







OPTION 1 The Bow	OPTION 2 Link with Wings	OPTION 3 The Sail	OPTION 4 Alliance Bridge	OPTION 5 Eternity Arch	OPTION 6 The Gateway
					

Theme and Concept

	<p>The tower of a cable stayed bridge is its most noticeable and symbolic feature. <i>The Bow</i> has a unique curved tower penetrating through the deck structure which is evocative of an archery bow being pulled back, as if about to fire an arrow. The cables shooting forwards from the tower and the deck symbolising the arrow in flight is a <i>dynamic</i> concept which is consistent with the long term vision for Tseung Kwan O as a developing vibrant town on the move.</p>	<p>This cable stayed bridge has a pair of outwardly leaning towers, which rise up like a bird outstretching its wings at Junk Bay. This concept has a symbolic connection with nature, and the slender towers give the bridge a sense of <i>peace and tranquility</i>. Greening and landscaping features that are proposed on the bridge deck for Cross bay Link are particularly in harmony with this theme, therefore bringing the two sides of Junk Bay together to offer Tseung Kwan O a real <i>Link with Wings</i>.</p>	<p><i>The Sail</i> appears like a two-mast junk on the horizon of Junk Bay thanks to the two sail-like towers of the cable stayed bridge. This <i>maritime</i> theme is consistent with the history of Junk Bay and the future plan for Tseung Kwan O coastal area as a destination location for water related activities. Unique to this option, the cycle/footway are on a separate structure, slightly offset, and below the main highway bridge. This separation allows pedestrians and cyclist to enjoy views along the route of Junk Bay, Lei Yue Mun and Tathong Channel.</p>	<p>The four short pillar-like towers give the image of strength, which when coupled with the cables appear like four companions, linking hands to support the bridge. The concept of people linking hands symbolizes how by <i>working together</i> and through great friendships, residents can build Tseung Kwan O into a great place. The low profile nature of the towers, gives the <i>Alliance Bridge</i> its elegant and simple impression that appears as a seamless addition across the bay.</p>	<p>Two relatively low profile outwardly leaning arches are visually connected to carefully sculpted piers to create an eternal never-ending loop, like the one created by the cycle track loop around the shores of Junk Bay, which is completed by Cross Bay Link. The <i>Eternity Arch</i> leaps across the channel with an <i>energetic movement</i> frozen in time, which reinforces the concept of eternity. The use of a strong symbolic identity creates a landmark sculpture for the residents of Tseung Kwan O to enjoy and contemplate.</p>	<p>The single arch of <i>The Gateway</i> crosses the eastbound carriageway diagonally, thus creating a <i>grand gateway</i> to Junk Bay and Tseung Kwan O for both road users and boats entering the bay. The mountain shaped profile of the arch reinforces this sturdy gateway image and gives the bridge the sense that it is a harmonious continuation of the surrounding hillside. In addition, the split-box arch structure creates an interesting effect of light and shade.</p>
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BASIC PARAMETERS

Main Span Length	Approx. 200 m	Approx. 200 m	Approx. 170 m	Approx. 160 m	Approx. 200 m	Approx. 200 m
Tower / Arch Height	Approx. 130 m above sea level	Approx. 120 m above sea level	Approx. 120 m above sea level	Approx. 60 m above sea level	Approx. 70 m above sea level	Approx. 110 m above sea level
Deck Material	Steel	Steel	Steel	Concrete	Steel	Steel
Tower / Arch Material	Concrete Tower	Concrete Towers	Concrete Towers	Concrete Towers	Steel Arches	Steel Arch

AESTHETICS AND ENHANCEMENT TO TSEUNG KWAN O						
Uniqueness	Hong Kong already has several examples of cable stayed bridges including Stonecutters Bridge, Ting Kau Bridge, Kap Shui Mun Bridge and Shenzhen Bay Bridge. Furthermore this bridge form is not uncommon to other parts of the world. To give Cross Bay Link a unique edge, innovative and creative tower shapes with associated cables arrangements have been adopted.			There are no long-span arch bridges in Hong Kong. Arch bridges of similar span have been constructed around the world, but the proposed arch arrangements are unique and creative at this scale.		
	The curved shape of the tower will be unique and instantly recognizable.	The leaning tower concept has been adopted locally on Shenzhen Western Corridor and this bridge will not be particularly unique.	The shape of the sail tower is unique and the innovative way in which the pedestrians and cyclists cross below the main carriageway is particularly novel.	This bridge form is not unique but nor is it common, particularly in Hong Kong where there are no examples.	Outwardly leaning arches are unusual although there are isolated examples of similar structures around the world, such as Nanling Bridge which opened in Sept 09.	The diagonal arch concept is unusual, particularly on this scale. The adoption of a split arch will be unique and instantly recognisable.
VIABILITY TO BUILD						
Capital Cost	Lowest amongst the six options	5% (approx. HK\$100M) higher than Option 1	10% (approx. HK\$200M) higher than Option 1	5% (approx. HK\$100M) higher than Option 1	10% (approx. HK\$200M) higher than Option 1	5% (approx. HK\$100M) higher than Option 1
Safety During Construction	A preliminary assessment has shown that there are few safety issues that differentiate the options and that in general the hazards to be managed will be typical of a major bridge constructed over water. The arch options have a greater degree of off site fabrication than the cable stayed bridge options which will in general reduce construction risk. However, the internal spaces of the arch present confined space hazards which must be managed.					
Environmental Impact	<ul style="list-style-type: none"> The previous Environmental Impact Assessment carried out in the <i>Feasibility Study of Further Development of Tseung Kwan O</i>, concluded that a feature bridge as a local landmark would enhance the future development of Tseung Kwan O and help alleviate the landscape and visual impact. A comparative environmental assessment has concluded that there are no significant differences between the six design options. A detailed Environmental Impact Assessment is currently being carried out. Greening and landscaping features will be provided along the carriageway, footpath and cycle track to enhance the experience for users of the bridge. The adoption of energy efficient features and renewable energy technologies will be studied when the Preferred Option is determined. 					
VIABILITY TO OPERATE						
Operation & Maintenance	A comparative assessment has been carried out of Operation & Maintenance Issues. All of the options can be feasibly maintained and will achieve a long life through regular inspection and routine preventative maintenance. The maintenance cost for each option would be different according to their structural forms and arrangement. Some of the key issues are itemized below:					
	<ul style="list-style-type: none"> Higher maintenance requirements for steel deck e.g. regular painting and prevention of fatigue. Complex internal access of the tower High level external access of tower 	<ul style="list-style-type: none"> Higher maintenance requirements for steel deck. e.g. regular painting and prevention of fatigue. High level external access of tower 	<ul style="list-style-type: none"> Higher maintenance requirements for steel deck e.g. regular painting and prevention of fatigue. High level external access of tower Access arrangements for deck and tower made more complicated by twin deck arrangement 	<ul style="list-style-type: none"> Concrete deck has a more complicated external shape for maintenance and inspections. Short towers and associated cables have better access than the other cable stayed bridge options. 	<ul style="list-style-type: none"> Higher maintenance requirements for steel deck e.g. regular painting and prevention of fatigue. Complex internal access of the arch High level external access of the arch 	

Security & Safety	Single navigation channel	<ul style="list-style-type: none">• Two navigation channels, each about 35% narrower than Options 1,2,5 & 6• Limited emergency vehicle access to some parts of the footway/cycleway	<ul style="list-style-type: none">• Two navigation channels, each about 35% narrower than Options 1,2,5 & 6	Single navigation channel
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