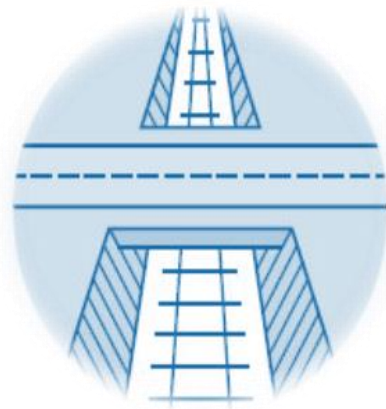




Rail Under option – lower the rail line under Brighton Road

Indicative measurement: 1,800m long, 9.3m deep



Project timeline (completion)	FY 23-24
Visual Impact	Less visible
Connectivity across corridor	Poor
Land Acquisition – properties impacted (residential and business) if rail line moved (slewed)	46
Utilities major impact	Yes
Rail shut down / closure if rail line not moved (slewed)	12+ months
Road shut down – closure time and lane restrictions	Weeks
Retain Hove Station	Yes

Rail disruption

- Most disruption to the rail network, including a long closure of the rail line and high patronage loss throughout construction works if the rail line is not moved (slewed) sideways to maintain services during construction
- A long corridor will be needed to deliver the correct grade

Traffic disruption

- Impacts to many underground utility services (underground water mains, sewerage, gas systems etc.)

Community and business impact

- A long underground rail structure requires bridges across the corridor to maintain existing access points, creating a visual impact with long ramps and raised bridges
- A long, large open trench over 20 metres wide has the potential to divide the local area
- Offers limited opportunities to upgrade the adjacent streetscapes and improve pedestrian and cycling paths
- The Brighton Road bridge deck construction (over the lowered railway) cannot be undertaken within the existing road corridor. Significant land acquisition for the construction period is therefore required

Land acquisition

- Significant land acquisition

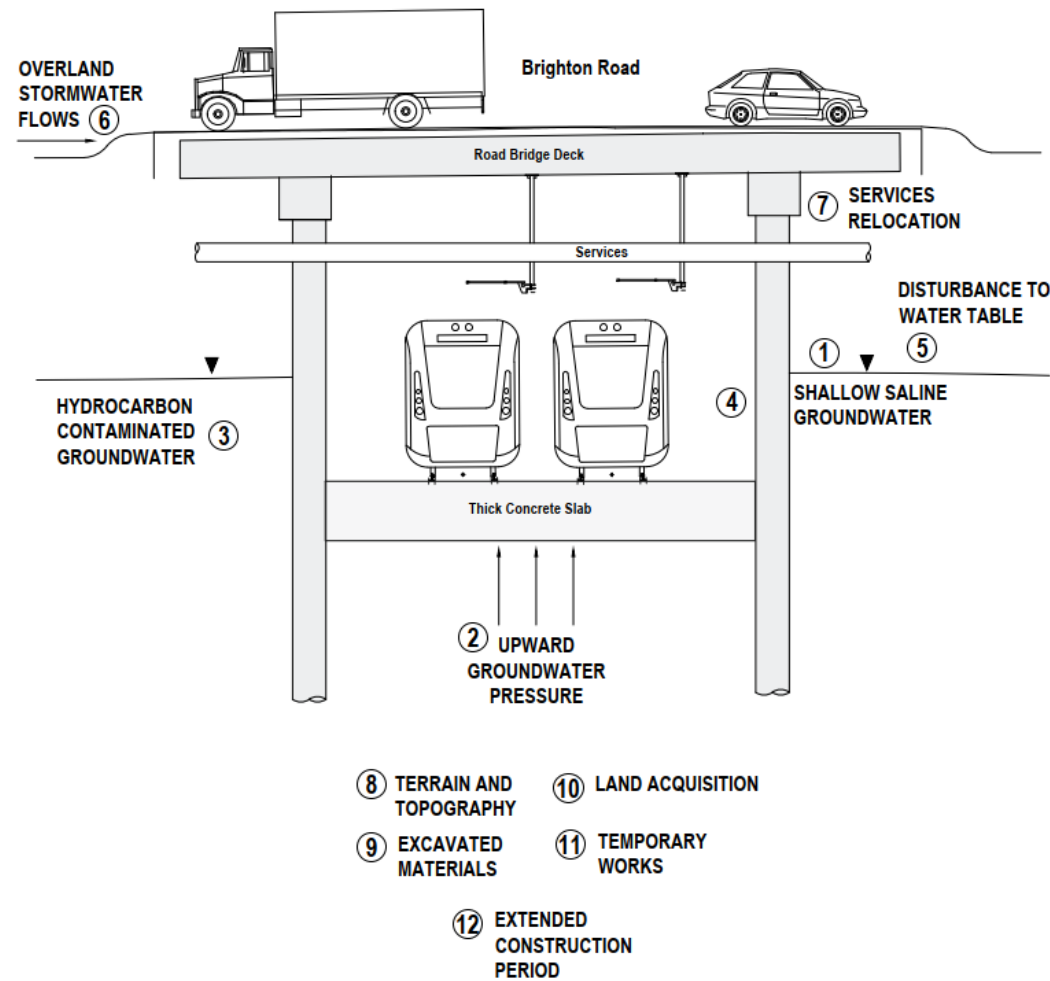
Cost

- Significantly higher capital costs associated with it when compared to the other options given road and rail disruption and constructability challenges



Groundwater

- Shallow saline groundwater – will ingress the substructure
- Complex major structures and foundations needed to prevent the structure being forced upwards from groundwater pressure due to high groundwater table
- The whole structure needs to be water-tight as much of it is below ground water
- Requires installation of dewatering systems for dewatering of underpass during construction
- Requirement for ongoing pumping systems to manage ground water pressure on either side of the structure and flooding within the structure for the life of the asset



Issues		Implications summary	At Hove	At Oaklands
1 & 4	Shallow saline groundwater table	Saline ground water will ingress the sub-structure. Additional cost to treat structure and reduced structural life (durability of materials). Higher ongoing maintenance cost for pumping and treatment of water prior to disposal.	Significant	Nil
2	Upward groundwater pressure	Groundwater pressure will force structure upward. A super thick foundation slab (approx. 800mm-1000mm) will be required to mitigate risk of cracking and movement of structures.	Significant	Nil
3	Hydrocarbon contaminated groundwater	EPA identified plume from old dry cleaning business. Groundwater disturbance (dewatering) will create ongoing risk of mobilisation of plume that could contaminate other properties.	Ongoing risk	Nil
5	Disturbance to water table	The need to dewater the excavation during construction will result in an ongoing risk of settlement of ground under adjacent properties post-construction due to water table disturbance	Major risk	Nil
6	Overland stormwater flows	A berm must be built along full length of structure to stop stormwater ingress. This creates a risk of localised flooding of surrounding properties as current stormwater system are under capacity.	Ongoing risk	Nil
7	Services relocation	There are major underground services at the location. The need to relocate and/or protect water, sewer, gas, electricity and telecoms will require extra pre-construction time, drive additional costs, and disrupt services.	Major All 5 services	Moderate Gas and water only
8	Terrain and topography	The slope and grades around the crossing result in the need for a longer cutting (extra 600m) to maintain clearance and return rail to ground level.	Significant	Nil (Flat)
9	Excavated materials	There will be a substantial quantity of excavated materials, including contaminated materials that will need trucking out and disposal.	Major	Minor
10	Land acquisition	Significant number of additional properties will need to be acquired and demolished to enable construction compared to alternative solutions.	Major	Minimal
11	Temporary works	Local businesses will need to be relocated and properties demolished to maintain traffic during construction of road bridge deck.	Major	Minor
12	Extended construction period	Given extent of preliminary works and the site preparation requirements, the construction timeframes will be extended (3 to 4 year duration).	Significant	None