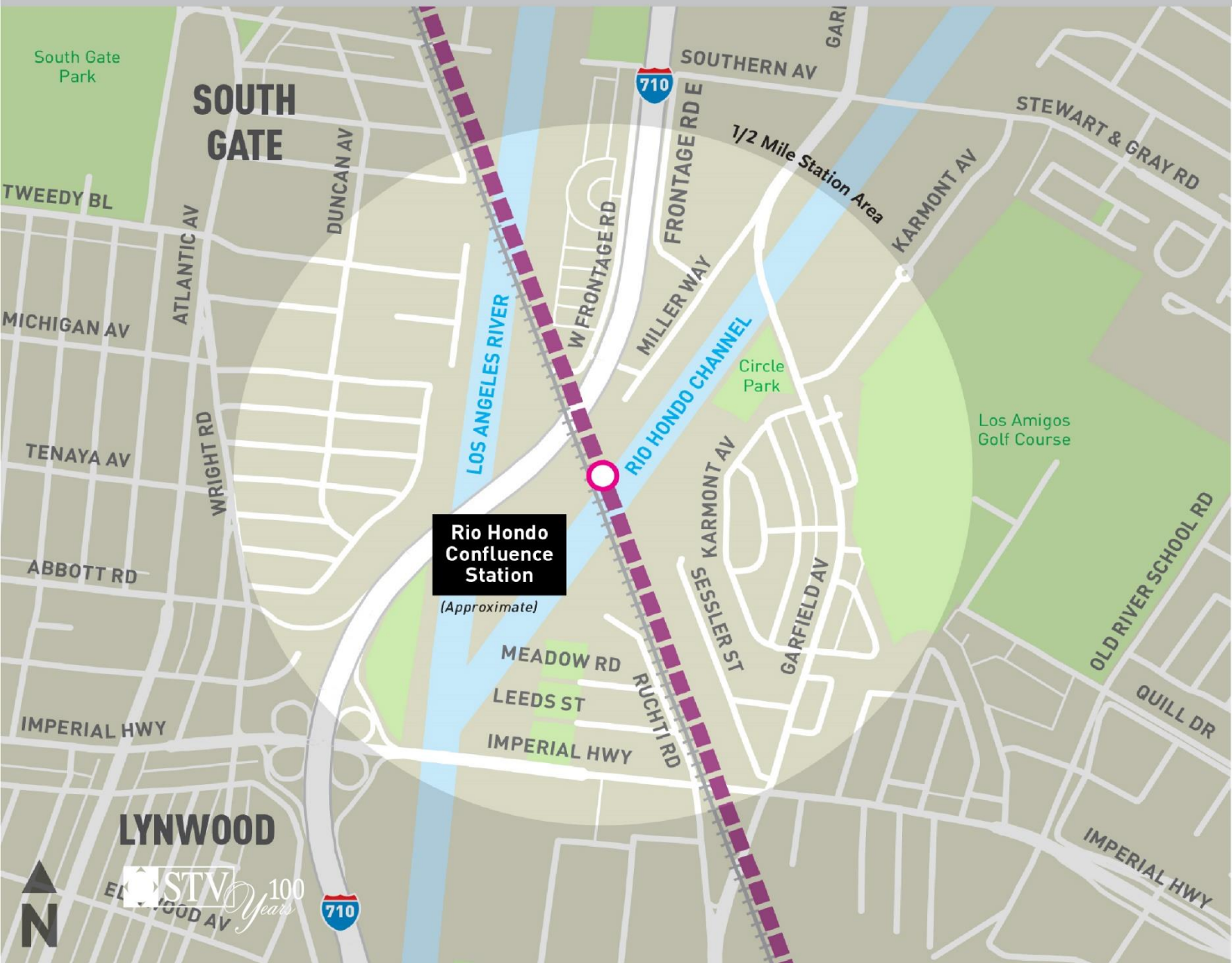
RIO HONDO CONFLUENCE STATION

Feasibility Study

Final



Feasibility Study

Final

August 8, 2022

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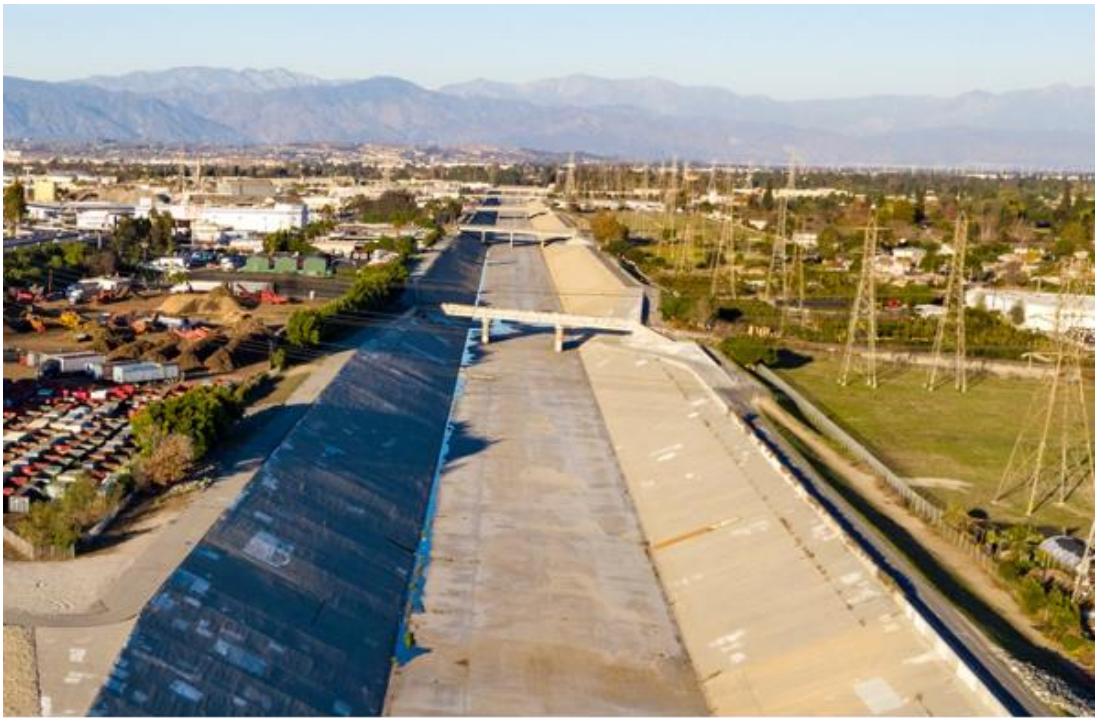
ABBREVIATIONS / ACRONYMS

ADA .....Americans with Disabilities Act
BMPs .....best management practices
CEQA .....California Environmental Quality Act
Confluence .....Rio Hondo Channel and Los Angeles River Confluence
EIS/EIR .....Environmental Impact Statement/Environmental Impact Report
FEMA .....Federal Emergency Management Agency
FIRM .....Flood Insurance Rate Map
FIS.....Flood Insurance Study
PTEL.....Passenger Assistant Telephone
GTEL .....Gate Telephones
I-710 .....Interstate 710 Freeway
LACFCD .....Los Angeles County Flood Control District
LID .....Low Impact Development
LLARP.....Lower Los Angeles River Revitalization Plan
LRT.....Light Rail Transit
LRV .....Light Rail Vehicle
Metro .....Los Angeles County Metropolitan Transportation Authority
NPDES.....National Pollutant Discharge Elimination System
OCS.....Overhead Catenary System
RHCAP .....Rio Hondo Confluence area Project
ROW .....Right-of-Way
SCE.....Southern California Edison
Study Area.....Rio Hondo Confluence Station Study Area
SWSD.....Systemwide Station Design
UPRR.....Union Pacific Railroad
WSAB.....West Santa Ana Branch

ES EXECUTIVE SUMMARY

The purpose of this document is to evaluate the feasibility of a potential Rio Hondo Confluence Station (Confluence Station) along the West Santa Ana Branch Transit Corridor Project (WSAB Project). This Rio Hondo Confluence Station Feasibility Study (Feasibility Study), being prepared at the request of the Metro Board [1], also analyzes the potential benefits and challenges of two station options to the Los Angeles County Metropolitan Transportation Authority (Metro) system and the surrounding community near the Rio Hondo Channel and the Los Angeles River Confluence (Confluence area). *Figure ES 1* shows an aerial view of the Confluence area. The findings presented in this study provide a preliminary understanding of the opportunities, constraints, and challenges of a potential station in this area.

Figure ES 1 Aerial View Looking North Towards the Confluence Station Area



Source: Cityworks Design, 2020

STUDY BACKGROUND

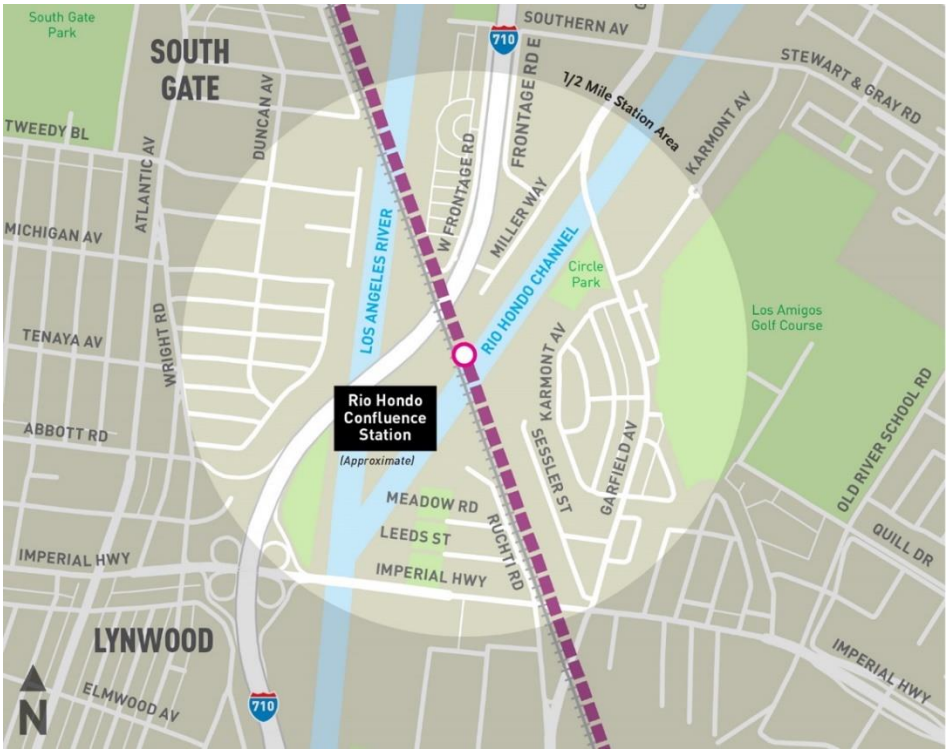
At its December 2018 meeting, the Metro Board approved Motion 15.1 to conduct a feasibility study of a potential WSAB station at the confluence of the Los Angeles River and the Rio Hondo Channel. The WSAB Project alignment will pass over the Confluence, which offers a unique opportunity to connect light rail transit (LRT) with planned community uses in the area, including multi-use trails, regional park space, and a future cultural arts center.

[1] Metro Board, Board Report File # 2018-0773, retrieved on May 20, 2022 from https://boardagendas.metro.net/board-report/2018-0773/.

The WSAB Project is an approximate 19-mile LRT corridor that would connect downtown Los Angeles to southeast Los Angeles County, serving the cities and communities of downtown Los Angeles, unincorporated Florence-Graham community of Los Angeles County, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, and Artesia. The Metro Board approved the selection of the Locally Preferred Alternative, which would be a 14.8-mile segment that would run from Slauson/A Line to Pioneer. This segment will continue into the final environmental phase, while a cost-effective alignment for the Slauson/A Line (Blue) to Union Station 4.5-mile segment will be studied.

The potential Confluence Station would be located within the Confluence area along the WSAB Project alignment in the City of South Gate, as shown in *Figure ES 2.* The Confluence area and the surrounding communities are some of the most disadvantaged and transit-dependent communities in Los Angeles County, with limited access to parks and high-quality transit.

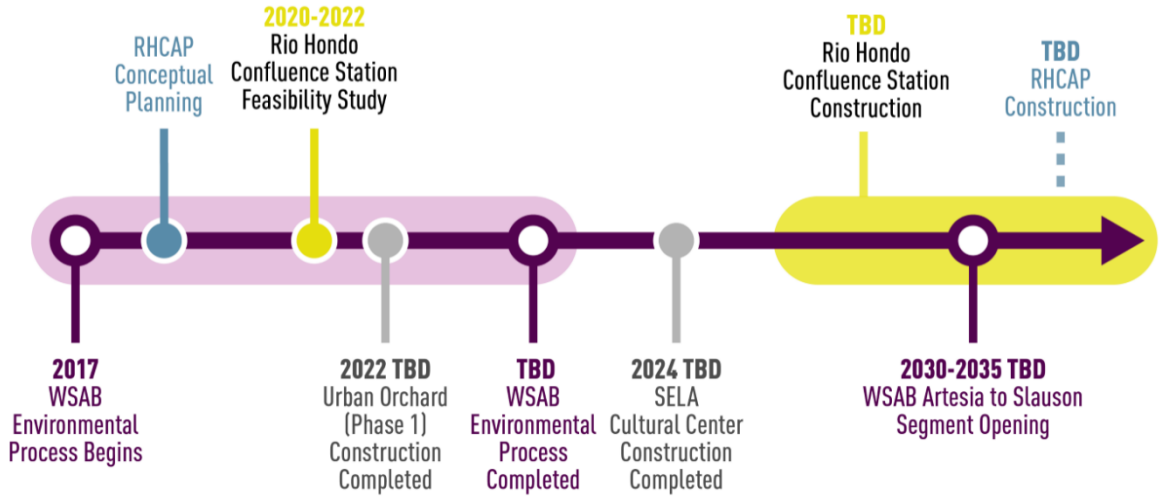
Figure ES 2 Rio Hondo Confluence Station Study Area



Source: Cityworks Design, 2020

However, several related projects, including new public open space and recreational uses, are planned within the Confluence area. *Figure ES 3* conveys a timeline of past, current and future milestones for WSAB and the planned projects in the vicinity of the potential Confluence Station.

Figure ES 3 Rio Hondo Confluence Station Conceptual Timeline



Source: Cityworks Design, 2022

The related efforts (Rio Hondo Confluence Area Project (RHCAP), Urban Orchard, and SELA Cultural Center) contribute to the viability and need of the potential station. Section 1.1 of this report discusses these key related efforts in further detail. A potential station in the Confluence area is expected to provide much needed equitable access to these recreational facilities, for local residents and visitors. It would also connect this community to the regional Metro rail transit network.

Study Goals

The goals of the Feasibility Study are consistent with those of the WSAB Project, with an additional goal of identifying a potential station configuration that minimizes construction and operational impacts to the WSAB Project. These goals have been utilized as a basis for assessing the overall feasibility of the potential Confluence Station:

- **Provide mobility improvements**
- **Support local and regional land use plans and policies**
- **Minimize environmental impacts**
- **Promote equity**
- **Improve cost effectiveness and financial feasibility**
- **Minimize construction and operational impacts to the WSAB Project**

Study Topics

As a preliminary planning level study, the Feasibility Study includes a high-level evaluation of a potential station across multiple topics: engineering, urban design, station access, right-of-way, environmental, operations, safety and security, ridership, cost, and construction. The study builds upon work conducted for the WSAB Project, including utilizing design and environmental analysis from the WSAB Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR), for consistency.

STATION OPTIONS

This Feasibility Study analyzed and evaluated two station configurations:

- Center Platform option – station platform over the Rio Hondo Channel
- Side Platform option – station platform between I-710 and the Rio Hondo Channel

Section 2 of this report includes a detailed description and assessment of these station options. Based on engineering feasibility and potential impacts to WSAB operations, among other factors, **the side platform is the more feasible station concept**. *Figure ES 4 Side Platform* depicts the side platform option.

Figure ES 4 Side Platform

Source: Cityworks Design, 2022

Summary of Key Metrics

This Feasibility Study developed key metrics to support the evaluation of the potential Confluence Station relative to the study goals. *Table ES 1* summarizes these key metrics.

Table ES 1 Summary of Key Metrics

Key Metrics	
Daily Boardings	**741** (2030), **853** (2042) - Lower ridership than WSAB mid-line station average: 2,500
Station Mode Share	**93% of riders would walk/bike** to the station
Cost	**$177 M - $207 M** (in 2020 dollars)[2][3]
Operations	Adds **one additional minute** to WSAB travel time in each direction

The following key benefits and challenges have been identified based on the analysis conducted in this Feasibility Study:

Key Benefits

- **Promote equitable access** to the Confluence area and the planned projects for local residents and visitors
- **Connect Confluence area residents to the regional Metro Rail network** via WSAB

Key Challenges

- **Limited station access represents the essential challenge** that must be addressed to ensure safe and convenient access to the potential station from the surrounding neighborhoods
    - Major investments in new access facilities (such as pedestrian/wheel bridges over the Rio Hondo Channel and Los Angeles River, sidewalks, ADA ramps at crosswalks, and street lighting) are needed for this station to be feasible
- **High Cost**: approximately $177M-$207M
    - This estimate includes station elements and needed access improvements
    - This does not include separate FLM improvements yet to be identified or additional cost of needed WSAB design accommodations not-to-preclude a future station
- **Low ridership**: 853 daily boardings by 2042, relatively low compared to WSAB mid-line station average of 2,500 daily boardings

[2] Does not include WSAB design accommodations and FLM costs
[3] Higher than WSAB mid-line station average costs

- **Identification of funding**: funding has yet to be identified for this potential station
- **Timing of related development efforts:** Completion of several related efforts in the vicinity of the Confluence area is essential for the viability of the potential Confluence Station
- Constructing a station on the WSAB alignment will be a major design challenge and would lead to **major disruptions to WSAB rail operations**

FEASIBILITY STUDY RECOMMENDATION

Based on the analysis conducted in this Feasibility Study, a future Confluence Station (with a side platform configuration) is a feasible option but will present some critical challenges. These challenges will need to be addressed, including the high cost of the station and its access improvements, the need to identify funding, and the uncertain timing of future supportive development in the area.

Moving forward, the WSAB Project will continue to monitor the status of adjacent station-supportive development projects, coordinate as necessary, and also make LRT alignment accommodations so as not to preclude a future side platform station in the Confluence area.

0. INTRODUCTION

The purpose of this document is to evaluate the feasibility of a potential Rio Hondo Confluence Station (Confluence Station) along the West Santa Ana Branch Transit Corridor Project (WSAB Project). The potential Confluence Station would be located near the confluence of the Rio Hondo Channel and the Los Angeles River (Confluence area). The surrounding neighborhoods comprise some of the most disadvantaged and transit-dependent communities in Los Angeles, with limited access to parks and high-quality transit. However, several recreational uses are planned within the Confluence area, including new public open space, trails, and a cultural center that would serve surrounding communities. A potential station in the Confluence area is expected to provide much needed equitable access to these recreational facilities, for local residents and visitors. It would also connect this community to the regional Metro rail transit network.

0.1. STUDY TOPICS AND REPORT STRUCTURE

This Rio Hondo Confluence Station Feasibility Study (Feasibility Study) includes analysis of several topics to evaluate the performance and feasibility of a potential station in the Confluence area. This Feasibility Study report is organized as follows:

- **Section 1** includes an overview of the study, including study goals, background, and key related efforts.
- **Sections 2** and **3** discusses the design elements, urban design and station access and considerations for the two station options considered in this Feasibility Study.
- **Sections 4 through 10** discuss the following topics: station operations, construction, traffic, ridership, environmental considerations, geotechnical and hazardous materials, water resources, right-of-way (ROW), and cost estimates.
- **Section 0** provides a conclusion and summary of findings (*Table 11.2*).

0.2. STUDY GOALS

The goals of the Feasibility Study are consistent with those of the WSAB Project, with an additional goal of identifying a potential station configuration that minimizes construction and operational impacts to the WSAB Project. These goals have been utilized as a basis for assessing the overall feasibility of the potential Confluence Station:

- **Provide mobility improvements**
- **Support local and regional land use plans and policies**
- **Minimize environmental impacts**
- **Promote equity**
- **Improve cost effectiveness and financial feasibility**
- **Minimize construction and operational impacts to the WSAB Project**

This Feasibility Study is based on a preliminary 5% level of design. As such, if and when development of this potential station proceeds into the next phase, additional analysis of topics outlined in this study would need to be considered.

1. STUDY BACKGROUND

Metro is studying a potential station in the Confluence area along the WSAB Project alignment in the City of South Gate, as shown in *Figure 1.1*. The Confluence area is anticipating substantial recreational development, which would create much needed opportunities for open space in one of the most disadvantaged and transit-dependent communities in Los Angeles County.

At its December 2018 meeting, the Metro Board approved Motion 15.1 to conduct a feasibility study of a potential WSAB station at the confluence of the Los Angeles River and the Rio Hondo Channel. This Feasibility Study builds upon work conducted for the WSAB Project, including utilizing design and environmental analysis from the WSAB Draft Environmental Impact Report/Statement (EIS/EIR).

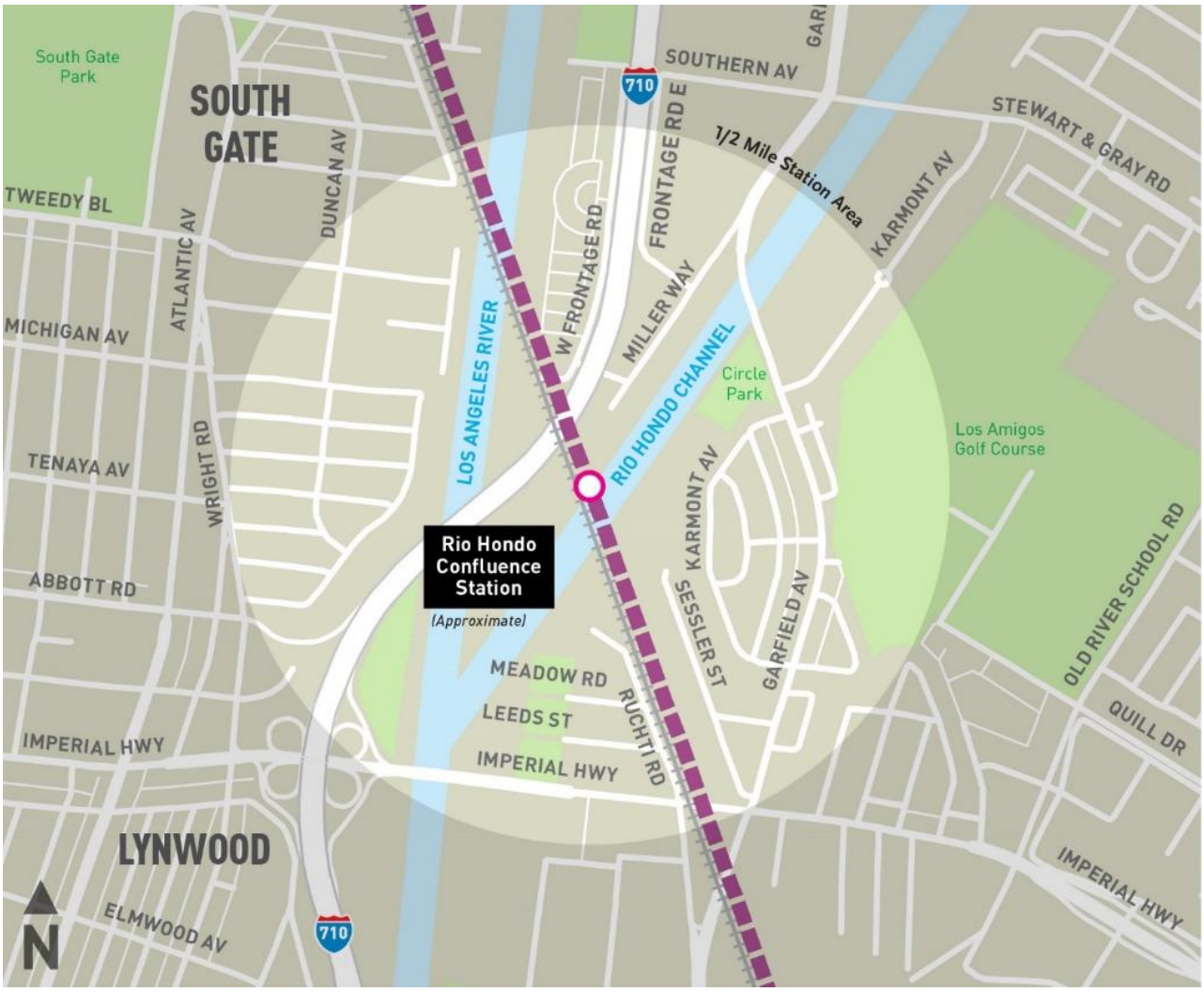
The WSAB Project is an approximate 19-mile light rail corridor that would connect downtown Los Angeles to southeast Los Angeles County, serving the cities and communities of downtown Los Angeles, unincorporated Florence-Graham community of Los Angeles County, Vernon, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, and Artesia. In January 2022, the Metro Board selected Slauson/A Line to Pioneer as the WSAB Project's Locally Preferred Alternative (LPA). The LPA is a 14.8-mile segment with 9 stations that is moving forward into the Final EIS/EIR for further study.

The WSAB Project alignment will pass over the Confluence area, which offers a unique opportunity to connect LRT with planned community uses in the area, including multi-use trails, regional park space, and a future cultural arts center. These related efforts are discussed in more detail in Section 1.1.

The potential Confluence Station boundary is defined as the area around the confluence of the Los Angeles River and the Rio Hondo Channel, located along the WSAB Transit Corridor and within the San Pedro Subdivision ROW that is owned by the Ports of Los Angeles and Long Beach. At the Confluence, the WSAB Project is proposed to run at-grade, within a jacked-box tunnel beneath the I-710 Freeway, just east of the Los Angeles River and southeast of the existing freight tracks. The WSAB Project would cross over the Rio Hondo Channel on a bridge and continue southeast at-grade.

Section 2 discusses the two station configurations included in this study: a center platform option over the Rio Hondo Channel and a side platform option between the I-710 Freeway and the Rio Hondo Channel.

Figure 1.1 Rio Hondo Confluence Station Study Area



Source: Cityworks Design, 2022

1.1. RELEVANT PLANS AND PROJECTS

This section provides a list of the related studies, plans, and projects within the Rio Hondo Confluence Station Study Area. These efforts are comprised of a variety of local improvements, including new public access pathways, infrastructure and recreational open space/amenities. These adjacent planning efforts helped inform the design concepts and analyses conducted in this Feasibility Study, as they helped to conceptualize future infrastructure, accessibility, and physical and operational constraints associated with a potential station in the Confluence area.

Metro intends to continue coordinating with proponents of these related efforts proximate to the Confluence area, as applicable.

METRO STUDIES & PLANS

- I-710 Corridor Project Recirculated Draft Environmental Impact Report/Supplemental Environmental Impact Statement, July 2017
- WSAB Final Rio Hondo Confluence Station Feasibility Study, November 2018
- WSAB Revised Final Study Corridor Definition Report, January 2019
- WSAB Mobility Problem Definition and Purpose and Need Statement, January 2019
- WSAB TOD Strategic Implementation Plan, May 2019

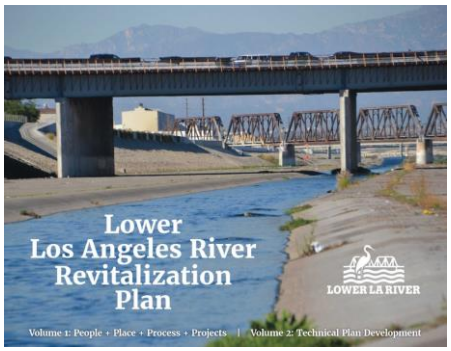
REGIONAL STUDIES & PLANS

- Gateway Cities Strategic Transportation Plan, March 2016
- Lower Los Angeles River Watershed Management Program, August 2017
- Lower Los Angeles River Revitalization Plan, June 2018 (LLARP)
- Eco-Rapid Transit: Draft Paramount/ South Gate Station Area Plan, March 2019
- RHCAP Draft Concept Report, November 2019
- Rio Hondo Confluence Los Angeles River Signature Project Feasibility Study, February 2019
- SELA Cultural Center
- LA River Master Plan, June 2022

LOCAL STUDIES & PLANS

- South Gate General Central Plan 2035, December 2009
- South Gate Hollydale Village Specific Plan, June 2017
- South Gate Urban Orchard Demonstration Project Environmental Assessment (NEPA) and Initial Study/Mitigated Negative Declaration (CEQA), June 2019

Summarized below in chronological order, are the related plans, projects and studies in the vicinity of the Confluence area:



Lower Los Angeles River Revitalization Plan (LLARP), June 2018

The Lower Los Angeles River Working Group, chaired by the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, represents the efforts of jurisdictions, neighborhoods, and non-profit organizations along the Los Angeles River to plan for future development and revival of the river between its mouth in the City of Long Beach to the City of Vernon.

This document summarizes planning efforts for potential project concepts near the Rio Hondo Confluence area. It includes park expansions, new open space, new community and cultural centers; new recreational paths and new infrastructure such as pedestrian bridges and terracing along the banks of the Los Angeles River and the Rio Hondo Channel. Parque Dos Rios and Urban Orchard are two sizable, proposed projects within ½ mile of the Confluence area. Site plans include pathways that could potentially connect to the proposed Rio Hondo Confluence Station. Proposed projects discussed in this plan have not been funded.

Rio Hondo Confluence Los Angeles River Signature Project Feasibility Study, February 2019

The Los Angeles County Department of Public Works prepared the study in response to regional plans and projects that fall within the Confluence area: Metro's WSAB, Parque Dos Rios, Urban Orchard and the Southeast Los Angeles Cultural Center.

This Feasibility Study focuses on the Rio Hondo Confluence Signature Project of the LLARP and reviews ongoing planning efforts, provides site history, and identifies infrastructure and community facilities in the area, along with proposed site plans.

Many facilities are not in the immediate Confluence area, but existing conditions such as high-power transmission lines adjacent to the WSAB tracks, a mobile home between the Rio Hondo Channel and I-710, and existing and proposed recreational and cultural facilities may inform

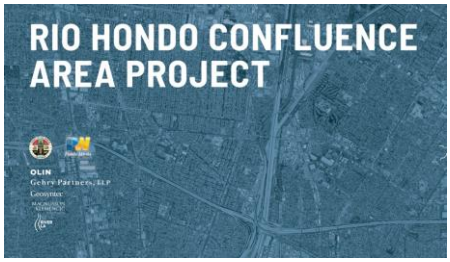
design and environmental considerations for the Rio Hondo Confluence Station Feasibility Study.

South Gate Urban Orchard Demonstration Project Environmental Assessment (NEPA) and Initial Study/ Mitigated Negative Declaration (CEQA), June 2019

The Urban Orchard Demonstration Project is a proposed 30-acre recreational park that would be located along the east bank of the Los Angeles River between Firestone Boulevard to the north, the Confluence area the south, and the I-710 to the east. The City of South Gate published an environmental assessment and initial study/mitigated negative declaration to environmentally clear the Urban Orchard Demonstration project under NEPA and CEQA.

The WSAB alignment would cross the proposed park north of I-710 and the Confluence area. The park would include a community center, a garden, a fruit tree orchard, a plaza, landscaping, a parking lot, and a wetland drawing water from the Bandini Channel.

There are three phases of the project development. Only the third phase includes land that would cross the WSAB corridor and add parkland to the Confluence area. Phase 1 construction would take approximately 18 months to complete, and a construction timeline for Phases 2 or 3 has not yet been determined. Phase 1 is currently under construction.



RHCAP Draft Concept Report, November 2019

The Los Angeles County Department of Public Works prepared the RHCAP Draft Concept Report, building on the Lower Los Angeles River Revitalization Plan and the Rio Hondo Confluence Los Angeles River Project Feasibility Study. The project area was first suggested in the Lower LA River Revitalization Plan (2017) and is defined as part of a “Major Project Zone” in the ongoing Los Angeles River Master Plan Update. The project area falls within a 2-mile stretch of the LA River at the Rio Hondo Confluence, including the Cities of South Gate, Lynwood, and Downey.

This report identifies various scenarios and configurations for redevelopment of the Confluence area, including planning

open space and parking lots in relation to a potential WSAB Rio Hondo station. It proposes a range of strategies for opportunity sites (identified in the Los Angeles River Master Plan) within the channel, adjacent properties, and parallel transmission ROW. Parallel projects such as the Urban Orchard Demonstration Project and the Parque Dos Rios are included in site plans.

Metro is currently coordinating with the Los Angeles County Department of Public Works about their respective projects. Such efforts should continue to identify infrastructure interfaces, such as how the elevation of the WSAB light rail alignment and potential Rio Hondo Confluence Station could impact the infrastructure elements studied in the Rio RHCAP. Conceptual projects cited in the report include:

- Southern Avenue Connector
- Confluence Point Park
- Blue Park
- Water Education Center
- Imperial Wetlands
- SELA Bridge Park
- Lynwood Connector
- LA River Platform Park
- Rio Hondo Platform Park
- South Garfield Transmission ROW Park
- North Imperial Transmission ROW Park
- South Imperial Transmission ROW Park

SELA (Southeast Los Angeles) Cultural Center

The proposed SELA Cultural Center will be a multi-arts facility that showcases the vibrant Southeast Los Angeles community and provide a permanent place for the surrounding community to gather in creative expression. The SELA Cultural Center will be located at a prominent site near the Confluence where the Los Angeles River and the Rio Hondo Channel meet in South Gate. The SELA Cultural Center is just one of many community-focused projects along the LA River that builds upon the LA River Master Plan (2022) and LLARP.

LA River Master Plan, June 2022

The Los Angeles County Board of Supervisors adopted the Los Angeles River Master Plan on June 14th, 2022. The Project is located along a 51-mile-long, 2-mile-wide corridor (i.e., 1 mile on each side) of the LA River in Los Angeles County and spans through 17 cities and unincorporated Los Angeles County (18 total jurisdictions). The river encompasses an 834-square-mile watershed and flows from its headwaters in Canoga Park in the City of Los Angeles to the City of Long Beach, where the river meets the Pacific Ocean in San Pedro Bay.

This plan provides for the optimization and enhancement of aesthetic, recreational, flood control and environmental values by creating a community resource, enriching the quality of life for residents, and recognizing the river's primary purpose for flood control.

The Master Plan includes 56 planned major projects, including the Rio Hondo Confluence Area Project (RHCAP) and the SELA Cultural Center which are part of the Lower LA River Revitalization Master Plan. The plan also calls for the Upper Los Angeles River, Los Angeles River Upper Reach 2, Rio Hondo, and Lower Los Angeles River watershed management groups to develop regional and distributed projects and programs that contribute to meeting goals for regional water quality improvement.

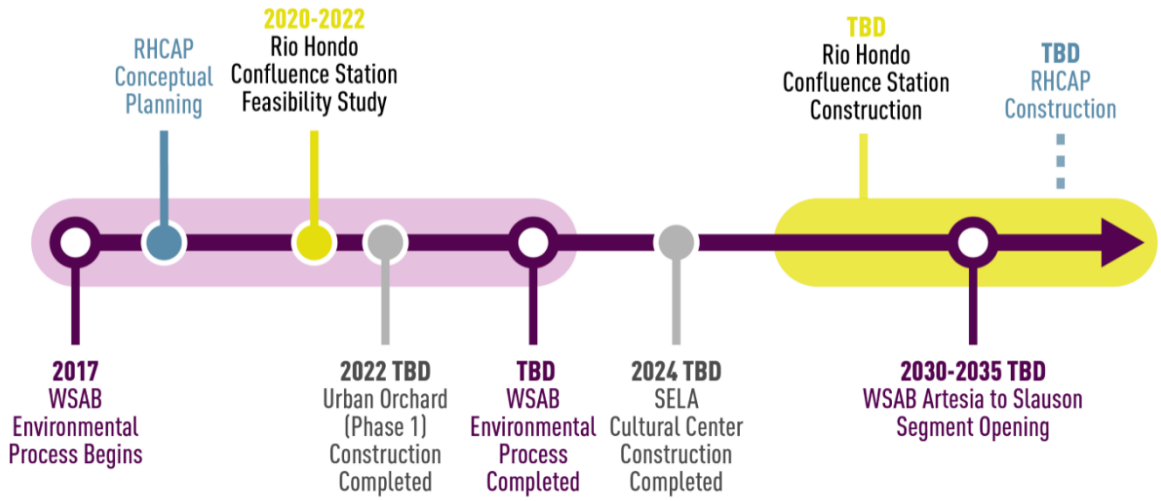
Figure 1.2 presents an overlay of proposed project boundaries proximate to the Rio Hondo Confluence Station.

Figure 1.2 Relevant Access Projects

Source: Cityworks Design, 2021

Figure 1.3 conveys a timeline of past, current and future milestones for WSAB Project and the potential Confluence Station, which would not preclude the construction of current and future planning efforts in the Study Area, including RHCAP, Urban Orchard, and SELA Cultural Center.

Figure 1.3 Rio Hondo Confluence Station Conceptual Timeline



Source: Cityworks Design, 2022

2. DESIGN: STATION OPTIONS AND DESIGN CONSIDERATIONS

Two station configurations were considered as part of the Feasibility Study analysis: a center platform option over the Rio Hondo Channel and a side platform option between I-710 and the Rio Hondo Channel. These options represent station configurations typically used within the Metro LRT System. The locations of these two station options were determined to be the most feasible based on the design considerations presented in *Table 2.1*.

Table 2.1 Station Design Considerations

Design Considerations	Additional Information
Minimize impacts to existing physical constraints to the greatest extent possible	Existing constraints include: elevated I-710, the Rio Hondo Channel, the Los Angeles River, the Southern California Edison (SCE) overhead power easement southeast of the Rio Hondo Channel, freight rail track ROW and adjacent properties.
Conformity to WSAB alignment	An alignment and station configuration that most closely matches the WSAB alignment.
Proximity to Planned Related Efforts/Projects	The potential station's proximity to the future proposed community uses within the Confluence area. This proximity is based on the ability to walk or wheel (i.e., bicycle, skateboarding, non-motorized scooters, and roller skates and blades) to/from these future uses.

Additional station options were analyzed but considered not feasible for not meeting the above criteria. Appendix A includes information on the concepts that were considered but ultimately dismissed from further study.

2.1. WSAB TRACK ALIGNMENT DESIGN CONSIDERATIONS

The potential Confluence Station track alignment was designed to match the WSAB Project track alignment to the greatest extent possible. The WSAB Project track alignment consists of two tracks, one northbound (or RT) and one southbound (or LT), both with a minimum of 14-foot track centers. The WSAB Project alignment stationing increases from north to south; therefore, the track alignment is described hereafter in the same direction and orientation (i.e., starting on the north and proceeding to the south).

The WSAB track alignment will cross under the I-710 through a reinforced concrete box that will be jacked under the freeway embankment. The track alignment will horizontally curve away from the existing UPRR (Union Pacific Railroad) freight track through this box and return to parallel with the UPRR tracks approximately 550 feet south of the Rio Hondo Channel. The proposed track alignment will cross vertically under the I-710 in a sag curve before ascending to a 1.64% grade to cross over the Rio Hondo Channel.

The WSAB bridge over the Rio Hondo Channel will be on a crest curve bridge. Thereafter, the proposed track alignment will descend after the bridge at a -1.42% grade, and then touch down to grade at approximately 1,200 feet south of the Rio Hondo Channel. The clear distance between the bridge soffit and the existing nearby Rio Hondo Channel Bike Path will be 21.1 feet, which includes 3.5 feet of freeboard.

To maintain the existing channel flow characteristics, the existing freight track bridge piers will be extended north by about 10 to 12 feet to also serve as the LRT bridge piers. The elevated sections of track over the Rio Hondo Channel will be supported by concrete pier walls while the elevated sections of track outside the channel limits will be supported by retained fill. Lastly, the WSAB Project will add a No. 10 scissor crossover southeast of the Rio Hondo Channel. This crossover would also be maintained for the potential Confluence Station design.

2.2. CENTER PLATFORM

The center platform station option includes a station platform directly over the Rio Hondo Channel, with a station entrance on the north and south sides of the Rio Hondo Channel. *Figure 2.1* depicts the center platform configuration.

Figure 2.1 Option 1: Center Platform Configuration

Source: STV, 2021

As indicated in Section 2.1, the WSAB Project vertical alignment requires a vertical crest curve over the Rio Hondo Channel. However, Metro Rail Design Criteria require that a station cannot be placed on a horizontal or vertical curve. Moreover, the maximum grade (up or down) that Metro design standards allow through a station is 1.00%. Therefore, this design option would require modifications to the WSAB Project horizontal and vertical alignments to accommodate a station. In addition, to accommodate a center platform design, the horizontal track centers would need to be widened from the WSAB design of 14 feet to 25.3 feet through the station platform.

The center platform option includes a single platform that is 270 feet long and 16 feet-2 inches wide, per Metro standards. While the elevation of the station at the mid-point over the Rio Hondo Channel would be approximately 40 feet over the channel, the two ends of the station where passengers would access the station are only about 8 to 12 feet above existing grade.

An initial design option was explored for the center platform configuration to include a grade separated pedestrian undercrossing of the two tracks. However, given the constraints of the Rio

Hondo Channel and proximity of the adjacent freight track, this design option was deemed not feasible. Therefore, for the center platform station option, the most feasible option is to provide access to the station platform via at-grade pedestrian grade crossings.

2.3. SIDE PLATFORM

The side platform station option includes a station platform between the I-710 Freeway and the Rio Hondo Channel. A side platform configuration would only provide station entrances north of the Rio Hondo Channel. Station access concepts are discussed further in Section 3. *Figure 2.2* depicts the side platform configuration.

Figure 2.2 Option 2: Side Platform Configuration

Source: STV, 2021

This segment of the WSAB Project alignment is in a horizontal and vertical tangent; therefore, fewer modifications to the WSAB Project alignment would be required to accommodate the side platform option compared to the center platform option. In addition, the WSAB track centers can remain at 14 feet because the potential Confluence Station platforms would be placed on the outside of the two tracks.

The side platform option consists of two platforms that are both 270 feet long and 12 feet wide, per Metro standards. All platform station entrances would sit approximately 8 to 10 feet above the existing grade.

An initial design option was explored for the side platform configuration to include a grade separated pedestrian undercrossing of the two tracks. While feasible from an engineering perspective, a potential pedestrian undercrossing would need to be studied further and coordinated with related jurisdictional entities. Therefore, for purposes of this Feasibility Study, the side platform option proposes providing access to the station platforms via at-grade pedestrian grade crossings.

2.4. STATION AMENITIES

Both station options would have the same types of amenities per Metro Systemwide Design Station (SWSD) Standards. The types of amenities are detailed below.

2.4.1. Ticketing Area

- Ticket Vending Machine
- Transit Passenger Information System
- Customer Information Panels
- Digital Customer Information Panels
- Ramps
- Turnstile Aisle
- Emergency Swing Gate
- Passenger Assistant Telephone (PTEL)
- Gate Telephones (GTEL)

2.4.2. Platform Area

- Benches (back-to-back for center platform and single for side platform)
- Trash Receptacles
- Customer Information Panels (Double sided for Center platform and single for Side platform)
- Digital Customer Information Panels
- Emergency Telephone
- Canopy(s)

Since a side platform station option consists of two platforms, it would require more station amenities to comply with Metro SWSD standards, compared to fewer amenities needed for a single platform in a center platform configuration.

2.5. RECOMMENDED PLATFORM CONFIGURATION

While a center platform configuration is typically ideal as it limits confusion for passengers navigating a north or southbound train, and reduces the pedestrian activity crossing the trackway, the WSAB alignment would need to be widened to accommodate a center platform. To accommodate a center platform, the required WSAB track widening would result in greater impacts to WSAB service compared to the side platform. The WSAB bridge overcrossing at the Rio Hondo Channel and I-710 tunnel could also be affected by track widening.

The side platform option could be an easier structure to build and would be less disruptive to WSAB operations, as its trackway design matches the WSAB alignment to a greater extent than the center platform. Adding the Rio Hondo Confluence Station to the WSAB line after construction would result in WSAB service impacts during construction of either station configuration.

Given the constraints posed by the freight tracks, WSAB alignment and operations, Rio Hondo Channel crossing, freeway, and surrounding access roads, a future Confluence Station (with a side platform configuration) is recommended as a feasible option. Therefore, the remainder of this report focuses on the analysis and evaluation of the side platform concept.

3. STATION ACCESS

This section discusses how station access would be provided for a side platform station configuration within the immediate station area, as well as issues, opportunities, and constraints associated with providing station access to/from the surrounding neighborhoods.

3.1. STATION PLATFORM ACCESS

Access to the side platform station could be provided from both ends of the platform and would require two total active track crossings (over the north and southbound track), as presented on *Figure 3.1* and *Figure 3.2*. Both paths would then lead Metro customers down a series of ramps and stairs to reach the station plaza near Miller Way with vehicular access, and a passenger drop off/pick up zone.

Grade crossing safety equipment and signage at active track crossings would be required to comply with Metro and California Public Utilities Commission standards, which may include automatic flashers and fencing or gates, bells, safety lighting, and pedestrian swing gates.

The side platform station would only be accessible north of the Rio Hondo Channel. However, an opportunity that could be explored further could be to design pedestrian and cyclist access parallel to the potential station for people traveling between the station and Imperial Highway

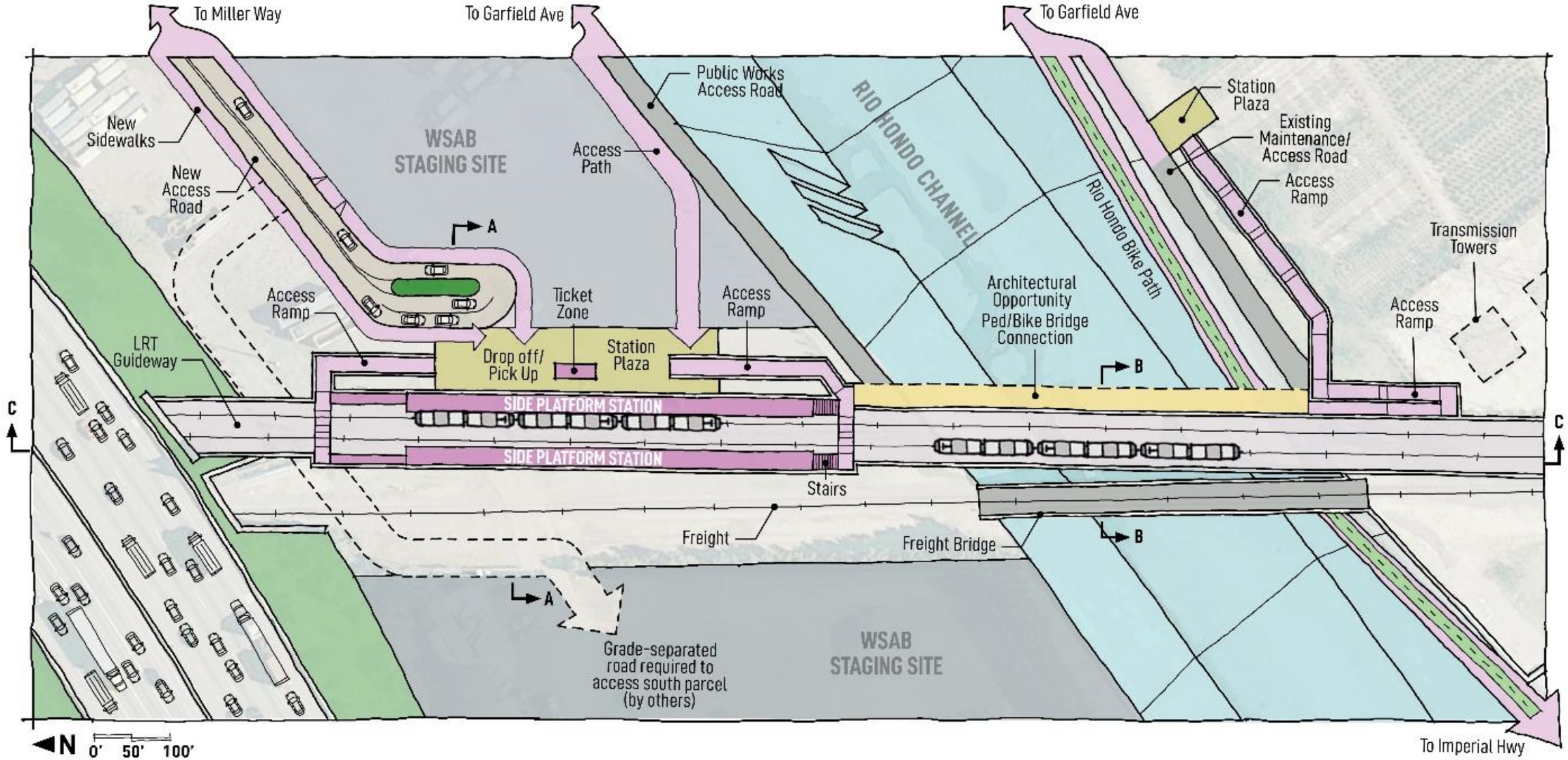
to the south or Garfield Avenue to the north. One benefit of this concept is locating the station entirely on land with only a pedestrian/bicycle bridge being added to the narrow rail bridge over the Rio Hondo Channel.

Metro SWSD standards require ADA accessible ramps on either side of a station platform. Given the constraints with the side platform station location (between the I-710 north of the platform, and Rio Hondo Channel to the south), and the existing topography and adjacent freight track, there is inadequate space available to provide ADA-compliant ramps connecting to both north and south platform entrances. This station configuration would require a deviation from Metro SWSD standards to only provide one ADA-compliant ramp.

Figure 3.1 illustrates ADA-compliant ramps at the north platform entrances, with stairs providing access on the south platform entrances. The location of access ramps and stairs could be reversed, with stairs on the north side, and access ramps on the south side. Due to space constraints, the ticketing and fare zones would also need to be relocated from the platform ends to the station plaza.

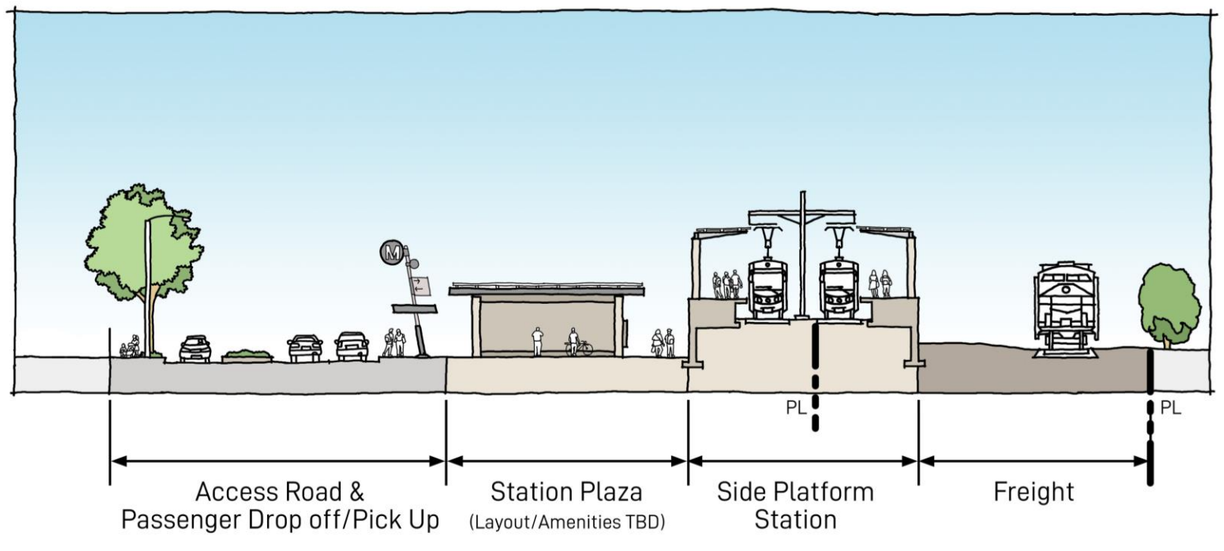
The connection from the platform to the station plaza and immediate station area would be constrained by the height differences between the light rail track and freight track elevations, and adjacent topography. To overcome these vertical grade differences, the preferred approach would be to generally maintain the existing grade adjacent to the station site. Stairs and ADA-compliant ramps could bring pedestrians up to the track-level elevation, to then access the station platforms.

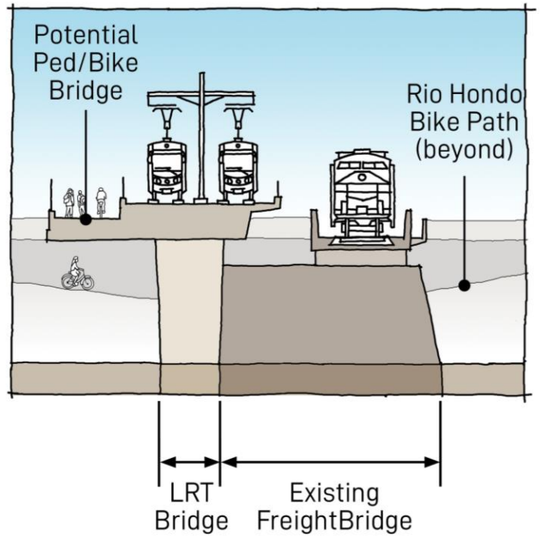
Figure 3.1 Side Platform Station Access Plan



Source: Cityworks Design, 2022

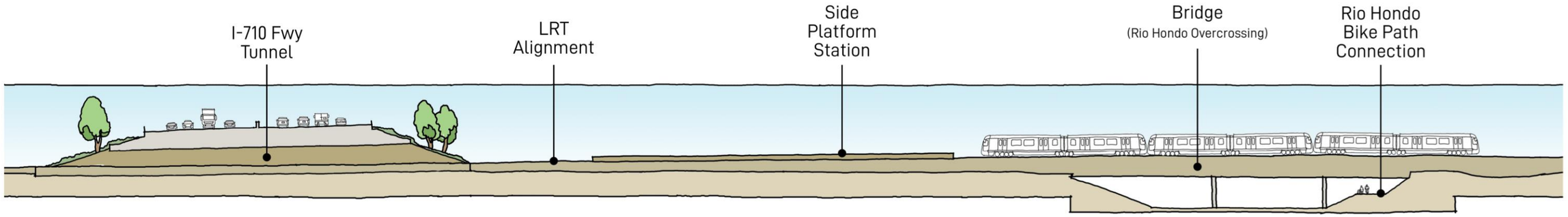
Figure 3.2 Side Platform Station Access Cross-Sections





Section A-A Side Platform Station

0' 10'



Section B-B Side Platform Bridge/Alignment

0' 10'

Section C-C Side Platform Alignment Profile

0' 50' 100'

Source: Cityworks Design, 2022

3.2. ESSENTIAL STATION ACCESS IMPROVEMENTS

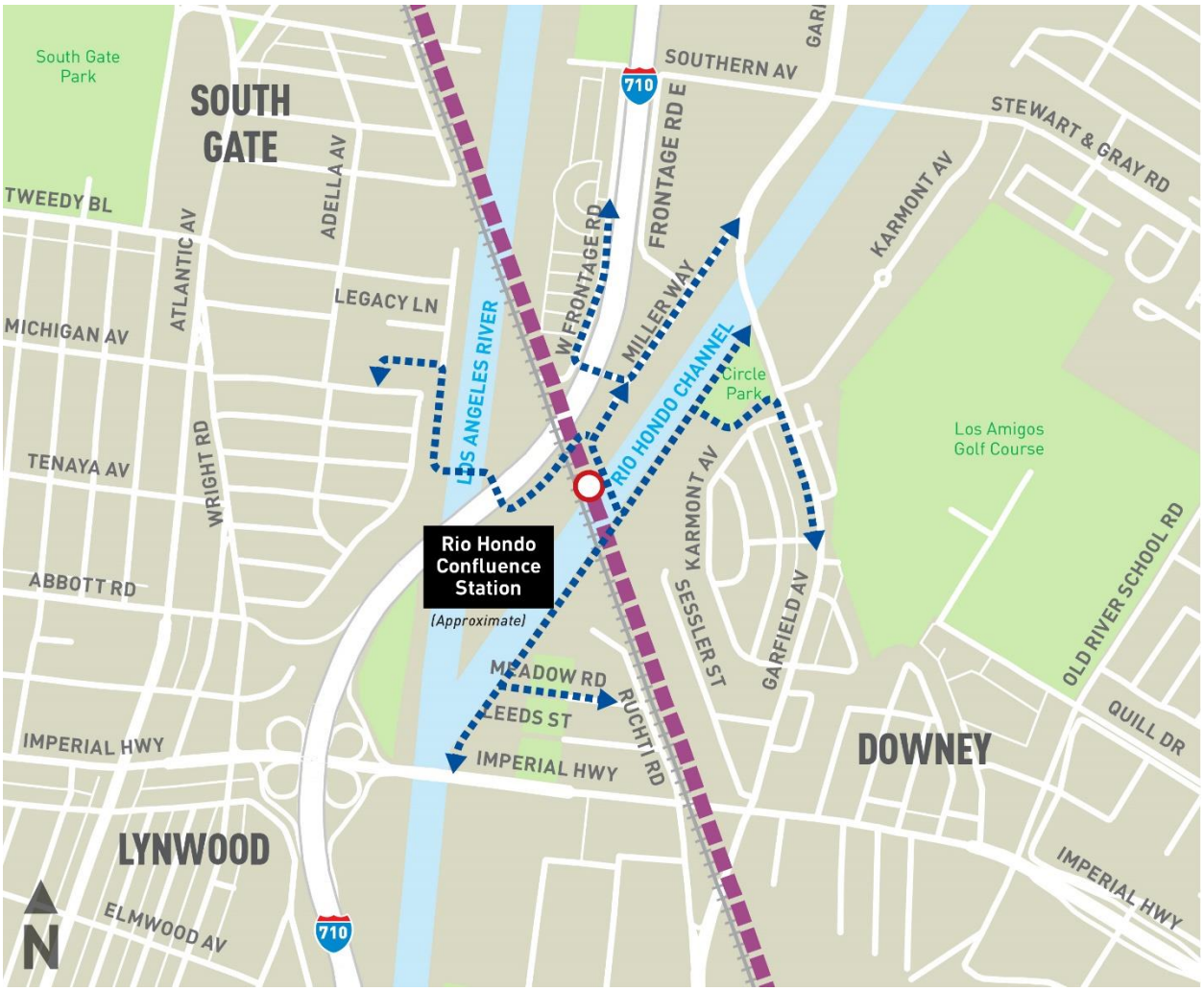
The existing public street network does not provide direct vehicular or non-motorized access to the Confluence area. Given the limited existing pedestrian and vehicular circulation infrastructure near the Confluence area, station access represents the essential challenge that must be addressed to ensure safe and convenient access to the potential station from the surrounding neighborhoods.

Due to the station's location and existing physical constraints, it is disconnected from surrounding neighborhoods in South Gate, Downey, and Lynwood. Essential pedestrian and non-motorized wheel-oriented (i.e., bicycle, skateboarding, non-motorized scooters, and roller skates and blades) access improvements would be needed to make the potential station accessible to residents in these areas. The viability of this station would be heavily limited without these needed access improvements.

The essential station access improvements presented in this section consist of only critical pedestrian and wheel-oriented improvements needed to address constrained ROW challenges, and missing roadway and pedestrian infrastructure. The essential access improvements are distinct from pedestrian and wheel access improvements that would be identified during Metro's First/Last Mile Planning work around its rail transit stations.

Figure 3.3 shows essential pedestrian and wheel-oriented access paths of travel that would provide the potential station access to nearby neighborhoods. Access improvements would be focused along, but not limited to these pathways.

Figure 3.3 Rio Hondo Confluence Station Pedestrian/Wheel-Oriented Access Paths of Travel



Source: Cityworks Design, 2022

With over 90% of station access forecasted to occur via walking and bicycling/wheeling, three pedestrian/wheel bridges would be required to cross over the:

- Rio Hondo Channel
- Freight tracks adjacent to the station
- Los Angeles River

Typical pedestrian improvements are assumed to be provided along all paths of travel. These include:

- Concrete walkways or sidewalks
- ADA ramps at crosswalks
- Continental crosswalks at signalized intersections
- Street or pedestrian lighting
- Shade trees with irrigation

In addition, a traffic control device to provide a controlled crossing of Garfield Avenue is included.

3.3. STATION ACCESS FINDINGS

Given the constraints posed by the WSAB alignment, river crossing, freeway, and surrounding access roads, immediate station entrances could be limited to the north side of the Rio Hondo Channel for the side platform option.

As noted in Section 2, this study finds that a side platform configuration is a feasible design option. *Table 3.1* presents a high-level summary of the Urban Design & Station Access challenges and opportunities identified for a potential station in the Confluence area. These findings were informed by various technical studies and analysis performed as part of this Feasibility Study and are discussed in more detail in subsequent sections.

Table 3.1 Urban Design & Station Access Findings

Urban Design & Station Access Key Issues	Challenge	Opportunity
WSAB Design Impacts	✓	
Existing Built Environment	✓	
Pedestrian Safety & Rail Operations	✓	
Cost	✓	
Community Access	✓	✓
Future RHCAP	✓	✓

Source: Cityworks Design, 2020

In summary, limited station access represents the essential challenge that must be addressed to ensure safe and convenient access to the potential station from the surrounding neighborhoods.

4. OPERATIONS

4.1. STATION AREA OPERATIONS AND MAINTENANCE ACCESS

Operations and service characteristics for the potential Confluence Station would be consistent with those specified for the WSAB Project.

Given that the existing public street network does not provide direct vehicular and non-motorized access to the Confluence area, construction of new ROW and access roadways to serve the potential station area would be required for maintenance activities to support station operations. Potential improvements could include extending Miller Way, as well as other potential off-street pathways, to connect the potential station to the existing street and pathway networks. Additionally, limited roadway access to the Confluence area south of the Rio Hondo Channel would require coordination with third parties to allow the use of existing maintenance roads in that area. These are critical access improvements that are required to operate and maintain the potential station and are further defined in Section 10.1.

4.2. GENERAL OPERATIONAL IMPACTS TO WSAB AND CONFLUENCE AREA TRANSPORTATION NETWORK

Low projected ridership (discussed in Section 8) at the potential station and shifting of riders from nearby rail stations to this potential station, are not anticipated to significantly affect WSAB rail operations overall. However, the addition of the potential station would create an additional one minute of travel time in each direction that would require additional trains in certain headway combinations. This could increase WSAB capital and operating costs.

Ridership estimates show few riders would connect to the station by car or bus, resulting in minimal effects on roadway or bus operations. These estimates assume the current roadway system in place; any new road or transportation infrastructure which would be needed to improve bus and rail connections, would have major cost implications.

5. CONSTRUCTION

5.1. CONFLUENCE STATION

A side platform station would entail constructing two concrete raised platforms on both sides of the two-track guideway in the retained fill segment of the alignment. The platform would largely consist of two concrete walls that form the side of the platform with a concrete slab on top. This could be constructed using cast-in-place or use pre-cast concrete members. To avoid construction equipment from accidentally hitting and damaging the OCS system, temporary removal of some of the OCS poles and wires may be required during construction and reinstalled once completed. The final station platform elements and amenities (i.e., canopies, benches, lighting, signage, etc.) would be constructed and installed after the platforms are constructed.

The ADA ramps and stairs from the station platform to track level will largely be constructed on the retained fill sections of the alignment. These could consist of concrete walls and a concrete

slab for the walkway and constructed as cast-in-place. The pedestrian grade crossings on either side of the platform would consist of typical Metro standard concrete crossing panels, flashers, gates, and safety railings. Included with the grade crossings would be the installation of the electrical rail detection systems and approach circuitry required to activate and deactivate the crossings by approaching and departing trains.

5.2. STATION PLAZA AREA AND ACCESS CONSTRUCTION

The station plaza area is envisioned to consist of an open passenger plaza/waiting area, a bus and passenger pick-up/drop-off zone. Construction in this area would include the following items:

- Demolition of any remaining existing features (i.e., asphalt, utilities, fencing etc.) leftover from the previous property owner and not removed during construction of the WSAB Project.
- Installation of new utilities to support the station could include water, storm drainage, electrical and fiber optic utilities. If restrooms are to be provided, sewer utilities would also need to be installed.
- Grading to level the site to final design elevation.
- Installation of drainage features like piping and drainage inlets.
- Concrete paving or other pavement material for the open passenger area. Benches, signage and kiosks, ticket machines, glass canopies, communication equipment, fare gates, emergency swing gates and other passenger amenities could be included in this area.
- Asphalt pavement construction for the access road into the site, and pick-up/drop-off areas. Concrete sidewalks with curb and gutter would be included and would need to extend and tie-into the existing curb and gutter and sidewalks on Miller Way.
- Construction of other key station features, including striping and signage, lighting, landscaping, and fencing.

Access to the platforms from the station plaza area would consist of ADA-compliant ramps. These could be constructed on raised fill material, either sloped or retained or a combination of both. The ramps would be constructed of concrete and would include railings and lighting. Modifications to the existing track retaining walls constructed under the WSAB Project may be required to tie-in the ramps with the at-grade pedestrian crossings.

5.3. IMPACTS TO WSAB OPERATIONS DUE TO STATION CONSTRUCTION

The potential Confluence Station is assumed to be constructed after WSAB has been open and in operation. The following light rail and operational elements from WSAB are assumed to be in place at the start of the station's construction:

- Track guideway with alignment constructed to accommodate either of the station options.
- Concrete box under I-710 configured to accommodate either of the station options.

- Track bridge over the Rio Hondo Channel configured to accommodate either of the station options.
- Overhead catenary system (OCS) poles, underground conduit, and signaling system constructed to accommodate either of the station options.
- Removal, relocation, and/or protection of existing underground utilities completed to accommodate either of the station options.
- Retaining walls constructed to accommodate either of the station options.

Station construction has the potential to significantly disrupt WSAB Project operations since construction could not occur on an active rail line and, therefore, would require the active tracks to be taken out of service. A shoofly or auxiliary tracks may not be feasible at the Confluence area due to constrained ROW north of the Rio Hondo Channel, potentially resulting in the WSAB Project operating two disconnected segments. Without a shoofly providing a bypass track for Metro LRT vehicles during construction, another option would be to provide a bus bridge, which could affect rail operations and travel times. Light Rail Vehicles (LRVs) operating on a segment disconnected from the planned WSAB Project maintenance and storage facility (MSF) would need to be transported to the MSF, or a temporary satellite facility would be required, which would have major operational and cost implications on WSAB. Additionally, during single tracking for a disabled train under a side platform scenario, passengers would be unable to transfer without a change of platform.

The site southwest of the potential station has been identified as a construction staging site for the WSAB Project. While this site may continue to function as construction staging for this potential station, the area also overlaps with sites proposed by RHCAP. Access and use of this staging site could be constrained if RHCAP is implemented prior to the potential station.

6. RIGHT OF WAY

This section describes the property and rights that would be required for the proposed station platform *in addition* to the rights that would be required for the WSAB Project without the potential Rio Hondo Confluence Station.

The main ROW consideration is that all but one of the properties has been identified for acquisition as part of the WSAB Project. Thus, Metro will already be coordinating with these property owners as part of WSAB. In addition, the WSAB Project will be acquiring property in the area for construction laydown; therefore, minimal property takes are required for the potential Confluence Station.

The potential Confluence Station would require additional acquisition from four parcels that have been identified by the WSAB Project. Of the four parcels that would require additional ROW, three would remain partial acquisitions while one parcel would need to be fully acquired for the station. One newly affected parcel would require a partial acquisition. No additional displacements would be required to accommodate this potential station in addition to those needed for the WSAB alignment.

Coordination with local owners and relevant agencies would be required to build the potential station. Acquisition of rights, as applicable, may be challenging and would require close coordination with pertinent entities.

7. TRAFFIC

The traffic assessment evaluated the existing (2019) and future (2024) intersection traffic operating conditions at 12 intersections within the Confluence area for the no-build and build conditions, while considering the existing public transit service and the projected potential station ridership.

Metro, the City of South Gate, and the City of Lynwood offer seven bus routes within the Study area. The following Existing Transit Network Map (*Figure 7.1)* depicts key transfer points near the intersection of Imperial Highway and Atlantic Avenue, where connecting service is available to Metro Local Lines 260 (Pasadena to Artesia Station via Fair Oaks Avenue and Atlantic Boulevard), 117 (LAX City Bus Center to Downey via Century Blvd and Imperial Highway), 120 (Aviation/LAX Station to Whittwood Center via Imperial Highway), Lynwood Trolley/Breeze and South Gate bus services. Given the Confluence Station's unique location and lengthy distance to existing local bus stops, bus-to-rail transfers may be difficult without any service adjustments.

Figure 7.1 Existing Transit Network Map

Source: Cityworks Design, 2021

Figure 7.2 shows the current characteristics of different travel modes near the Confluence area and associated challenges that would need to be addressed to improve access to the potential station for each mode.

Figure 7.2 Current Local Transportation Characteristics

Pedestrian Conditions

- ADA-compliant sidewalks
- No visibility of Confluence Site
- No pedestrian lighting or shade trees
- High vehicular speeds and heavy industrial traffic
- Limited signalized street crossings

Bicycle/Wheel Conditions

- No existing bicycle facility connects directly to the immediate station area

Local Transit Conditions

- Area not well connected to existing bus network
- Long bus transfers, require over ¼-mile walk or bike between the Confluence area and nearest bus stops
- Difficult bus-rail transfers indirect access routes to/from the Confluence area

Source: Metro 2021

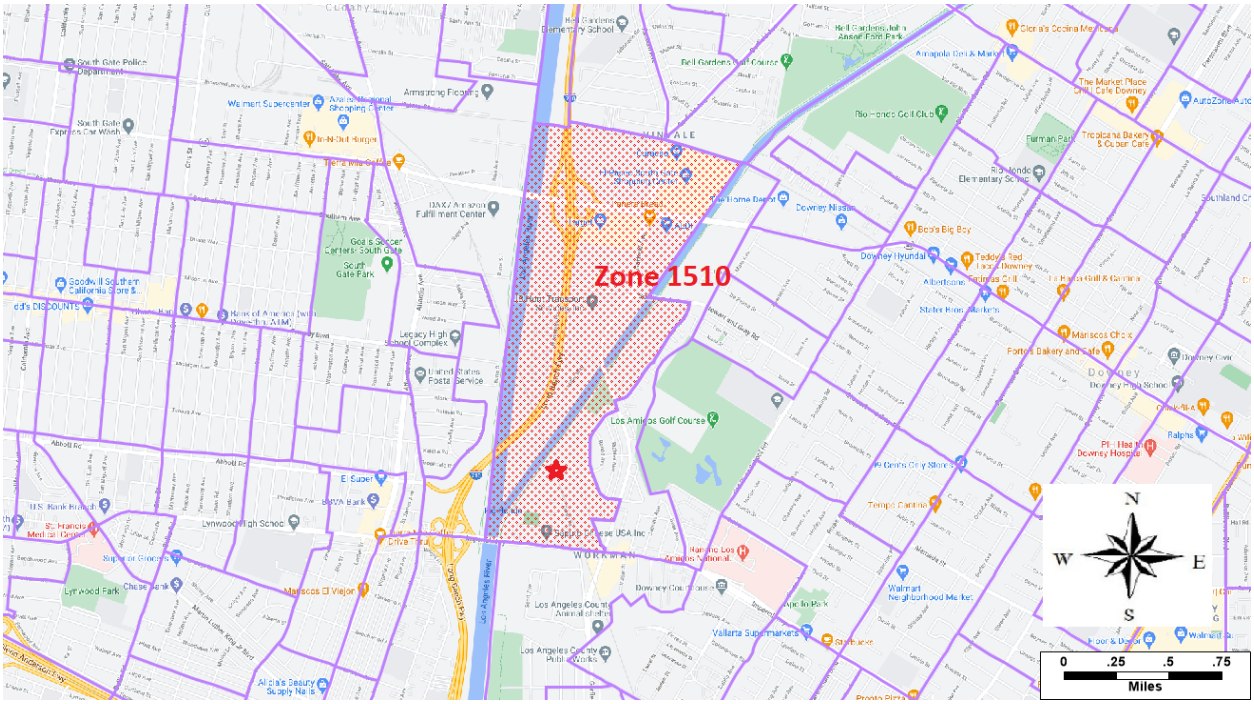
As addressed in Section 8, the potential station is forecasted to generate 853 daily boardings by horizon year 2042. Passenger pickups and drop offs would account for 3% of these daily boardings.

The results of the horizon year (2042) build intersection LOS and delay are mixed, with some intersections showing a decrease in LOS and delay while others show an increase in LOS and delay. Specifically for changes in LOS, the intersection of Garfield Avenue and Firestone Boulevard is anticipated to improve to an acceptable LOS D in the AM peak hour, for the build condition when compared to LOS E during the same peak hour for the no-build condition. During the PM peak hour, the LOS remains the same, but the delay improves slightly. LOS at Garfield Avenue and Southern Avenue are anticipated to increase from LOS E to F in the AM Peak Period. It should also be noted that some intersections show an increase in delay including those locations that provide access to the potential station.
Due to its low ridership projections (discussed in Section 8), the potential Confluence Station is anticipated to minimally affect traffic operations.

8. RIDERSHIP

Ridership forecasts for the Rio Hondo Confluence Station were prepared for two future years – 2030 and 2042 both with and without the potential Confluence Station. Population is forecasted to increase by about one-third over the 25-year horizon period, while employment is forecasted to increase by 10 percent in the travel analysis zones containing the potential Confluence Station (*see Figure 8.1*). The Metro Model captures the anticipated growth from development in this area, as it utilizes regional growth rates developed by SCAG. These regional growth rates take into account a combination of recent and past trends, reasonable key technical assumptions, and regional growth investments and policies in the SCAG region.

Figure 8.1 Rio Hondo Confluence Station Metro Model TAZ (1510)



Source: Cambridge Systematics, 2021

The future year 2030 was selected as the first year of revenue service operation and 2042 is considered the ultimate horizon year. The horizon year 2042 ridership forecasts for the potential Confluence Station were prepared for both the no-build and build conditions. Ridership forecasts focus on two areas – WSAB Project ridership with and without the potential Confluence Station and modes of access/egress to the Rio Hondo Confluence Station.

WSAB ridership forecast by station for 2042 is shown in *Table 8.1*. Overall, ridership for the WSAB Project shows that the build scenario would have slightly higher ridership compared to no-build.

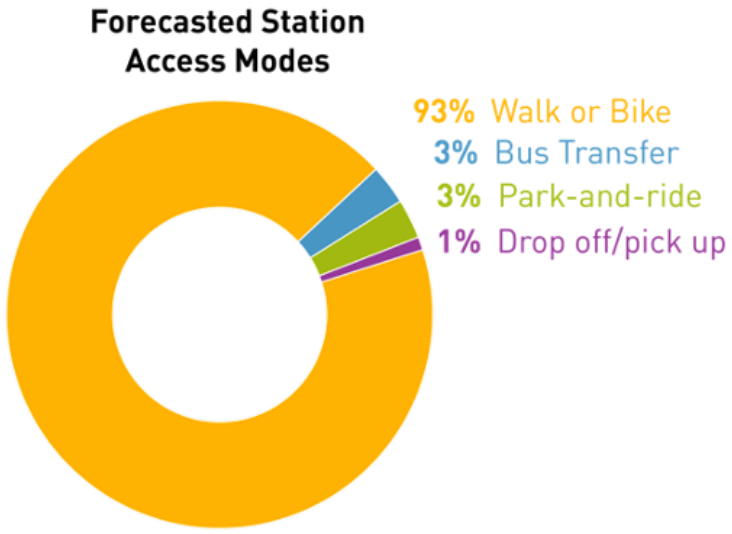
Table 8.1 Horizon Year (2042) Daily WSAB Project Ridership by Station

Station	No-Build Boardings	Build Boardings	Difference	% Difference
Slauson/A-Line	7,991	7,934	-58	-1%
Pacific/Randolph	2,154	2,162	8	0%
Florence/Salt Lake	3,130	3,115	-15	0%
Firestone	3,850	3,579	-271	-7%
Rio Hondo Confluence	0	853	853	
Gardendale	1,013	904	-109	-11%
I-105/C Line	4,469	4,377	-92	-2%
Paramount/Rosecrans	1,753	1,620	-134	-8%
Bellflower	2,187	2,155	-32	-1%
Pioneer	4,432	4,352	-81	-2%
Total Ridership	30,977	31,048	71	-0%

Source: Cambridge Systematics, 2021

The Metro model estimates 741 boardings in 2030 and 853 boardings by 2042 at the potential Confluence Station, which is between 6% and 108% lower than ridership at other WSAB stations. While forecasted ridership is low, over 90% of riders would walk or bike to and from the station to their destinations, with approximately 3% of ridership coming from bus transfers, and the remaining as drop off/pick up and parking, as depicted on *Figure 8.2*.

Figure 8.2 Forecasted Station Access Modes



Source: Cityworks Design, 2021

A review of these ridership forecasts indicates that the potential Confluence Station primarily serves the adjacent residential and commercial neighborhoods. The forecasts also show that

the addition of the potential Confluence Station results in lower ridership at nearby stations – Firestone, Gardendale, and Paramount/Rosecrans. This could be due to the new station providing better access in the immediate Rio Hondo Confluence neighborhoods. Overall, daily ridership for the WSAB Project is forecasted to increase minimally with the potential Confluence Station.

9. ENVIRONMENTAL ANALYSIS

9.1. ENVIRONMENTAL SCAN

A preliminary review of applicable data was conducted to identify potential social, economic, and physical environmental impacts during construction of the proposed station, as well as long-term operational impacts. High-level quantitative and qualitative analyses of the environmental factors that could be affected by this study was prepared based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines.

Given the high-level nature of this scan, a preliminary impact determination was conducted for the following topics:

- Aesthetics
- Air Quality
- Cultural Resources
- Greenhouse Gas Emissions
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Transportation and Traffic
- Tribal Cultural Resources
- Utilities and Service Systems

Preliminarily, the analysis found that the potential Confluence Station may not result in environmental issues/challenges for these topics.

9.1.1. Preliminary Environmental Station Findings

The analysis identified no impacts under Historical Resources stemming from the potential station, as the site's location has been disturbed by previous uses and would not be constructed adjacent to historic bridges. Impacts to drainage patterns and flood flows would be less than significant due to potential minor increases in the local runoff, if unpaved areas are covered by hard surfaces, and potential of an inundation hazard.

9.2. GEOTECHNICAL AND HAZARDOUS MATERIALS

The section provides a high-level geotechnical, geological, seismic, and hazardous material information to assess the feasibility of a potential Confluence Station. This assessment revealed

evidence of potential geotechnical, geological, and seismic hazards in the proposed Confluence area. In addition, this assessment also revealed evidence of Recognized Environmental Conditions in the Confluence area.

This analysis identified potential low to high impacts for expansive soils and regional subsidence, and high impacts for liquefaction, naturally occurring subsurface gas, flooding and inundation. Insufficient data is available to evaluate subsurface soil collapse potential. *Table 9.1* and *Table 9.2* summarize potential impacts, conclusions, and recommendations for Geotechnical and Hazardous Materials related to a potential Confluence Station.

Table 9.1 Geotechnical/Geological/Seismic Hazards Conclusions and Recommendations

Concern	Potential impact to Confluence Station (high/low)	Conclusion/ Recommendation
Ground rupture	Low	Mapped surface faults do not cross through or project toward the Confluence area.
Liquefaction	High	Perform a site-specific subsurface exploration to evaluate liquefaction potential.
Seismically induced landslide	Low	Based on the flat topography of the Confluence area, concern for earthquake-induced landslides is considered low.
Seismically induced dry-sand settlement	Low	Historically highest groundwater level has been recorded to be at shallow depths, therefore, the potential for seismically induced dry-sand settlement is considered low.
Tsunamis and seiches	Low	The Confluence area is located inland and not mapped for a tsunami hazard. There are no bodies of water upslope from the site; therefore, seiche hazard is considered low.
Slope instability	Low	Based on the flat topography of the Confluence area, concern for slope instability is considered low
Collapsible soils	N/A	Insufficient data is available to evaluate subsurface soil collapse potential. It is recommended that a site-specific subsurface exploration and subsequent laboratory testing to check for collapse potential be performed.
Regional subsidence	Low to High	No current significant subsidence problems related to groundwater or petroleum extraction have been identified in the Confluence area; therefore, subsidence related to extraction of groundwater and/or petroleum is not considered a significant hazard. However, there is potential for ground subsidence related to construction activities such as dewatering particularly given that the potential Confluence Station is within or adjacent to the Los Angeles River and Rio Hondo Channel.
Naturally occurring subsurface gas	High	There are two nearby facilities that will require further investigation to determine whether methane mitigation is required. These are the abandoned South Gate Solid Fill

Concern	Potential impact to Confluence Station (high/low)	Conclusion/ Recommendation
		and the active Greenwise Soil Technologies composting facility.
Flooding and inundation	High	The Confluence area is located within the Federal Emergency Management Agency (FEMA) 500-year flood plain and the Los Angeles River and Rio Hondo River Channel are within the FEMA 100-year flood plain. Failure of the Whittier Narrows and Hansen dams pose an inundation hazard to the potential Confluence Station.

Source: Diaz-Yourman & Associates, 2021

This analysis identified soils to be potentially affected by the following:

- Title 22 metals, volatile and semi-volatile organic compounds, organo-chlorine pesticides at the Greenwise Soil Technologies site.
- Polychlorinated Biphenyls - Containing Equipment at the potential Confluence Station
- Treated Wood Waste at the potential Confluence Station
- Herbicides, pesticides, arsenic, and lead at the potential Confluence Station

Additionally, asbestos-containing material and lead-based paint may exist on the existing bridge bearing pads, hinge and joint seal materials, coatings, and graffiti. Yellow thermoplastic striping would also potentially contain lead-based paint and chromium at the potential Confluence Station.

Table 9.2 Hazardous Materials Conclusions and Recommendations

Rec Source/ Location	Contaminants of Potential Concern	Potentially Affected Media	Conclusion/Recommendation
Greenwise Soil Technologies	Title 22 Metals, Volatile and semi-volatile organic compounds, organo-chlorine pesticides	Soil	A Phase II Site Investigation is recommended to evaluate soils for potential hydrocarbon contamination if construction of the potential Confluence Station involves soil disturbance adjacent to the former Gun and Rod Club facility.
Potential Confluence Station	Polychlorinated Biphenyls (PCB)-Containing Equipment	Soil	Electrical transformers and equipment should be evaluated for PCB content or releases if the transformers will be removed or relocated as part of the improvements.
Existing Bridges	Asbestos-Containing Material (ACM), Lead-Based Paint (LBP)	Existing Bridge Bearing Pads, Hinge and Joint seal materials, Coatings, Graffiti	Prior to disturbance of the existing bridge structures, ACM and LBP surveys are recommended to be performed by licensed contractor. LBP should also be evaluated if the construction involves disturbance to existing painted bridge surfaces.

Potential Confluence Station	LBP, Chromium	Yellow Thermoplastic Striping	Yellow thermoplastic striping materials should be handled in accordance with Caltrans Standard Specifications (Caltrans, 2018a) and the corresponding Standard Special Provisions (SSPS) (Caltrans, 2018c).
Potential Confluence Station	Treated Wood Waste (TWW),	Soil	Upon removal, wood railroad ties, power poles, or guard rail posts (including previously salvaged) in the potential Confluence Station should be properly disposed as fully regulated hazardous waste in Class I landfill.
Potential Confluence Station	Herbicides, Pesticides, Arsenic, Lead	Soils	A Phase II Site Investigation is recommended to evaluate shallow soils for potential contaminants of residual agricultural chemicals resulting from the former and current agricultural use and weed control operations in railroad corridor.

Source: Diaz-Yourman & Associates, 2021

9.3. WATER RESOURCES

The potential station location was evaluated at a planning level for hydrologic, hydraulic, and water quality impacts. *Figure 9.1* shows existing conditions at Confluence area. Impacts and potential mitigation measures, including site impacts to the regional groundwater, were identified for the potential Confluence Station and are described below.

Figure 9.1 Looking north towards Confluence Area on east bank of Rio Hondo Channel

Source: Cityworks Design, 2022

The potential Confluence Station could drain to Miller Way similar to the existing condition. The site development would need to comply with water quality regulations. These regulations require the implementation of best management practices (BMPs) consistent with the requirements of the County of Los Angeles and the City of South Gate. Additionally, the potential Confluence Station would be required to comply with current Low Impact

Development (LID) requirements set forth by the County of Los Angeles and local jurisdictions. These requirements are anticipated to be satisfied with stormwater facilities that would filter the runoff and infiltrate into the site soils.

Improvements at the potential Confluence Station would trigger water quality mitigation requirements, as the site involves redevelopment including at least 5,000 square feet of impervious areas being redeveloped. The proposed construction for the potential station site would trigger LID requirements set forth by the County of Los Angeles and local jurisdictions, requiring the development of an LID Plan. Runoff generated by the 85th percentile, 24-hour storm event would need to be mitigated using infiltration and/or capture and use BMPs if feasible.

Encountering groundwater is not anticipated for the construction of the potential station. The soils in the area may be beneficial for stormwater infiltration, providing no issues due to the former use as a dump. Infiltration is an acceptable method of treating stormwater flows and low impact development requirements in accordance with the NPDES permit and local requirements. The potential station would be in an area protected by the Rio Hondo Channel levee. Since the potential station area is in an area below the top of levees, the site area may be five feet below the top of levee. This condition may require the site area to store site rainfall runoff until flows subside in the Rio Hondo Channel to a level that can accept gravity flows from the site area storm drain system. Alternatively, the potential station could include a stormwater pump station of sufficient capacity to pump flows into the Rio Hondo Channel.

According to the current FEMA Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS), the Rio Hondo Channel at the location of the crossing is designated as a Zone A flood zone. Zone A is defined in the FIS as an area that corresponds to the one percent annual chance floodplain determined using approximate methods. The area is also designated as a Zone X. Zone X is defined in the FIS as areas of 0.2% annual chance flood; areas of one percent annual chance flood with average depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from one percent annual chance of flood.

The potential Confluence Station would require changes to the existing drainage for the station site, modifications to existing facilities, and increased stormwater management based on the latest regulations.

10. COSTS

Table 10.1 presents and compares the costs associated with the potential station in 2020 dollars. The cost estimates include cost contingency to cover unexpected cost increases, which is consistent with Federal Transit Administration recommendations for transit projects at the level of Advance Conceptual Engineering completion. The contingency consists of amounts allocated in varying amounts to each cost category based on “known unknowns such as design changes, historical perspective related to construction, cost growth, etc.” Furthermore, an additional amount of unallocated contingency has been added to address “unknown

unknowns" such as unanticipated events, including, but not limited to, political events, widespread economy downturns, labor strife, weather, differing site conditions, mercurial commodity pricing, unfavorable market conditions, bid risk, and change orders. Together, allocated and unallocated amounts make up the total contingency.

Estimates for the conceptual phase are based on the following assumptions:

- The estimates are prepared utilizing 2020-year dollars. This was done to match the Metro West Santa Ana Branch Transit Corridor Final Advanced Conceptual Engineering Capital Cost Report dated June 2021 and provide a "apples to apples" cost comparison.
- No premium time on labor costs is assumed.
- Adequate experience craft labor will be available.
- Compatible trade agreements exist in the region.
- No unusual labor pacts or agreements have been negotiated.
- There will be sufficient experienced contractors to complete the work.
- There will be no unusual weather conditions.
- This estimate does not include First/Last Mile Costs

Table 10.1 Capital Cost Estimate by Standardized Cost Categories, in 2020 Dollars (x000)

Cost Categories	Confluence Station
Guideway and Track Elements	$0
Stations, Stops, Terminals, Intermodal	$10,500
Support Facilities	$0
Sitework And Special Conditions	$18,000
Systems	$0
ROW, Land, Existing Improvements	$13,000
Vehicles	$0
Professional Services	$10,000
Unallocated Contingency	$5,000
Finance Charges	$0
Subtotal Cost (2020 dollars)	**$56,500**

The potential Confluence Station is estimated to cost approximately $56.5 million dollars. It would require additional acquisition from four parcels that have been identified as needed by the WSAB Project. The largest cost categories are Sitework and Special Conditions followed by ROW, Land, Existing Improvements and Stations, Stops, Terminals, and Intermodal.

10.1. Essential Station Access Improvements

Limited access to the potential Confluence Station represents the essential challenge that must be addressed to ensure safe and convenient access to the potential station from the adjacent neighborhoods. In addition to the base capital cost for constructing the potential station, additional major investments in new access facilities are needed for this station.

The essential station access improvements presented in this section consist of only critical pedestrian and wheel-oriented improvements needed to address constrained ROW challenges, and missing roadway and pedestrian infrastructure. *Table 10.2* summarizes the cost estimate for essential pedestrian and wheel-oriented access improvements for the potential station.

Table 10.2 Essential Station Access Improvements Cost Estimate

	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)
PEDESTRIAN & WHEEL-ORIENTED ACCESS IMPROVEMENTS			
1 Bridge over Rio Hondo Channel	$ 12,000	$ 4,800	$ 16,800
2 Bridge over freight tracks	$ 24,000	$ 9,600	$ 33,600
3 Bridge over Los Angeles River	$ 19,000	$ 7,600	$ 26,600
4 Other Ped./Wheel Improvements	$ 5,000	$ 2,000	$ 7,000
Subtotal (1-4)			**$ 84,000**
5 PROFESSIONAL SERVICES			$ 25,800
Subtotal (1-5)			**$ 109,800**
6 UNALLOCATED CONTINGENCY			$ 11,000
Total Project Cost (1-6)			**$ 120,800**

10.1.1. Overall Station Cost Breakdown

The preliminary cost of these recommended access improvements would need to be considered alongside the capital station costs to capture the full range of costs for building the Rio Hondo Confluence Station. *Table 10.3* combines estimated costs for a potential Confluence Station with the essential station access improvements.

Table 10.3 Overall Station Cost Estimate

Cost Categories	Base Year Dollars TOTAL (X000)
Station Cost	
1 Side Platform Station	$ 56,500
Essential Station Access Costs	
2 Pedestrian/Wheel-Oriented Improvements	$121,000
Total Project Cost (1-2)	$ **177,500**

11. CONCLUSION

This Feasibility Study evaluated the viability of a potential LRT station along the WSAB alignment in the Confluence area across several subject areas and according to how well it aligns with the study goals listed in Section 0.2.

The Confluence area and the surrounding communities are some of the most disadvantaged and transit-dependent communities in Los Angeles County, with limited access to parks and high-quality transit. Coupled with planned public open space, recreational, and cultural projects in the vicinity of the Confluence area, a potential Confluence Station is expected to provide much needed equitable access to these recreational facilities, for local residents and visitors. It would also connect this community to the regional Metro Rail transit network.

This section presents a summary of key metrics, benefits, and challenges that informed the determination of overall feasibility of the potential station, as well as recommendations based on the analysis conducted in this Feasibility Study.

SUMMARY OF KEY METRICS

This Feasibility Study developed key metrics to support the evaluation of the potential Confluence Station relative to the study goals. *Table 11.1* summarizes these key metrics.

Table 11.1 Summary of Key Metrics

Key Metrics	
Daily Boardings	**741** (2030), **853** (2042) - Lower ridership than WSAB mid-line station average: 2,500
Station Mode Share	**93% of riders would walk/bike** to the station
Cost	**$177 M - $207 M** (in 2020 dollars)[45]
Operations	Adds **one additional minute** to WSAB travel time in each direction

[4] Does not include WSAB design accommodations and FLM costs
[5] Higher than WSAB mid-line station average costs

The following key benefits and challenges have been identified based on the analysis conducted in this Feasibility Study:

KEY BENEFITS

- **Promote equitable access** to the Confluence area and the planned projects for local residents and visitors
- **Connect Confluence area residents to the regional Metro Rail network** via WSAB

KEY CHALLENGES

- **Limited station access represents the essential challenge** that must be addressed to ensure safe and convenient access to the potential station from the surrounding neighborhoods
    - Major investments in new access facilities (such as pedestrian/wheel bridges over the Rio Hondo Channel and Los Angeles River, sidewalks, ADA ramps at crosswalks, and street lighting) are needed for this station to be feasible
- **High Cost**: approximately $177M-$207M
    - This estimate includes station elements and needed access improvements
    - This does not include separate FLM improvements yet to be identified or additional cost of needed WSAB design accommodations not-to-preclude a future station
- **Low ridership**: 853 daily boardings by 2042, relatively low compared to WSAB mid-line station average of 2,500 daily boardings
- **Identification of funding**: funding has yet to be identified for this potential station
- **Timing of related development efforts:** Completion of several related efforts in the vicinity of the Confluence area is essential for the viability of the potential Confluence Station
- Constructing a station on the WSAB alignment will be a major design challenge and would lead to **major disruptions to WSAB rail operations**

FEASIBILITY STUDY RECOMMENDATION

Based on the analysis conducted in this Feasibility Study, a future Confluence Station (with a side platform configuration) is a feasible option but will present some critical challenges. These challenges will need to be addressed, including the high cost of the station and its access improvements, the need to identify funding, and the uncertain timing of future supportive development in the area.

Moving forward, the WSAB Project will continue to monitor the status of adjacent station-supportive development projects, coordinate as necessary, and also make LRT alignment accommodations so as not to preclude a future side platform station in the Confluence area.

Table 11.2 Summary of Preliminary Findings by Topic

	Engineering		Urban Design		Environmental		Ridership		Station Operations		Traffic	Geotechnical & Hazardous Materials	Water Resources	Construction	Right of Way	Cost
	Impacts WSAB Design	Complies with Metro SWSD	Comfortable & Convenient Access	Integrated with Community	Natural Resource Impacts	Social/Utility /Public Services Impacts	Forecasted Ridership	WSAB Trip Duration	Bus & Rail Operations	Mainte-nance					Property Rights & Acquisitions	Cost of Station
Accommodate WSAB Project in Future																
Center Platform Station	Would require a wider concrete box under I-710, widened WSAB track alignment, a wider WSAB bridge over Rio Hondo Channel and additional ROW south of Rio Hondo Channel.	Platform configuration and ADA access to the platform would comply with Metro SWSD.	No direct vehicular or non-motorized access to the Confluence area. Limited multi-modal connections and safety/security issues along streets between major roadways and potential station entrances north / south of Rio Hondo Channel. Station access represents the essential challenge that must be addressed to ensure safe and convenient access to the potential station from the surrounding neighborhoods.	Adjacent industrial uses & heavy industrial traffic; poor connection to residential neighborhoods, public parks, & commercial corridors within or just beyond ½ mile station radius.	Preliminarily anticipated to have no or a less than significant impact on most resources. Some resources need additional study. Further study needed for drainage patterns and flood flows. May potentially be more environmentally impactful than side platform due to channel and bridge modifications that may be required.	Preliminarily anticipated to have no or a less than significant impact on most environmental resources. Some resources need additional study.	Preliminary ridership forecast for potential station is low at an estimated 853 daily boardings, 75% lower than average of other WSAB stations.	WSAB travel time preliminarily forecast to increase by 1 minute in each direction.	Preliminarily anticipated increase to WSAB travel time would create a need for more WSAB trains. Station construction would cause major disruptions to WSAB operations.	Construction may impact access to the WSAB MSF. Additional trains due to the potential station may increase maintenance costs	The potential Confluence Station is preliminarily anticipated to minimally affect traffic operations due to due to low ridership projections.	Geotechnical hazards and hazardous materials exist in the Confluence area. A site-specific exploration for geotechnical hazards and a Phase II environmental site assessment recommended to determine the potential impacts.	Would require changes to the existing drainage for the site, modification to existing facilities, and increased stormwater management based on the latest regulations.	Constructing a station will be a major challenge & has potential to have major disruptions to existing WASB rail operations. A safe physical separation cannot be achieved during construction. This option would have potential temporary impacts to the Rio Hondo Channel Bike Path & may require additional access from local streets, temporary access easements on the south side of the Rio Hondo Channel & access requirements within the Rio Hondo Channel.	Preliminarily anticipated to require more property than the side platform and would require coordination with SCE and LACFCD.	Preliminarily anticipated to cost more than the side platform, as it would require more property/ ROW and acquisition of rights, and higher sitework and special conditions costs.
Side Platform Station	Would require a shift of the proposed concrete box under the I-710, but the size would remain the same. Matches WSAB alignment to a greater extent, no changes to WSAB bridge over Rio Hondo Channel or additional ROW south of the Rio Hondo Channel.	Platform configuration would comply with Metro SWSD. ADA access would require a variance in that ADA access can only be provided from one end of platform.	Same preliminary findings as the center platform.	Same preliminary findings as the center platform.	Similar preliminary findings as center platform, except no impact to Historical Resources preliminarily anticipated, less than significant impact to drainage patterns and flood flows preliminarily anticipated.	Same preliminary findings as the center platform.	Same preliminary findings as the center platform.	Same preliminary findings as the center platform.	Same preliminary findings as the center platform.	Same preliminary findings as the center platform.	Same preliminary findings as the center platform.	Same preliminary findings as the center platform.	Same preliminary findings as the center platform.	Constructing a station will be a major challenge & has potential to have major disruptions to existing WASB rail operations.	Preliminarily anticipated to require fewer properties than the center platform. Additional acquisition required from four parcels identified by WSAB. One newly affected parcel would require a partial acquisition. Coordination with LACFCD required.	Preliminarily anticipated to cost less than the center platform, as it would require fewer properties/ ROW.

Appendix A: Station Option Evaluation

As mentioned in this report, other station options (beyond the side platform and center platform) were considered but dismissed as **not feasible** for not meeting the below criteria. These options were dismissed from further consideration and were not analyzed and evaluated as part of this Feasibility Study.

Design Considerations	Additional Criteria
Minimize impacts to existing physical constraints to the greatest extent possible	Existing constraints include: elevated I-710, the Rio Hondo Channel, the Los Angeles River, the Southern California Edison (SCE) overhead power easement, freight rail track ROW and adjacent properties.
Conformity to WSAB alignment	An alignment and station configuration that most closely matches the WSAB alignment.
Proximity to Planned Related Efforts/Projects	The potential station's proximity to the future proposed community uses within the Confluence area. This proximity is based on the ability to walk or wheel to/from these future uses.

These station options and their reason for dismissal are shown in the following table.

Preliminary Station Options Considered	Reasons for Dismissing Station Option
Center platform station option between I-710 and Rio Hondo Channel	Due to the close proximity of the potential station to the I-710 and the wider track centers required for the center platform, this option would require a concrete box under the I-710 that would be approximately twice as wide as that proposed by the WSAB alignment. This wider box was considered impactful to the I-710 and was, therefore, not considered for further study.
Side platform station option over Rio Hondo Channel	Due to the WSAB alignment configuration, the westerly platform, closest to the existing freight track, would encroach into the freight track ROW at the south end of the bridge over the Rio Hondo Channel. In addition, passenger access to the platform from that end of the platform would be constrained due to the proximity to the freight track. Therefore, this option was not considered for further study.
Station north of I-710	This option would place the station north of the I-710 in an area between the freeway and the Los Angeles River channel. The WSAB track alignment is in a horizontal curve in this location. Metro MRDC criteria require a station to be on straight tangent track. Therefore, a station in this location could not be accommodated. In addition, the I-710 would serve as a physical barrier for convenient access to the future planned community uses. Therefore, this option was not considered for further study.
Station south of the Rio Hondo Channel	This option would place the station south of the Rio Hondo Channel. The WSAB alignment is proposed to run parallel to the existing freight track, but within the existing freight ROW. Due to the proximity of the WSAB tracks to the freight tracks, neither platform configuration would fit within the existing ROW. Additional impacts to the existing

Preliminary Station Options Considered	Reasons for Dismissing Station Option
	properties and freight track would be required to accommodate a station in this location. Therefore, this option was not considered for further study.
Underground Station	This option would place the station underground in the area between the I-710 and the Rio Hondo Channel. Due to this station being depressed below-grade, this configuration would not be consistent with the WSAB design, and therefore was not considered for further study.
Aerial Station	This option would place the station on an aerial structure in the area between the I-170 and the Rio Hondo Channel. The track alignment would also bridge across the I-710. This option would not be consistent with the WSAB design, and therefore was not considered for further study.