that cut a direct route between the downtown and the fashionable South Zone of Copacabana, Ipanema, and Leblon. The debt crisis of the 1980s slowed the process considerably. With the return of economic growth to Latin America, new urban highways began to reappear again.

In China and India, recent urban highway construction is even more dramatic. Cities in China are building both new highways and surface roads at a rapid pace. In China, all urban land is owned by the government, so land acquisition presents less of an obstacle to highway expansion than in the rest of the world. In India, the pace of highway construction is slower, as land acquisition is far more complex, but state governments are upgrading many large urban arterials with strings of flyovers that over time grow into limited-access freeways.

These new roads carry a significant amount of traffic and contribute to economic growth, but they also blight large sections of cities, threaten historic urban neighborhoods, and concentrate air pollution in highly populated areas, threatening people's health and causing other problems.

In the past fifty years, tens of thousands of miles of urban highways were built around the world. Many are now approaching functional obsolescence. This is leading many cities, not just in the United States, to question the place of major highways in urban areas and whether they merit further investment or should be removed. Today, some of the same urban highways that were built in that period are being torn down, buried at great expense, or changed into boulevards. As cities around the world grapple with congestion, growth, and decline, some, as seen in the following case studies, illuminate what can be done when a highway no longer makes sense.

In light of the fact that so many cities in developed countries are now tearing out urban highways, it is time to re-appraise the specific conditions under which it makes sense to build a new urban highway and when it makes sense to tear one down.

## Why Urban Highways

### Cities need roads, and sometimes they even need highways, but few cities have thought systematically about when and where they need highways. Highways have a very specific role to play in an overall transportation system: to move traffic long distances at high speeds.

While urban passenger trips can generally be moved most efficiently by some other means than private cars, buses and trucks need to use roads, and these trips are much harder to replace. Both long-distance trucks and buses are heavy-weight vehicles that tear up roads, have difficulty stopping suddenly, and have large engines that pollute heavily and make a lot of noise. Therefore, it is frequently desirable to get as many large trucks and long-distance buses as possible off of local streets. Urban highways should prioritize the rapid movement of suburban and inter-city bus and truck trips and could include exclusive lanes for buses to ensure high capacity passenger moment.

However, such facilities are not as useful for short urban trips, because the indirectness of routes between a trip origin and destination undermines the time saved from the higher speed achieved by limiting access points.

Highways were typically sought as a solution to congestion. Years of evidence has shown that highways in fact do not alleviate congestion. While expanding road capacity might provide relief for the first few years, it is likely to have the opposite effect, even within the first five years of operation (Duranton and Turner, 2011).

By the late 1960s, traffic engineers from both the United States and the United Kingdom had observed that adding highway capacity was not decreasing travel times, and theorized that this was due to additional trips that were generated or induced because of the new roads. Since then, numerous empirical studies and analysis of real world case studies have shown that new road capacity usually induces traffic in direct proportion to the amount of new road space; removing roadways similarly reduces traffic (Cairns, Hass-Klau and Goodwin, 1998), with traffic growing by 0.4 to 1.0 as much as new capacity in the long-run (Hensher, 1977; Noland and Lem, 2000).

In practice, many urban highways were justified with some form of cost-benefit analysis. However, most experts in cost-benefit analysis point out that the tool was never meant to evaluate whether or not to build urban highways but rather to prioritize between competing inter-urban highway projects. Additionally, the analysis ignored important secondary effects, such as the adverse impact of the new road on surrounding property values, or the environmental costs that are generated by new induced traffic (Wheaton, 1978).

## Why Remove Urban Highways

**Cities are not removing all highways because of a sudden awakening of environmental consciousness or realization that car culture is bad. Rather, cities are removing urban highways in very specific circumstances, which include:**

Costs of Reconstruction and Repair: In the United States, availability of ninety percent federal funding for roads was an incentive to build highways. Today, diminished federal funding and a growing reliance on private financing is spurring cities to more closely scrutinize costly investments. The costs of reconstruction and repair can be a compelling reason for cities to decide to remove highways. San Francisco, Milwaukee, and Seoul decided to invest in less costly alternatives instead of repairing or reconstructing some of their urban highways (CNU, 2010; Seattle, 2008).

In Milwaukee, the city removed a thirty-year-old freeway spur for $25 million. Officials estimated it would have cost between $50 million and $80 million to fix that roadway (NPR, 2011). The removal freed up twenty-six acres of land for redevelopment including the freeway right-of-way and parking lots around it (Preservation Institute, 2011).

Economic Revitalization: Highways can blight the area around them, what Jane Jacobs called "the curse of the border vacuum." Highways also can sever communities by creating inaccessible paths that bisect the city. Milwaukee, San Francisco, and Seoul wanted to revitalize areas blighted by elevated highways and eliminate the severance effects that were lowering adjacent urban property values (Preservation Institute, 2007).

Image: Arnie Baert

After Seoul removed the Cheonggyecheon the average price for apartments in the area rose by at least twenty-five percent, as compared to only a ten percent growth in neighborhoods further away. Rents for commercial office space rose as well (Seoul Metropolitan Government, 2006). The area has also become a popular destination for locals and tourists alike. As of October 1, 2007, there had been 56 million visitors to Cheonggyecheon. According to the "Hi Seoul" program of the city of Seoul, there are on average 53,000 visitors to the reborn creek each weekday and 125,000 on each day of the weekend.

3. Increased Property Value: Some cities, including Portland, San Francisco, and Seoul have removed urban highways and reclaimed valuable real estate and sparked redevelopment, that in turn has generated more tax revenue for the city. In Portland, the removal of their expressway cleared the way for the creation of the Downtown Waterfront Urban Renewal Area in 1974 and the creation of a large new waterfront park. Land values in the area have increased 10.4 percent annually on average, from $466 million in 1974 to over $1.6 billion in 2008 (City of Seattle, 2008). When San Francisco replaced their double-decked freeway with the street-level boulevard, the "Embarcadero," they saw an increase in property values in the adjacent neighborhoods of 300 percent and a dramatic increase in development in the area (Preservation Institute, 2007).

4. Making Waterfronts Accessible: Often, urban waterfronts used to be functioning ports with many truck movements needed to service the port. Highways were built along waterfronts to facilitate that. Waterfronts have often been polluted, smelly, and undesirable. But with new environmental regulations, many waterfronts have become clean. In multiple cities, port activities have been moved and consolidated outside the city's downtown. This has made waterfronts again desirable land. Harbor Drive in Portland and the Embarcadero in San Francisco are both examples where cities and local constituencies have wanted to reconnect to their waterfronts and develop the land for other purposes (Mohl, 2011).

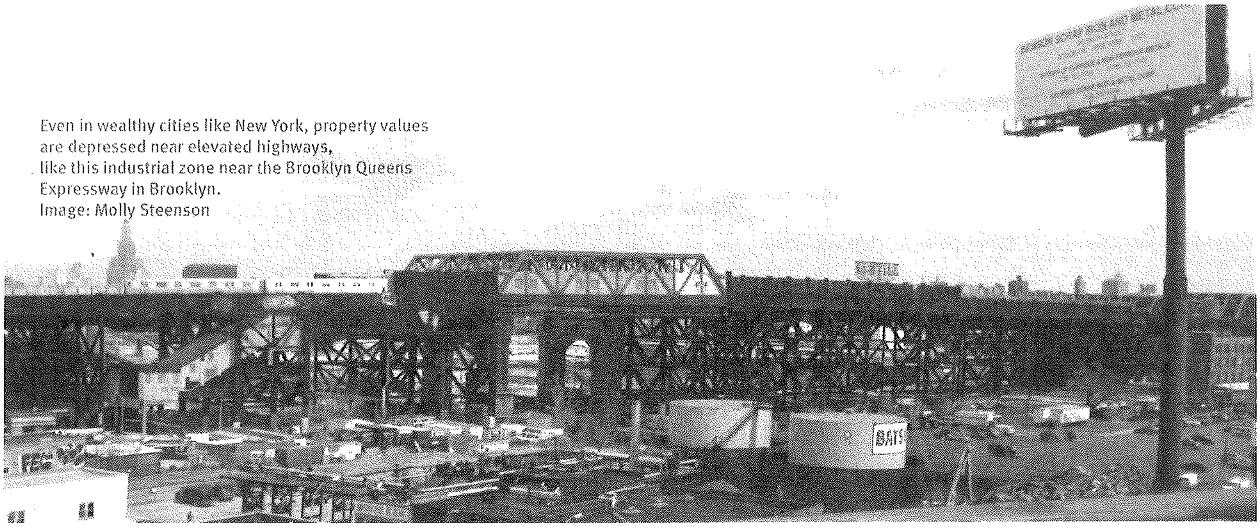
5. Offering Better Solutions to Meet Mobility Needs: Highways have a specific function—moving traffic long distances at high speeds. To meet mobility needs, investments in other forms of transportation are needed. Bogotá chose to invest in a whole mobility strategy that included bus rapid transit, bikeways, and greenways, instead of elevated highways. Seoul also introduced BRT and restrictions on car use to increase mobility options for all when they removed the highway to create a linear park (Hidalgo, 2004).

# When Urban Highways Are Removed

## When cities took down or chose not to build urban highways, what they got instead was:

- Harbor Drive, Portland, USA: The Tom McCall Waterfront Park has helped property values in the downtown rise on average 10.4 percent per year and led to a sharp reduction in crime in the area.
- Embarcadero, San Francisco, USA: A world-famous boulevard surrounded by a 25-foot-wide promenade led to a 300 percent increase in adjacent property values
- Park East Freeway, Milwaukee, USA: Halting construction of the freeway preserved Juneau Park. Taking down the highway has opened 26 acres of land to be redeveloped and added back into the tax coffers. Land values have risen faster than in the rest of the city and the area is now reconnected with Milwaukee.
- Cheonggyecheon, Seoul, South Korea: An international best practice for greenways that has also seen an increase in development and rents along the corridor and a decrease in air and noise pollution and traffic.
- Bogotá, Colombia: A 45-kilometer greenway now connects low-income neighborhoods to the downtown, and includes a mass-transit system that revolutionized bus rapid transit and carries 1.8 million people, and over 300 kilometers of bike lanes.

By taking down or not completing their highways, these cities found that reimagining urban highways created better places and attracted higher investment in the surrounding area. More cities around the world, having learned from the cities presented here, are removing highways. Other cities might consider highway removal or halting construction as well. These case studies illustrate how it was done.



Even in wealthy cities like New York, property values are depressed near elevated highways, like this industrial zone near the Brooklyn Queens Expressway in Brooklyn.
Image: Molly Steenson

# Alternatives to Building New Urban Highways

## Instead of constructing new urban highways, cities can consider...

Managing existing capacity more effectively:

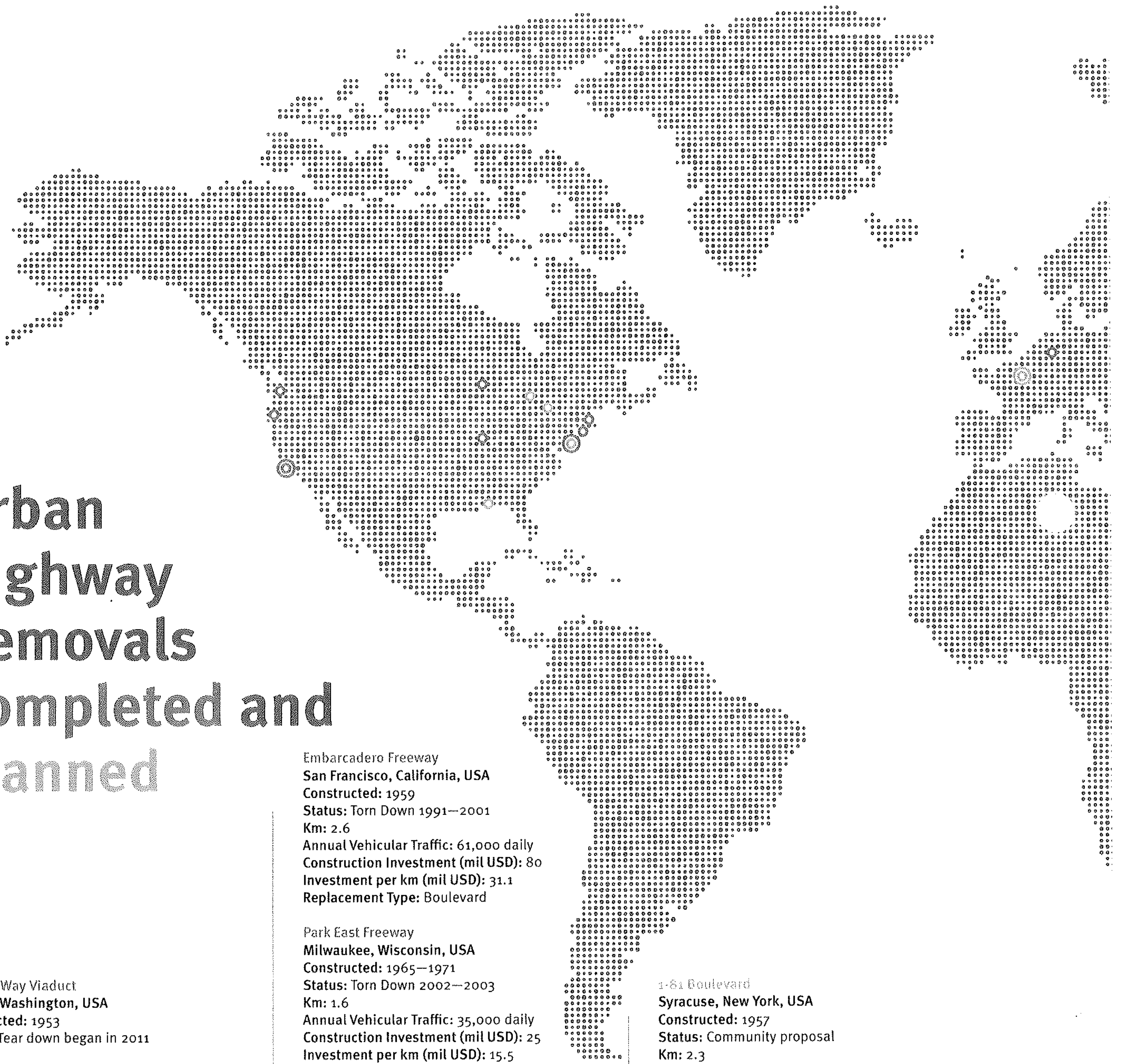
- Congestion pricing and time-of-day pricing can help shift drivers to other modes Encourage drivers to travel at less congested times of day
- Parking pricing can also discourage unnecessary car trips

Investing in mass transit:

- Highway construction funds can be re-allocated to expand mass transit or increase service frequency and to shift drivers to transit
- Revenues from a pricing program can also fund transit expansion or improvement

Implementing land use policies that discourage sprawl and reduce unnecessary driving:

- Policies and zoning should encourage in-fill development and the creation of new development near existing development and transit lines
- Providing high quality bicycling and walking facilities can encourage people making short trips to use these modes and alleviate some marginal congestion.



# Urban Highway Removals Completed and Planned

Alaskan Way Viaduct
**Seattle, Washington, USA**
**Constructed:** 1953
**Status:** Tear down began in 2011
**Km:** 4.5
**Annual Vehicular Traffic:** 100,000 daily
**Construction Investment (mil USD):** 3,100
**Investment per km (mil USD):** 688.1
**Replacement Type:** Tunnel—Boulevard

Habor Drive Boulevard
**Portland, Oregon, USA**
**Constructed:** 1950
**Status:** Torn Down 1974
**Km:** 4.8
**Annual Vehicular Traffic:** 25,000 daily
**Construction Investment (mil USD):** Unknown
**Investment per km (mil USD):** Unknown
**Replacement Type:** Boulevard-Park

Central Freeway
**San Francisco, California, USA**
**Constructed:** 1959
**Status:** Torn Down 2005
**Km:** 1
**Annual Vehicular Traffic:** 93,000 daily
**Construction Investment (mil USD):** 50
**Investment per km (mil USD):** 51.8
**Replacement Type:** Boulevard

Embarcadero Freeway
**San Francisco, California, USA**
**Constructed:** 1959
**Status:** Torn Down 1991—2001
**Km:** 2.6
**Annual Vehicular Traffic:** 61,000 daily
**Construction Investment (mil USD):** 80
**Investment per km (mil USD):** 31.1
**Replacement Type:** Boulevard

Park East Freeway
**Milwaukee, Wisconsin, USA**
**Constructed:** 1965—1971
**Status:** Torn Down 2002—2003
**Km:** 1.6
**Annual Vehicular Traffic:** 35,000 daily
**Construction Investment (mil USD):** 25
**Investment per km (mil USD):** 15.5
**Replacement Type:** Boulevard

I-64
**Louisville, Kentucky, USA**
**Constructed:** 1961
**Status:** Community proposal to remove the freeway
**Km:** 3.2
**Annual Vehicular Traffic:** 86,300 daily
**Construction Investment (mil USD):** 4,100
**Investment per km (mil USD):** 1274.1
**Replacement Type:** Boulevard

Gardiner Expressway
**Toronto, Canada**
**Constructed:** 1955—1966
**Status:** Portions were removed in 2001 and 2003, there is a study underway to remove another portion
**Km:** 18
**Annual Vehicular Traffic:** 200,000 daily
**Construction Investment (mil USD):** 490
**Investment per km (mil USD):** 27.2
**Replacement Type:** Boulevard

I-81 Boulevard
**Syracuse, New York, USA**
**Constructed:** 1957
**Status:** Community proposal
**Km:** 2.3
**Annual Vehicular Traffic:** 100,000 daily
**Construction Investment (mil USD):** Unknown
**Investment per km (mil USD):** Unknown
**Replacement Type:** Boulevard

Claiborne Expressway
**New Orleans, Louisiana, USA**
**Constructed:** 1968
**Status:** Community proposal for removal
**Km:** 3.2
**Annual Vehicular Traffic:** 69,000 daily
**Construction Investment (mil USD):** Unknown
**Investment per km (mil USD):** Unknown
**Replacement Type:** Boulevard

West Side Highway aka "Westway"
**New York, New York, USA**
**Constructed:** 1927—1931
**Status:** Torn Down 2001
**Km:** 7.6
**Annual Vehicular Traffic:** 140,000 daily
**Construction Investment (mil USD):** 380
**Investment per km (mil USD):** 50.2
**Replacement Type:** Boulevard

Sheridan Expressway
**New York, New York, USA**
**Constructed:** 1958-1962
**Status:** Proposal being studied by the government
**Km:** 1.9
**Annual Vehicular Traffic:** 45,000 daily
**Construction Investment (mil USD):** Unknown
**Investment per km (mil USD):** Unknown
**Replacement Type:** Boulevard

Route 34/Downtown Crossing
**New Haven, Connecticut, USA**
**Constructed:** 1960
**Status:** Construction slated to begin 2014
**Km:** 0.9
**Annual Vehicular Traffic:** 30,000 daily
**Construction Investment (mil USD):** 342
**Investment per km (mil USD):** 401
**Replacement Type:** Boulevard

I-93 aka "The Big Dig"
**Boston, Massachusetts, USA**
**Constructed:** 1959
**Status:** Torn Down 2007
**Km:** 2.9
**Annual Vehicular Traffic:** 200,000 daily
**Construction Investment (mil USD):** 15,000
**Investment per km (mil USD):** 5179.2
**Replacement Type:** Tunnel—Boulevard

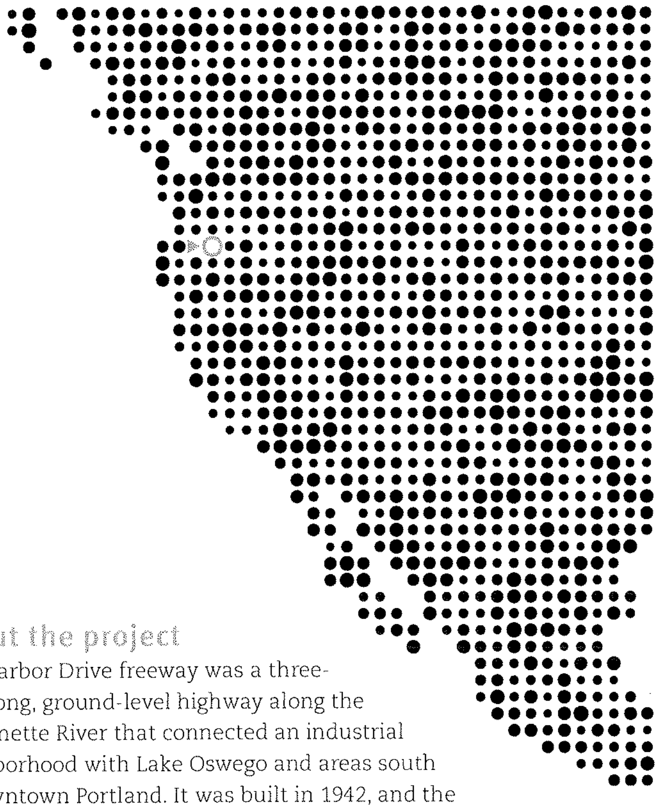
Marechaux 411
**Paris, France**
**Constructed:** 1932—1967
**Status:** Plans
**Km:** 7.9
**Annual Vehicular Traffic:** 100,000 daily
**Construction Investment (mil USD):** 411
**Investment per km (mil USD):** 52
**Replacement Type:** Tramway

Georges Pompidou Expressway
**Paris, France**
**Constructed:** 1967
**Status:** Government proposal
**Km:** 1.8
**Annual Vehicular Traffic:** 70,000 daily
**Construction Investment (mil USD):** Unknown
**Investment per km (mil USD):** Unknown
**Replacement Type:** Boulevard

A-100 Tunnel
**Berlin, Germany**
**Constructed:** 1995
**Status:** Torn Down 2000
**Km:** 1.7
**Annual Vehicular Traffic:** 170,000 daily (2015)
**Construction Investment (mil USD):** 276
**Investment per km (mil USD):** 162.4
**Replacement Type:** Tunnel—Boulevard

Cheonggyecheon
**Seoul, South Korea**
**Constructed:** 1967—1971
**Status:** Torn Down 2003—2005
**Km:** 9.4
**Annual Vehicular Traffic:** 102,747 daily
**Construction Investment (mil USD):** 120
**Investment per km (mil USD):** 12.7
**Replacement Type:** Boulevard-Park

Today, downtown Portland is now linked to the waterfront, and a new park provides residents access to the Willamette River Waterfront.
Image: Brxo via Flickr



▸ Case Study

# Harbor Drive, Portland, OR

## Background

Harbor Drive, an at-grade, four-lane highway, was built in 1942. In pace with most U.S. cities, a number of additional freeways were planned for the Portland area in the 1950s. In 1964, the state completed the first, I-5, along the west bank of the Willamette River. Four years later in 1968 the State Highway Department proposed widening and relocating Harbor Drive between Front Avenue and the west bank of the Willamette River.

But there was already a constituency in Portland that supported creating more open space and public access along the city's waterfront. In fact, Portland's 1968 Downtown Waterfront Plan recommended eliminating the Harbor Drive freeway and developing the land as a park to improve the downtown riverfront. The city appointed a task force to study the feasibility of removing the freeway and replacing it with a park. The task force also evaluated and held a public hearing on three alternative plans for the Harbor Drive freeway. None of the alternatives included closing the freeway, but that alternative was added as a result of the public input the task force received. The freeway removal alternative was created and presented to the city council, and a convincing case was made that Harbor Drive's traffic could be absorbed by the parallel highways of I-5 and I-405. The city council agreed to close Harbor Drive.

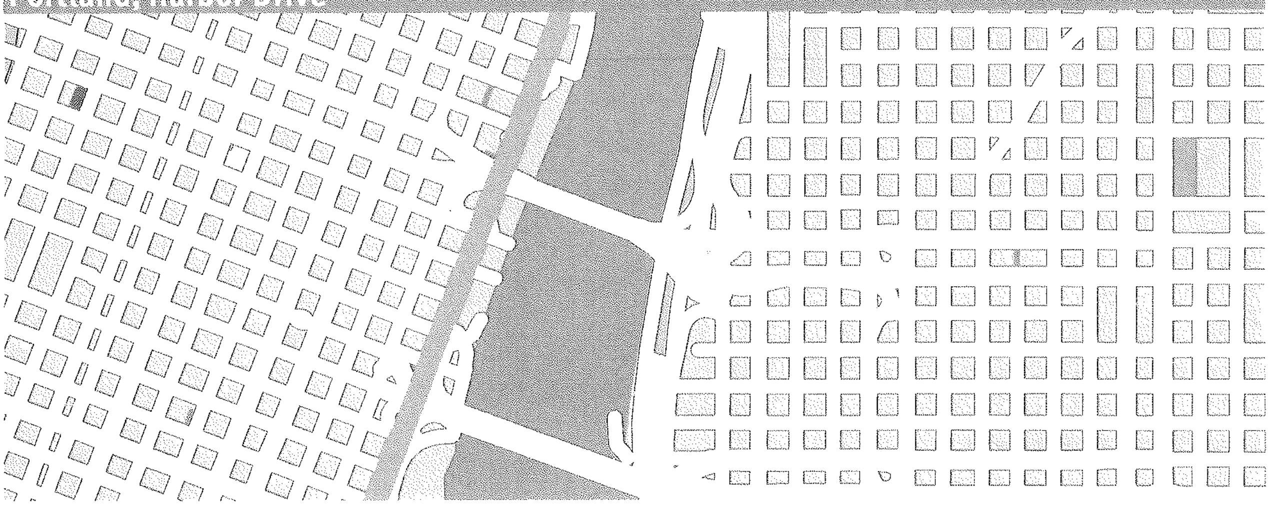
## About the project

The Harbor Drive freeway was a three-mile long, ground-level highway along the Willamette River that connected an industrial neighborhood with Lake Oswego and areas south of downtown Portland. It was built in 1942, and the four-lane highway carried 25,000 vehicles per day (City of Seattle, 2008).

In the late 1960s, the city of Portland decided to remove the Harbor Drive freeway and replace it with a 37-acre park. The city was convinced that the construction of I-5 and I-405, two interstates running parallel to Harbor Drive, could absorb a sufficient amount of traffic to warrant the removal.

In place of the freeway, the city built Tom McCall Waterfront Park, which opened up the waterfront to pedestrians, creating an important amenity for downtown. The Portland Planning Commission took the lead on the project, which took twelve years (1976—1988) to build using tax increment funds. Construction began along Front Avenue and the Ankeny Plaza area and was followed by four subsequent redevelopment projects until the last section (north of the Burnside Bridge) was completed in 1989 (Portland Parks and Recreation Project Team and EDAW Inc., 2006).

Portland, Harbor Drive



Before: Harbor Drive cut off the downtown waterfront from the rest of the city. Image: City of Portland Archives, 1974

## Stakeholders

The city of Portland, particularly the planning department and the Oregon state governor at the time, Tom McCall, were the driving forces behind the highway removal. Park users, cyclists, and a citizen's committee representing Portland's residents were powerful voices in the public participation process, as were the Portland Oregon Visitors Association and Eastside Business District groups.

## Effects

The removal of the freeway allowed for the creation of a park, which served as the focal point for downtown redevelopment and the only direct access point for residents to the Willamette River. The project allowed the city to create the Downtown Waterfront Urban Renewal Area (DTWF URA), and since its creation in 1974, land values in downtown Portland have increased an average of 10.4 percent annually, from a total of $466 million to more than $1.6 billion (City of Seattle, 2008).This has helped expand the city's tax base and encourage more compact and sustainable development.

In terms of mobility, before and after comparisons found 9.6 percent fewer vehicle trips on nearby roads and formerly connecting bridges (City of Seattle, 2008). The decrease in motor vehicle use has helped decrease air and noise pollution in the area.

The freeway's removal has created safer and more pleasant spaces for pedestrians and improved the quality of life in downtown Portland.

The redevelopment of the waterfront area has also helped reduce crime rates partly because of new visibility earned by removing the highway and partly due to the increase in pedestrian "eyes on the street" (City of Seattle, 2008). According to police bureau reports, since 1990 crime has declined by 65 percent in the waterfront area compared with a reduction of 16 percent in the city as a whole.

Overall the project is considered successful and even the impacts on traffic have been minor, thanks in part to the construction of parallel roads. Advance public notice was used to alert drivers of the closure and divert traffic from Harbor Drive to nearby freeways with extra capacity.

A few anchor developments, including the Yards at Union Station to the north and River Place to the south, have increased the availability of downtown housing. And the city continues to expand its waterfront plans. Property values have risen in the area, and today the Portland Development Commission's Downtown Waterfront Development Strategies Project aims to increase mixed-use development along the length of the downtown and three blocks from the waters' edge (pdc.us/ura/dtwf/dtwf.asp).

Timeline

# Harbor Drive Removal Project

1968 The Oregon Highway Department proposes widening the Harbor Drive freeway; the city of Portland acquires the Journal Building to provide land needed for the right-of-way.

The city of Portland releases its Downtown Waterfront Plan, which recommends eliminating the Harbor Drive freeway.

1969 A new citizen's group, Riverfront for People, is formed to fight against the state's proposal to widen the freeway.

August: the Portland City Club issues a report entitled "Journal Building Site Use and Riverfront Development," recommending waterfront redevelopment that would provide easy and attractive public access.

August 19: Governor McCall instructs the Intergovernmental Task Force to hold a public hearing on the future of Harbor Drive, the Task Force drafts two alternatives to the state's proposal including moving the freeway in a block from the waterfront and decking over the freeway and building a park on top. The State's traffic engineers convinced the Task Force to not consider the option of removing the freeway altogether.

October 14: A day-long hearing is held, the public is highly critical of all of the alternatives.

November: Governor McCall calls for the creation of a citizen's advisory committee to help plan the project.

December: An eighteen-member citizens' committee holds its first meeting and hires an independent consulting firm to evaluate the options.

1973 Governor McCall continues to pressure his staff to find a way to remove the highway and replace it with a park. Yet another alternative is drawn up and presented to the city council, which finally approves the plan for the highway removal.

The Fremont Bridge opens, completing Interstate 405, the second Interstate through downtown Portland, which makes Harbor Drive somewhat redundant and allows for the removal to begin.

1974 Harbor Drive is closed north of Market Street, and planning for the new park begins.

1978 The new 37-acre waterfront park opens to the public.

1984 The park is renamed Tom McCall Waterfront Park in honor of the former governor.

1999 The city extends Waterfront Park to the south, doubling its size.

**Source:** Adapted from Preservation Institute, 2007

Today: Embarcadero Boulevard
Image: T. J. DeGroat

▸ Case Study

# The Embarcadero, San Francisco, CA, USA

## Background

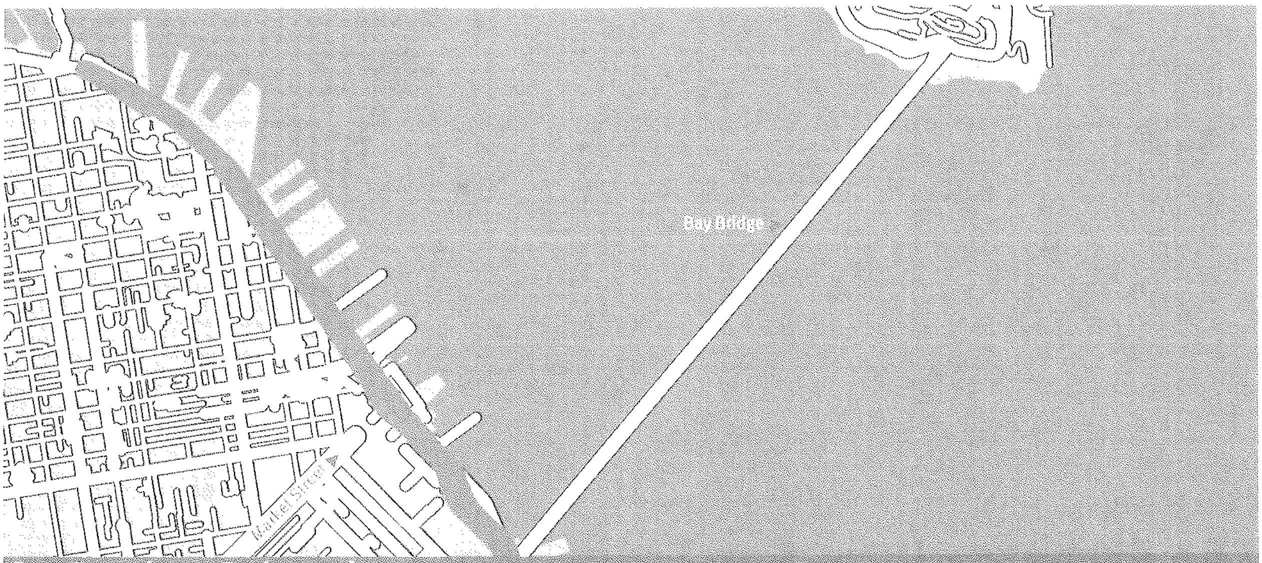
After the Loma Prieta earthquake in October 1989 the Embarcadero and the Central Freeway in San Francisco were left standing, but significantly weakened. CalTrans, California's State Transportation Agency, quickly devised three alternatives to address this issue, 1) seismologically retrofit the damaged structures, 2) tear down the elevated portions and rebuild an underground freeway, or 3) demolish the elevated portions and replace them with a surface street. There was much public debate over these alternatives, but in the end, the majority of San Franciscans wanted to remove the freeway permanently. In January 1991, CalTrans made the formal finding that removing the elevated freeway and replacing it with an at-grade facility was the best solution, and two months later demolition began. The removal of the elevated freeways reconnected San Francisco's depressed east side waterfront to the rest of the city, opening the door for waterfront revitalization.

## About the project

The city of San Francisco spent $50 million to create the Embarcadero, a six-lane boulevard, 1.6 miles long, surrounded by a 25-foot-wide pedestrian promenade, ribbons of street lights, mature palm trees, waterfront plazas, and the world's largest piece of public art (Cervero, Kang, & Shively, 2009).

## Stakeholders

CalTrans and the residents of San Francisco were the main stakeholders in this project. Local environmental groups played a large role in swaying public opinion. The design was developed by ROMA Design Group.



San Francisco, Embarcadero

## Effects

After the 1989 earthquake damaged area freeways, there was a temporary increase in traffic congestion. Soon thereafter, many drivers switched to transit; the BART (Bay Area Rapid Transit) experienced an increase of fifteen percent in its ridership, and the local street grid absorbed a large portion of the remaining traffic (CNU, 2010). Once skeptics saw that the city was not gridlocked without the freeway, it was easier to build support for the proposed boulevard.

When the boulevard was completed, the land that the freeway had occupied became available for new developments and parks. More than 100 acres along the waterfront gave way to a new public plaza and a waterfront promenade (CNU, 2010). The area south of Market Street was slated for 3,000 housing units, 2 million square feet for offices and 375,000 square feet of retail (Preservation Institute, 2007). Replacing the double-decked freeway with a boulevard raised property values in the adjacent neighborhoods by 300 percent and stimulated development dramatically (Preservation Institute, 2007).

Rincon Hill, which is adjacent to the Embarcadero just south of Market Street, was completely cut off by the highway before. The removal of the highway made reinvestment in this neighborhood much more attractive. South Beach, south of Rincon Hill, was also redeveloped with housing, retail, and a new baseball field. Even though this neighborhood was not directly adjacent to the Embarcadero freeway, the opening of the waterfront and the improvement of the Embarcadero as a boulevard helped it to flourish. Dense commercial development lines the boulevard, jobs increased by twenty-three percent and housing in the area increased by fifty-one percent (CNU, 2010).

Many individual developments including the Ferry Building, which was redeveloped with a farmer's market and gourmet food stalls, a new headquarters for The Gap clothing company, and new office space for Pier One home goods were also stimulated by the highway removal.

Drivers with longer trips do report a slight increase in travel times still, but the benefits outweigh the small number of drivers who are inconvenienced. (Preservation Institute, 2007 and CNU, 2010).

Timeline

# Embarcadero Freeway Removal Project

| | |
|---|---|
| 1959 | Embarcadero Freeway is constructed. |
| 1986 | San Francisco voters reject the Board of Supervisors' plan to tear down the Embarcadero Freeway. |
| 1989 | October: Loma Prieta Earthquake damages the elevated highway beyond repair,<br>CalTrans scrambles to develop alternatives. |
| 1991 | January: CalTrans makes the formal finding that removal of the elevated highway and replacement with an at-grade facility is the best alternative.<br>March: Demolition begins. |
| 2000 | The Embarcadero Boulevard is completed. |

Before: The waterfront seen through
the elevated Embarcadero Freeway
Image: wayfaring.com

The demolition of the Park East Freeway in Milwaukee opens the way to neighborhood revitalization and redevelopment.
Image: Andrew Tucker

▸ Case Study

# Park East Freeway, Milwaukee, WI, USA

## Background

In the late 1940s and 1950s, the Milwaukee city government introduced plans for the construction of a ring of freeways around the downtown. The Park East Freeway was to connect to I-794, a 3.5-mile freeway linking Lake Michigan to the southern suburbs, and, in combination with the Park West Freeway, would create an east-west regional expressway. The project began in 1971 and was halted in 1972 due to community opposition, and then later abandoned completely, due to rising construction costs and opposition. The incomplete freeway was underused and the land around it, previously cleared for further highway construction, sat vacant for years.

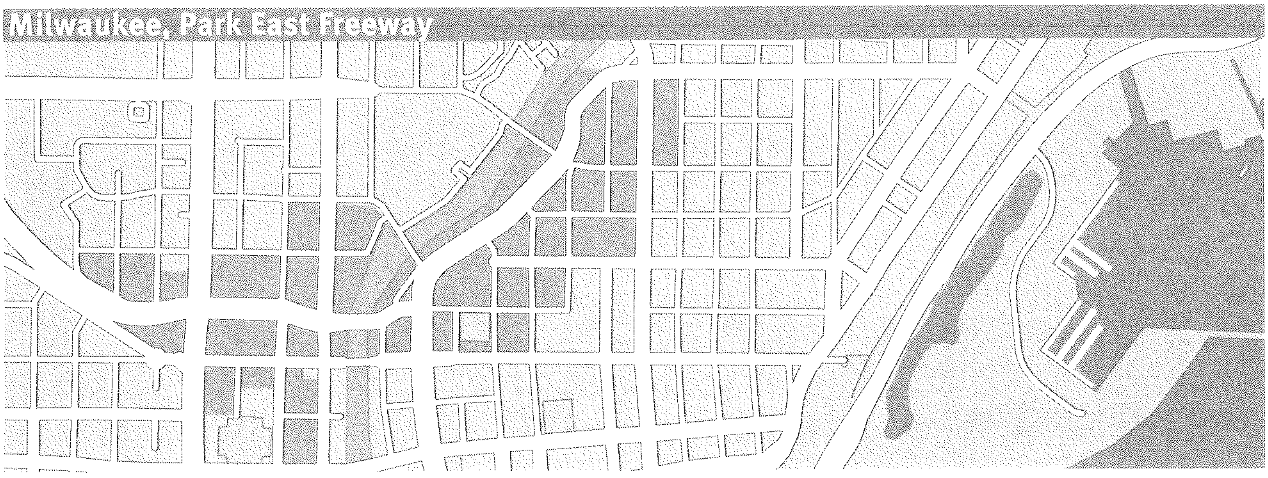
In the early 1990s, the state of Wisconsin finally removed the transportation corridor designation on the cleared land that had prevented it from being developed, and the vacant area was redeveloped into the lively mixed-use development known as East Pointe. The success of its revitalization inspired Mayor John Norquist to remove the under-utilized freeway for further redevelopment and revitalization. Demolition of the Park East Freeway began in 2002 and was completed by 2003.

Today, the area that once housed the Park East Freeway is a neighborhood of shops, apartments, and townhouses, on a traditional street grid. The freeway removal not only helped reduce congestion in the area but helped stimulate development.

## About the project

The freeway was a response to the city's concern about its economic competitiveness and its ability to easily move goods from Milwaukee to major hubs like Chicago. To solve that problem, Milwaukee developed the freeway network that included the Park East Freeway. Property acquisition began in 1965, resulting in the demolition of hundreds of houses and scores of businesses.

By 1971, the first section of the freeway was open and around that same time, local opposition grew because of the highway's detrimental effect on the city, including the pending severance by the highway of Juneau Park from Lake Michigan and the polluting of the park. Elected officials soon supported the opposition and the project was halted. What remained was a one-mile freeway spur that extended from I-43 in the east, near the waterfront, into downtown Milwaukee. The freeway separated the north side of the city from the downtown area with only three exits as well as interrupting the street grid network. Further construction of the freeway was finally terminated in 1972, when Mayor Henry Maier vetoed any additional funds to the proect. (Preservation Institute, Milwaukee, Wisconsin).



Milwaukee, Park East Freeway

Mayor John Norquist, mayor from 1988 to 2004, was inspired by the revitalization and success of the East Pointe neighborhood that developed in the 90s and decided that it was time to demolish the Park East Freeway. Initially, there was some opposition to the teardown, especially from George Watts, a long-time Milwaukee resident, who claimed that the freeway brought vital business to the shop owners in the area. A further analysis showing how under-used the Park East Freeway was eventually discredited any claims to Watts' assertion. Other opponents included business owners that feared the removal would congest their streets and further blight the area. A traffic impact study quelled this sentiment, finding that the project would not impact traffic levels because it offered better connections with existing streets.

A successful redevelopment design competition further won over area residents and business owners.

Demolishing the freeway cost $25 million, with the federal government paying 80 percent of the cost. The cost of keeping the freeway would have been $50 to $80 million in repairs and reconstruction—saving the city $25 to $55 million. It also freed twenty-six acres of land for new development, which also meant a new tax base for the city.

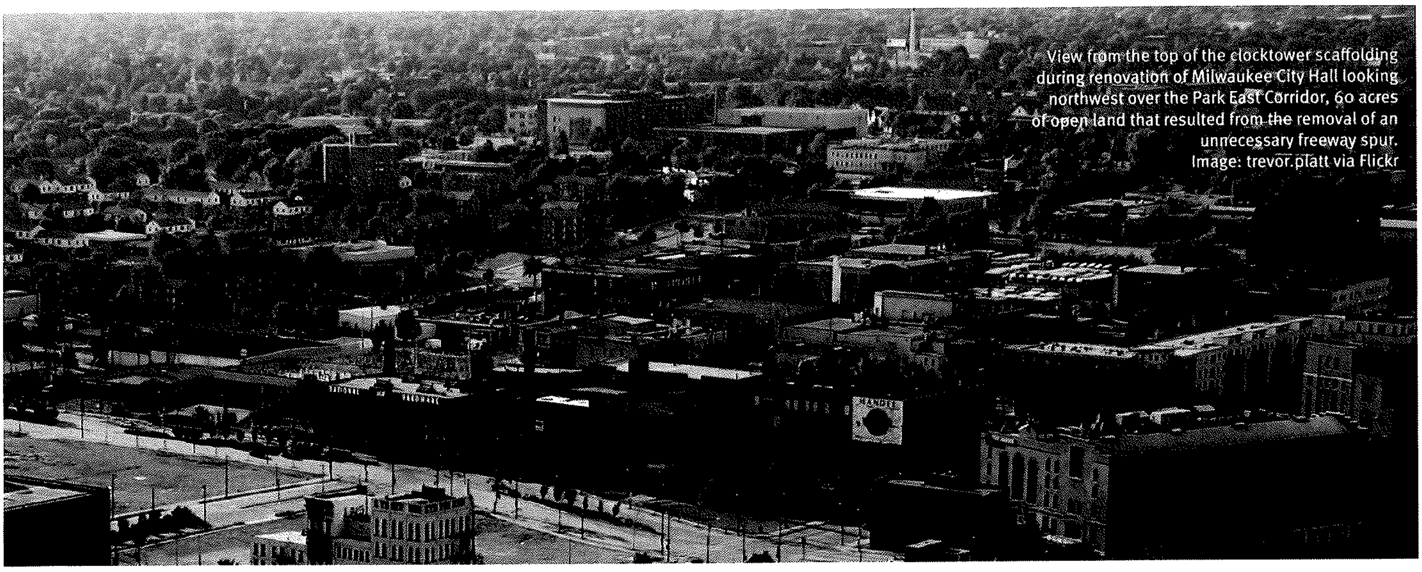
## Stakeholders

Local neighborhood and environmental activists were the original catalysts for reversal around the freeway. Mayor Maier stopped construction of the freeway. The federal government played a key role, financing both the highway construction and its takedown. The National Environmental Policy Act (NEPA), passed in 1969, also helped stop the construction of the highway (Cutler, 2001). Opponents brought suit claiming that the environmental impact statement had to be prepared under NEPA before construction started. Although part of the highway had been built and the acquisition of land and destruction of homes had already commenced, the judge upheld the suit and all construction stopped. The Governor and State Department of Transportation were also involved in authorizing the creation and demolition of the freeway.

John Norquist, mayor, and Peter Park, city planning director, were the primary figures pushing for the Park East takedown.

Anton Nelessen Associates were responsible for the revisioning of the Park East area.

George Watts was the key figure in opposition to highway removal. Watts claimed that the freeway system "is the life blood of the city," and, in 2000, even ran against Norquist for Milwaukee mayor to prevent the removal.



View from the top of the clocktower scaffolding during renovation of Milwaukee City Hall looking northwest over the Park East Corridor, 60 acres of open land that resulted from the removal of an unnecessary freeway spur.
Image: trevor.platt via Flickr

## Effects

The Park East Freeway was replaced with a surface boulevard that reconnects the grid. Since the take-down, access to downtown Milwaukee has improved. Most of the one-way streets in the area were converted to two-way streets, improving connectivity. The lane widths on the road were narrowed, slowing down traffic and allowing more space for pedestrians. Sidewalks and pedestrian connections were put over the bridges.

Peter Park, the city planning director, used form-based codes, instead of traditional zoning codes, to encourage better development in the area. Three new neighborhoods were created on the new acres of real estate, including: the McKinley Avenue District, which was slated for office, retail, and entertainment development; Lower Water Street District, with offices and existing waterfront residences, and the Upper Water Street District slated for mixed-use infill office development.

Between 2001 and 2006, the average assessed land values per acre in the footprint of the Park East Freeway grew by over 180 percent and average assessed land values in the Park East Tax Increment District grew by forty-five percent during the same period. This growth exceeded the city's overall growth by twenty percent.

Although parcels for redevelopment in the area were ready to enter the market since 2004, development has been slow to happen. The reasons for this may include the recession that began in 2007, the lot sizes being too large, and the fact that control of the land resides in the county and not the city.

There has been some new developments though, including the new headquarters for Manpower Inc.—a Fortune-500 company—the Aloft Hotel, the Flatiron mixed use and condominium project, the North End neighborhood development, and the Park East Square.

### Timeline

# Park East Removal Project

| | |
|---|---|
| 1971 | Park East Freeway construction begins, 1 mile spur is built. |
| 1972 | Construction is halted and then terminated due to local opposition and veto of funds. |
| 1990 | The transport corridor designation of the vacant land around Park East is eliminated, allowing the land to be redeveloped. |
| 2002 | Demolition of Park East begins. |
| 2003 | Demolition ends.<br>McKinley Avenue Boulevard completed. |

The revitalized Cheonggyecheon Greenway
Image: lensfodder via Flickr