

## Appendix C

### Architectural Design Statement

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July 2020

**ARCHITECTURAL  
DESIGN  
STATEMENT**

**Part 8 Application  
Wicklow County Council**



**Bray Sustainable Transport  
Bridge**

Report No; RDPTB-SHA-ZZZ-BRD-RP-AX-0002

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## Foreword

This Architectural Design Statement has been written to accompany the Part 8 Application for the Bray Sustainable Transport Bridge.

The Statement sets out the considerations relating to urban design, the architectural compositional strategy for the bridge, a review of the initial design strategy options, and describes the proposed design of the bridge.

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April 2020

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## 1. The Wider Context.

Bray is the ninth biggest urban centre in Ireland, and is the largest town in Co Wicklow. It is situated on the coast approximately 20km from Dublin city centre. Historically it developed as a seaside resort town, as a direct result of the rail link with Dublin, which opened in 1854.

This rail link, along with the proximity to the M11, and its scenic location along the coast between Bray Head and the River Dargle, gives the town great potential for the future, both as an increasingly important regional centre and as a commuter town for Dublin.

The site for the new bridge is at the mouth of the River Dargle and Bray Harbour, and is just north of Bray Railway Station. Consequently, the bridge has great potential to be an important civic landmark, seen on entering or when leaving Bray by train, and symbol for the town.

## 2. The Town.

The town of Bray has two parallel and equally important axes of activity and civic focus; Strand Road on the seafront and Main Street, some 600m inland. The historic core of the town is defined by these N-S axes, and by the River Dargle to the north, and Bray Head to the south. Subsequent suburban developments have seen the town spread westwards to the N11, northwards to Woodbrook and to the south to the Southern Cross Road and Kilruddery.

The primary direction of vehicular approach to the town is from the north, via the Dublin Road. This crosses into Main Street via the Fran O'Toole Bridge. From here, several alternative streets to the east of Main Street lead to Strand Road. Most vehicular traffic is channelled via Main Street, but the railway is associated more with the sea front, with the railway station just one street back from Strand Road. The railway line crosses the River Dargle east of Fran O'Toole Bridge at the mouth of the river, immediately adjacent to Bray Harbour.

The utilitarian railway bridge is visible from Fran O'Toole Bridge, at the end of a 550m long straight stretch of the river. This section of river has been subject to recent flood protection works, and has the potential to become an attractive civic amenity for the town, as a continuation of the recently developed section just west of the Fran O'Toole Bridge, leading from the Peoples Park and incorporating an attractive cantilevered boardwalk over the river.



The Dublin-Kingstown Line link to Bray



Town plan of Bray with 2 civic axes highlighted



View of the existing railway bridge from Fran O'Toole Bridge

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### 3. The Future of the Site

The new bridge will facilitate and instigate urban change, as it will open up the development potential of the lands immediately to the north of the River Dargle with public transport, taxi, cycle and pedestrian links to the seafront, railway station and Main Street beyond.

The scale, massing, height and form of any new potential developments will have a significant change impact on the urban character of this part of Bray. As best as possible, this has been anticipated and taken into account when designing the new bridge.

On the south bank there is an Irish Water facility, the dominant feature of which is a large concrete drum structure.

Along with the existing utilitarian railway bridge this drum currently dominates the townscape in this area. It is our understanding that it is highly unlikely that Irish Water will redevelop this facility in the near future. Consequently the design of the new bridge will take into account its scale, height, massing and form. We strongly recommend that proposals to disguise the concrete drum should be considered as part of the general improvement of this area of Bray, to contribute to the positive change from industrial landscape to human townscape.

As noted above, the River Dargle eastward from Fran O'Toole Bridge is intended to be redeveloped as an amenity area with cycleways and promenades on both banks. The new bridge should seamlessly link with both.



Plan of previous planning application for the lands to the north of the river.



Aerial view of existing Irish Water works on south bank of the river

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#### 4. Compositional Strategy for the New Bridge

Following careful consideration of the regional, town and local context of the bridge site, as it is today and as it is likely to develop, and the preliminary structural design assumptions, our recommendations for the bridge design strategy is as follows;

1. The bridge should connect easily and seamlessly to all approaches; roads, cycleways and footpaths, and should facilitate the LUAS in the future. A particular challenge is the connection between riverbank cycleways and footpaths that approach the bridge at right angles, and from a lower level.
2. The springing points, (and or cable tie-backs) of the bridge should not unduly inhibit potential nearby developments of buildings, roads, cycleway or footpaths.
3. The bridge should be a landmark “eye-catcher”, as seen with from the east by train travellers and from the west from the Fran O’Toole Bridge, and the river banks.
4. The bridge should assist in visually screening the utilitarian railway bridge as seen from the west.
5. The bridge should respond to the scale of the Irish Water works on the south bank, and the immediately adjacent future developments on the north bank (that are likely to be in excess of 10 storeys high).
6. The bridge should be elegant in proportion, well balanced and simple in design. It should be structurally clear and feel and look structurally stable.



*View from Fran O’Toole Bridge will be dominant.*

## 5. Initial Exploratory Sketch Options 1-10.

For this exploratory exercise it was decided to initially consider the primary view of the bridge, which is from the west.

As viewed from the west, to the left of the crossing we show the likely scale and massing of the new apartment development. In the centre is the profile of the existing railway bridge (with central catenary cable support mast shown). To the right is the profile of the existing Irish Water concrete drum structure. The red line is the likely approximate deck level of the new bridge.

### Preliminary Option 1. Steel Truss Beam bridge.

Positive attributes;

- Visually screens the existing railway bridge from the west.

Negative attributes;

- Does not act as an eye-catcher from the Fran O'Toole bridge, as the mast will be visually confused with the nearby Irish Water works structure.
- Is not a "visual gateway" to Bray as seen by rail passengers.
- Does not adequately visually screen the existing railway bridge from the west.
- Back-span cable supports may clash with or restrict approach route to the bridge on the south side.
- There is no good compositional reason why the bridge should be visually weighted to the south side.

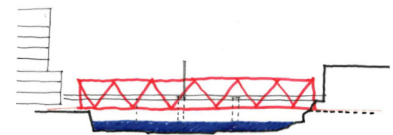
### Preliminary Option 2. Cable stay bridge with symmetrical structural vertical masts

Positive attributes;

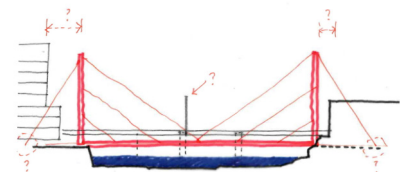
- There is an aesthetic hierarchy between the centre of the river and the springing points. The masts respond to the scale of new development and the Irish Water works structure.

Negative attributes;

- Does not act as an eye-catcher from the Fran O'Toole bridge, as the mast will be visually confused with the nearby Irish Water works structure, although less so than a vertical mast.
- Is not a "visual gateway" to Bray as seen by rail passengers.
- Does not adequately visually screen the existing railway bridge from the west.
- Back-span cable supports may clash with or restrict approach routes to the bridge on the south side.
- The inclined mast may look like its falling over, as the back-span cable is hidden from view by the Irish Water drum.
- There is no good compositional reason why the bridge should be visually weighted to the south



*Preliminary Option 1. Steel Truss Beam bridge.*



*Preliminary Option 2. Cable stay bridge with symmetrical structural vertical masts*

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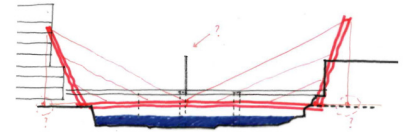
Preliminary Option 3. Cable stay bridge with symmetrical structural angled masts.

Positive attributes;

- There is an aesthetic hierarchy between the centre of the river and the springing points.
- The masts respond to the scale of new development and the Irish Water works structure.

Negative attributes;

- Does not act as an eye-catcher from the Fran O'Toole bridge, as masts will be visually confused with the nearby new development and the Irish water works structure.
- Is not a "visual gateway" to Bray as seen by rail passengers.
- Does not adequately visually screen the existing railway bridge from the west, and highlights the overhead cable support mast on the railway bridge.
- Back-span cable supports may clash with or restrict approach routes to the bridge.

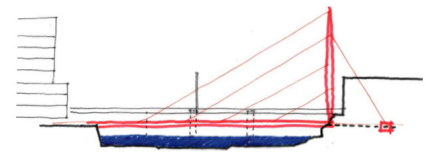


*Preliminary Option 3. Cable stay bridge with symmetrical structural angled masts.*

Preliminary Option 4. Assemetrical cable stay bridge with single vertical mast on the south bank.

Positive attributes;

- There is an aesthetic hierarchy between the centre of the river and the springing point.
- The masts respond to the scale of new development and the Irish Water works structure.
- The single tall mast could act as a landmark.
- Avoiding a structural mast on the north side ensures there is no visual clash with the new development.



*Preliminary Option 4. Assemetrical cable stay bridge with single vertical mast on the south bank.*

Negative attributes;

- Does not act as an eye-catcher from the Fran O'Toole bridge, as the mast will be visually confused with the nearby Irish Water works structure.
- Is not a "visual gateway" to Bray as seen by rail passengers.
- Does not adequately visually screen the existing railway bridge from the west.
- Back-span cable supports may clash with or restrict approach route to the bridge on the south side.
- There is no good compositional reason why the bridge should be visually weighted to the south side.

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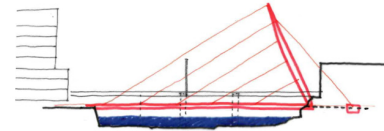
Preliminary Option 5. Assemetrical cable stay bridge with single inclined mast on the south bank.

Positive attributes;

- There is an aesthetic hierarchy between the centre of the river and the springing point.
- The masts respond to the scale of new development and the Irish Water works structure.
- The single tall mast could act as a landmark.
- Avoiding a structural mast on the north side ensures there is no visual clash with the new development.

Negative attributes;

- Does not act as an eye-catcher from the Fran O'Toole bridge, as the mast will be visually confused with the nearby Irish Water works structure, although less so than a vertical mast.
- Is not a "visual gateway" to Bray as seen by rail passengers.
- Does not adequately visually screen the existing railway bridge from the west.
- Back-span cable supports may clash with or restrict approach routes to the bridge on the south side.
- The inclined mast may look like its falling over, as the back-span cable is hidden from view by the Irish Water drum.
- There is no good compositional reason why the bridge should be visually weighted to the south



*Preliminary Option 5. Assemetrical cable stay bridge with single inclined mast on the south bank.*

Preliminary Option 6. Arched truss bridge

Positive attributes;

- Centred on the river.
- Visually leans away from both the new development and the Irish Water works structures.
- There is an aesthetic hierarchy between the centre of the river and the springing points.
- Responds to the scale of new development and the Irish Water works structure.
- Acts as an eye-catcher from the Fran O'Toole bridge.
- Acts as a "visual gateway" to Bray as seen by rail passengers.
- Visually screens the existing railway bridge from the west.
- Approach routes to the bridge are not restricted by any structural elements.
- Tall parabolic shape is elegant.

Negative attributes;

- Arched truss is not visually elegant.



*Preliminary Option 6. Arched truss bridge*

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### Preliminary Option 7 Bow String Arched bridge

Positive attributes;

- Centred on the river.
- Visually leans away from both the new development and the Irish Water works structures.
- There is an aesthetic hierarchy between the centre of the river and the springing points.
- Responds to the scale of new development and the Irish Water works structure.
- Acts as an eye-catcher from the Fran O'Toole bridge.
- Acts as a "visual gateway" to Bray as seen by rail passengers.
- Visually screens the existing railway bridge from the west.
- Approach routes to the bridge are not restricted by any structural elements.
- Tall parabolic shape comprising a single member is elegant.

Negative attributes;

- None.

### Preliminary Option 8. Asymmetrical Bow String Arched Bridge

Positive and negative attributes similar to Option 7;  
- except the centre of river is not emphasised.

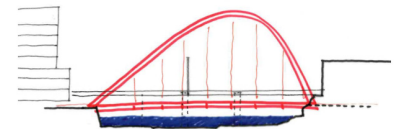
There seems to be no good compositional reason why the bridge should be visually weighted to one side.

### Preliminary Option 9. Consideration of Bray Head as an inspirational shape.

The dominant form as seen from Bray seafront is Bray Head. Considering the distinctive mountain profile, we wish to explore whether this prominent shape can be inspirational to any arched bridge solution. Our conclusion is that there are no benefits to this approach; The bridge is too low, not adequately responding in scale to the nearby new development or the Irish Water works structure. There seems to be no good compositional reason why the bridge should be visually weighted to one side.



*Preliminary Option 7 Bow String Arched bridge*



*Preliminary Option 8. Asymmetrical Bow String Arched Bridge*



*Preliminary Option 9. Consideration of Bray Head as an inspirational shape.*



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## 6. The Proposal - General Form

The favoured option, and the subject of this application is;

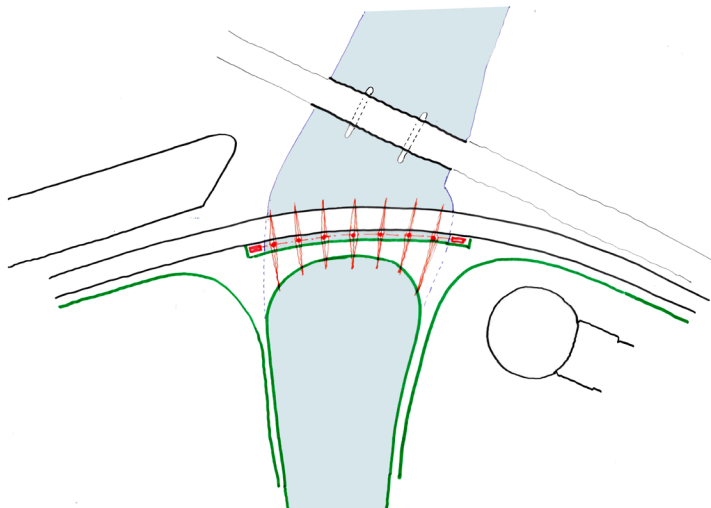
The Bow String Arched Bridge

Positive attributes;

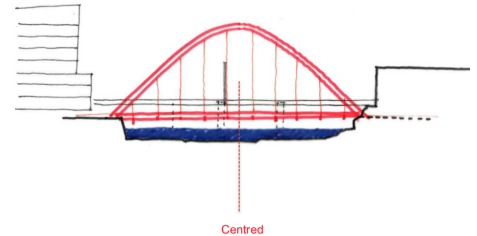
- Centred on the river.
- Visually leans away from both the new development and the Irish Water works structures.
- There is an aesthetic hierarchy between the centre of the river and the springing points.
- Responds to the scale of new development and the Irish Water works structure.
- Acts as an eye-catcher from the Fran O'Toole bridge.
- Acts as a "visual gateway" to Bray as seen by rail passengers.
- Visually screens the existing railway bridge from the west.
- Approach routes to the bridge are not restricted by any structural elements.
- Tall parabolic shape comprising a single member is very elegant.

Negative attributes;

- None.
- Centrally located single arch permits physical separation of vehicular carriageway and cycleway/footpath.
- 
- Vehicular carriageway on east side of the bridge next to the railway bridge.
- 
- Cycleway/footpath on the west side, allowing easy connections to be made with the riverside walks and cycleways, and so that the westerly view down the river can be enjoyed by pedestrian and cyclists.
- Potential to visually articulate vehicular carriageway and cycleway/footpath as separate parallel elements.



Sketch Plan of the proposal



The Proposal; The Bow String Arched Bridge

Summary of 3D form.

Vertical; visually parabolic, and nearly parallel pair of structural arches,  
with  
Horizontal;

Appropriateness of form as seen from different vantage points;

From Fran O'Toole bridge.

From riverside walkways

From train passengers

From the new developments to the north.

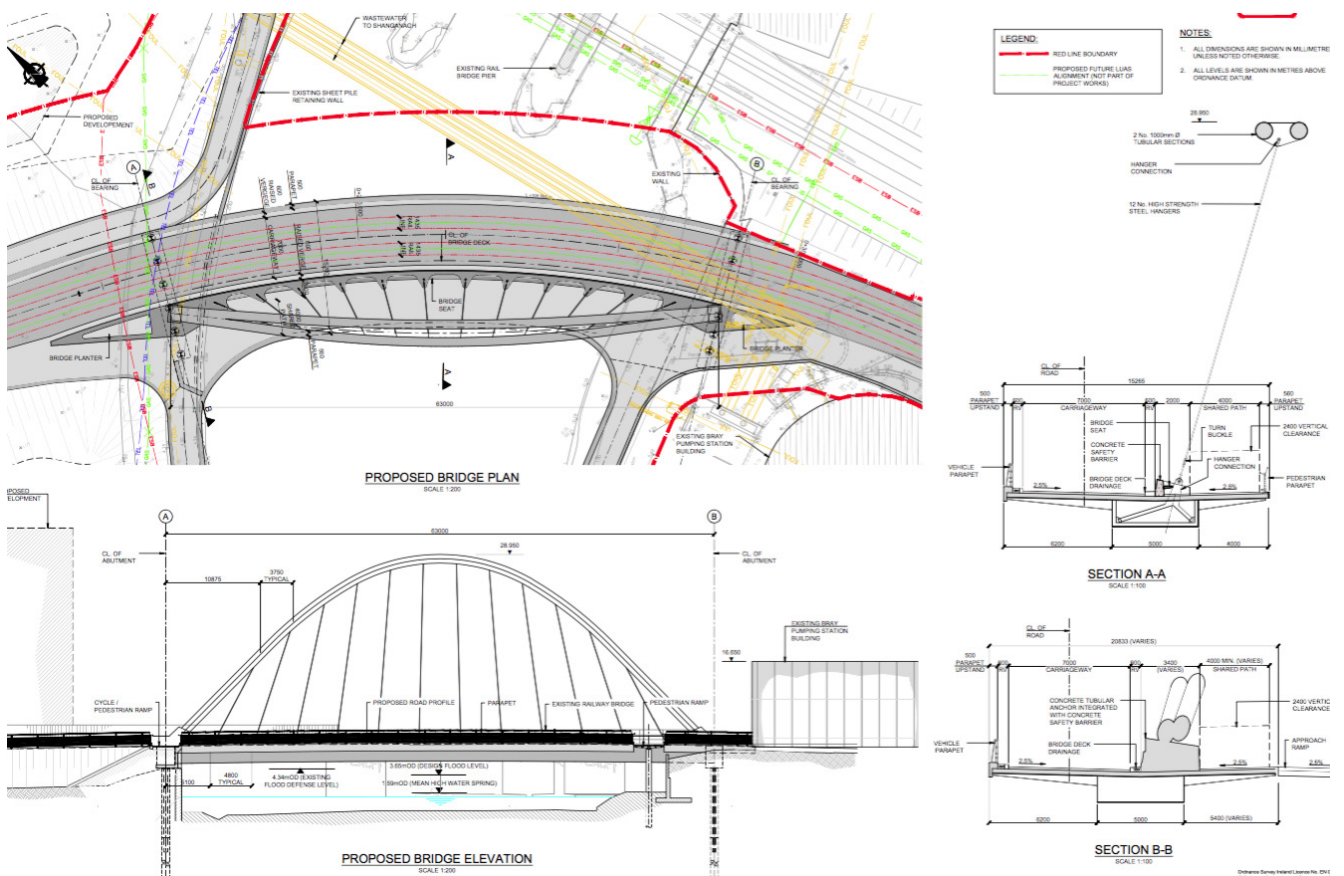
From the sea.

Pedestrian and cycling use of the bridge.

Flow and movement.

Views of the river.

Creating a new public place; seats, protection and planting.



ARUPS drawing of complete assembly

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## Summary of Visual Impact

*Seen from the air; the white arch of the new bridge highlights where the River Dargle discharges into Bray Harbour and Killiney Bay.*



*Seen from the sea; the white arch of the new bridge highlights the location of Bray Harbour.*



*Seen from Fran O'Toole Bridge; the white arch terminates the view of the last stretch of the River Dargle before it discharges into the sea.*

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## Summary of Visual Impact

*As seen when approaching Bray on the train; the white arch notifies passengers that arrival in Bray is imminent, and that they are about to cross the River Dargle.*



*As seen when leaving Bray on the train; the white arch notifies passengers that they are about to cross the River Dargle, and leave Bray.*



## 7. Balustrade Design

(on the west side of the bridge)

Function; To act as safety barriers to meet current regulations for pedestrians and cyclists.

Achieved by;

horizontal rail barrier at 1.4m above deck, for cyclists.

horizontal rail barrier at 1.1m above deck, for pedestrians, with infill between deck and rail with any gaps less than 100mm diameter.

Aesthetics;

To ensure keep visual impact minimal, and as transparent as practical, so that the eye is drawn to the arch, and the leading edge of the deck. This edge is designed to be as thin as possible, for elegance.

Visual Connection;

To make as transparent as possible to enable good views of the river from the people walking or cycling on the deck, or from people sitting on the deck.

Continuity;

To extend the same balustrade design to the cycle/pedestrian approaches along the river linking to the bridges, for visual consistency and to help "visually connect" the bridge to the river banks and the local surroundings.



*Flood defence scheme and boardwalk west of Fran O'Toole Bridge.*

*Flood defence scheme and boardwalk west of Fran O'Toole Bridge. Note the use of horizontal cable balustrade infill.*



*The Rosie Hackett Bridge, Dublin, by Sean Harrington Architects.  
Note the use of the near-transparent balustrade infill using horizontal cable.*

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Description of the Proposed Design;

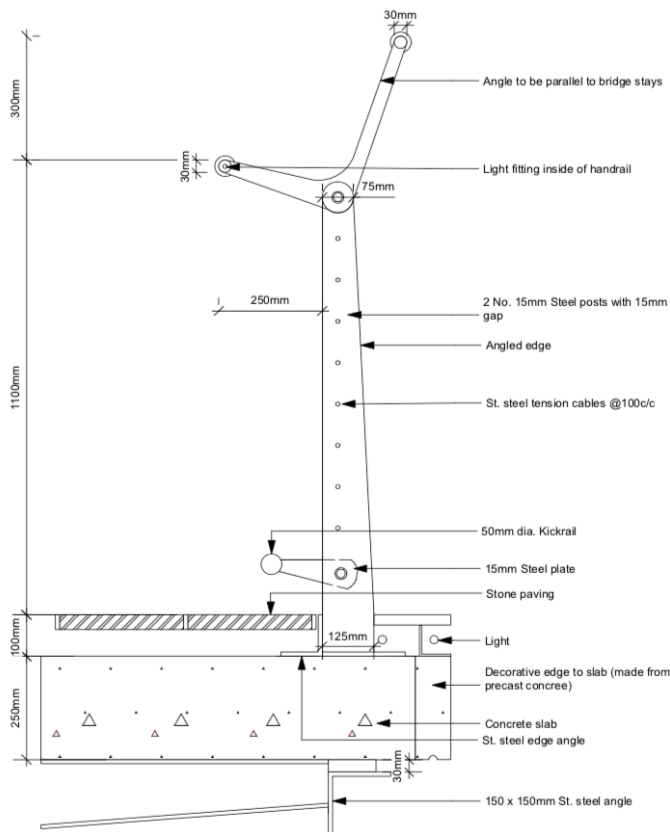
Pairs of vertical stainless steel posts, at 1.5-2m centres, at 1m height above the deck surface level. U shaped stainless steel flat plates connected between pairs of posts, supporting both horizontal rails ( at 1.1m for pedestrians and 1.4m for cyclists). The lower portion extends towards the deck, to prevent climbing of the balustrade infill, and the upper portion extends outwards at a similar angle to the main structural cable stays, for consistency.

Both upper and lower horizontal rails are CHS stainless steel, with the lower, pedestrian level rail containing LED down-lighters to provide safety lighting for the walkway deck.

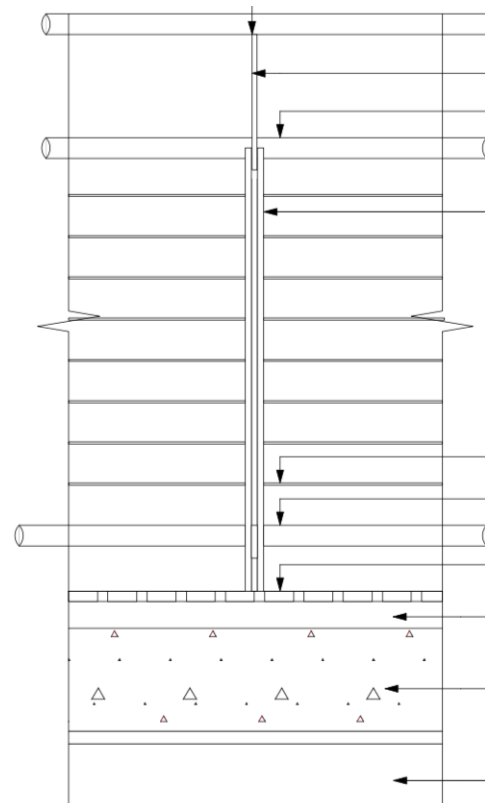
Consistent with the desire to maximise the transparency of the balustrade infill we propose horizontal stainless steel tension cables at 100mm centres, up to a height of 1.1m. This arrangement has been used successfully on the Rosie Hackett Bridge in Dublin, and along the existing boardwalk in Bray west of the Fran O'Toole bridge.



Horizontal top rails at differing heights at the Peace Bridge, Derry.



Proposed balustrading and handrails, (cross section).



Proposed balustrading and handrails, (elevation).

Balustrade Design (on the east side of the bridge)

Function; To act as safety barriers to meet current regulations for vehicles.

As this balustrade is for vehicles only, and faces the existing railway bridge, aesthetic considerations are of a minor nature.

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## 8. Central Barrier/Seating Design

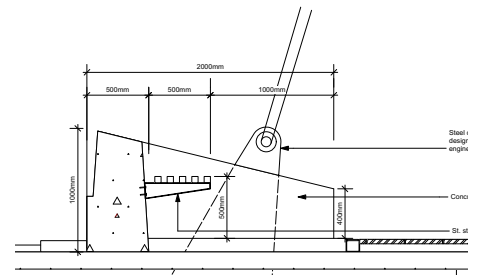
Function;

to provide seating areas for pedestrians and to be arranged in the median between walkway and the road, to act as a traffic barrier. Furthermore it must be designed in such a manner to function as a barrier to prevent pedestrians from clashing with the raking structural bridge cables this area.

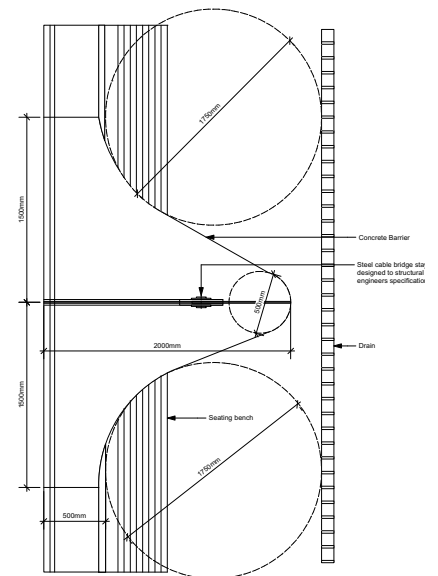
Description of the Proposed Design;

A central concrete median barrier is modelled on the west side to create a series of seating bays, facing west along the river and towards the setting sun. The projecting fingers of this barrier coincide with the locations of the cable stays above, and project far enough to prevent pedestrians from clashing with the cables. In side the bays, we propose simple hardwood slatted seats, from sustainable sources.

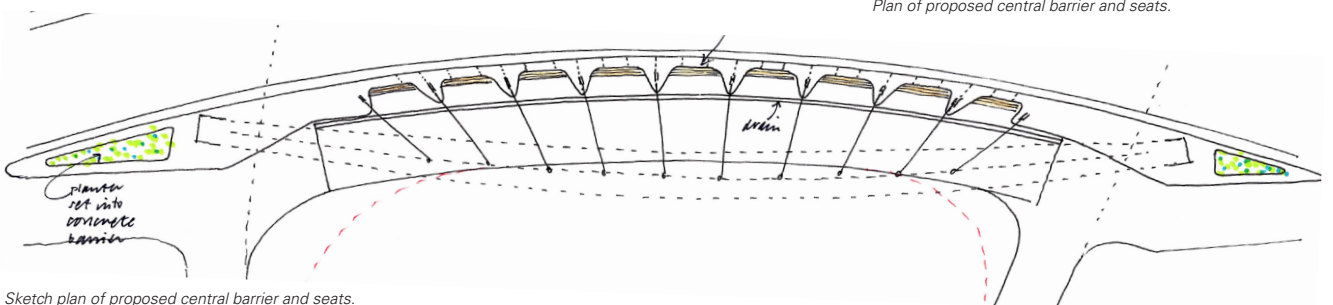
The modelled concrete barrier is made from precast concrete sections to ensure a high quality of concrete finish, which would be treated with a transparent anti-graffiti coating.



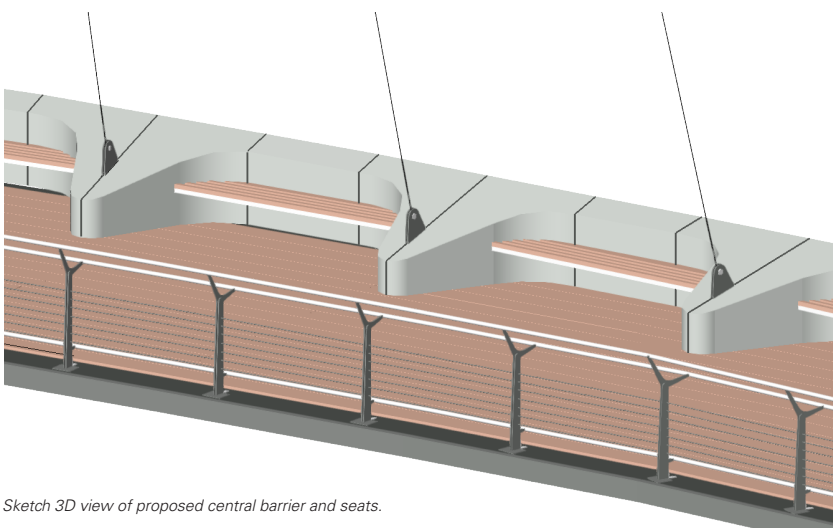
Cross section of proposed central barrier and seats.



Plan of proposed central barrier and seats.



Sketch plan of proposed central barrier and seats.



Sketch 3D view of proposed central barrier and seats.



The Rosie Hackett Bridge, Dublin, by Sean Harrington Architects. Note the use of hardwood slats for seating.

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## 9. Materials and colour

Materials for all structural elements are set out in the Engineers report.

In addition;

Balustrades for west bridge edge and approach walkways and cycleways;  
All posts, horizontal rails, connecting brackets, infill tension cables and lighting grilles; Marine Grade 316 Stainless Steel. (as Rosie Hackett Bridge in Dublin).

Central median barrier; precast concrete elements, with smooth finish.

Seats; hardwood slats (from sustainable source) on Marine Grade 316 stainless steel outrigger brackets. (as Rosie Hackett Bridge in Dublin).

Pavement surfaces of bridge and approach ramps; warm grey Wicklow granite paving slabs, with slip resistant surface finish.

Colour; The structural arches will be painted steel, to an off-white/light grey colour, with a satin reflectivity. This will give a timeless appearance, be eye-catching from all directions and not easily show dirt.



*Proposed bridge as seen from the west. Note off-white colour of the arches.*



*The Rosie Hackett Bridge, Dublin, by Sean Harrington Architects. Note the use of stainless steel balustrade posts.*



*Wicklow granite paving.*

## 10. Lighting

The proposed bridge will have both functional and feature lighting. Careful and sensitive design will be required to ensure that the landmark arch is sufficiently floodlit, whilst not creating excessive glare or light spillage. Traffic and pedestrian lighting will meet the requirements for public safety and security.

Feature lighting of the arch will be provided by carefully positioned floodlights at low level on the arches (for easy maintenance access), but out of reach of vandals. The fittings will have specially designed lenses to focus the light onto the surface of the arches, thereby ensuring the minimum light spillage. Most floodlighting will therefore be from below, and will fall onto the curved edges of the circular sectioned arches elements. The curve of the sections will allow the light to gently spread upwards onto the sides of the arches, ensuring that can be seen from afar.

Lighting of the pedestrian walkways will be as follows; safety lighting of the walking surface will be from LED lights mounted in the handrail on the west side, and under the hardwood seating on the east side. Lighting for facial recognition will be provided by flush up-lighters set into the granite paving, and by lights set into the projecting ends of the concrete central median barrier element, between the seating bays.

All lighting will be carefully considered to minimise negative impacts on fish and wildlife, in particular bats.



*The Rosie Hackett Bridge, Dublin, by Sean Harrington Architects. Note the use of down lighting (for deck illuminance) within the handrail and uplighting (for facial recognition) at the edge of the deck.*



*The arch lit from below; The Millennium Bridge, Gateshead, UK.*

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## 11. Planting;

County Wicklow is commonly known as the Garden County, and this is to be celebrated on the new bridge; We propose inset planting areas at both ends of the central media barrier, for seasonal flowers. These are easily accessible for maintenance.

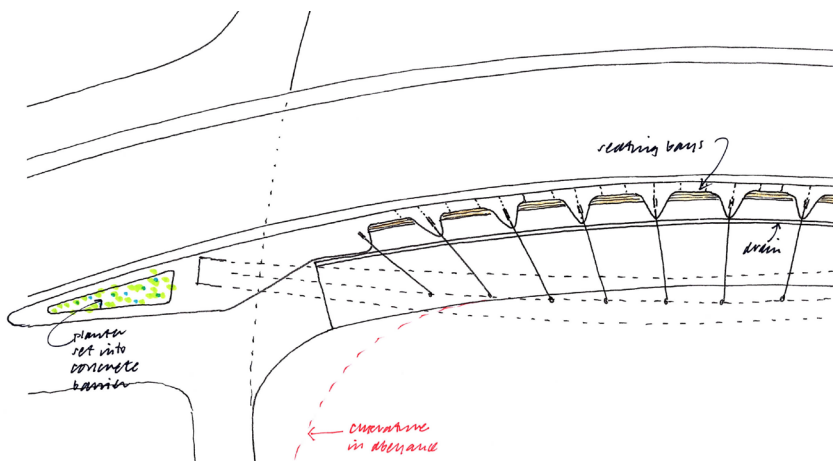
The chosen location is at the threshold of bridge, and the confluence of riverside walks, with the bridge, and will provide a colourful, beautifully scented experience for bridge users, marking the entrance and exit of the bridge.



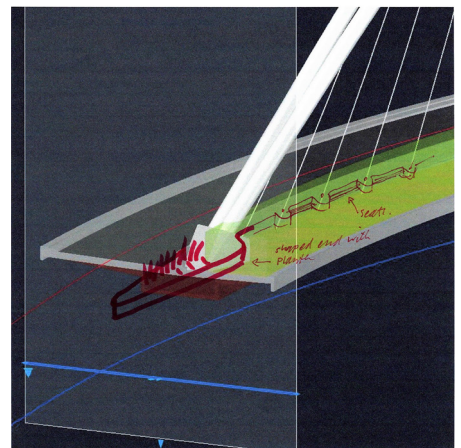
The Rosie Hackett Bridge, Dublin, by Sean Harrington Architects.  
Note the use the inclusion of flower planters.



The Rosie Hackett Bridge. Note the changable inserts for the planters, for ease of maintenance.



Proposed location of planter at the entrance to the bridge.



Proposed location of planter at the entrance to the bridge.

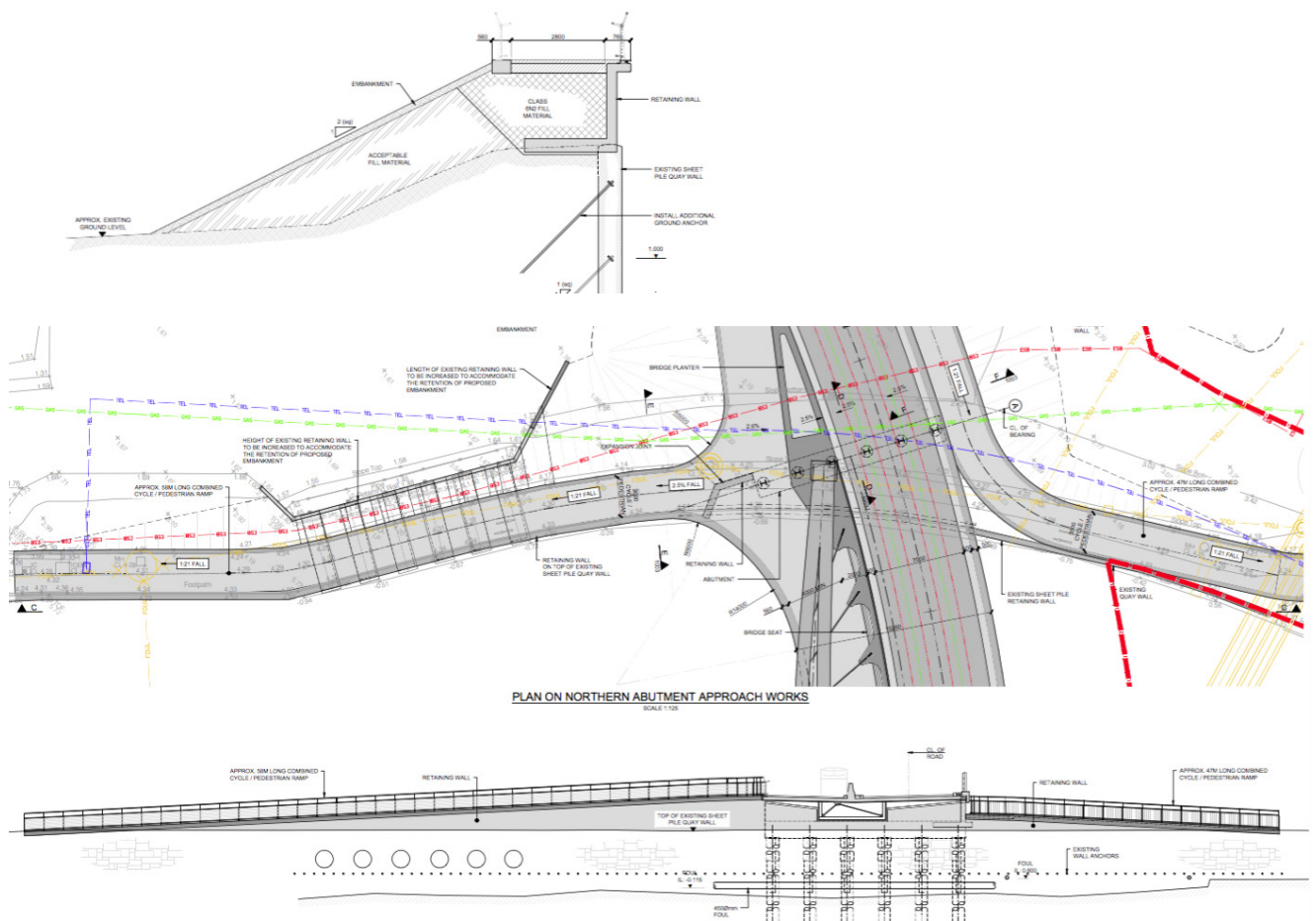
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## 12. North approach retaining wall

The design and treatment of the north approach retaining wall is very important to the overall appearance and setting of the new bridge. It is critical that it appears as a considered part of the town- and river-scape. The intention is to retain the existing stone clad wall, with a horizontal coping stone course to finish off the top surface neatly. Above this we propose to expose to view the pre-cast concrete retaining wall. This concrete wall will be recessed by at least 200mm from the face of the existing wall, and have a rough-textured, consistent, high quality finish. Above this, the walkway and balustrade will cantilever out to be flush with the face of the stone wall below. In this manner the concrete wall (which is wedge shaped in elevation) will be seen as a separating “shadow gap” between existing stone wall and new additions.



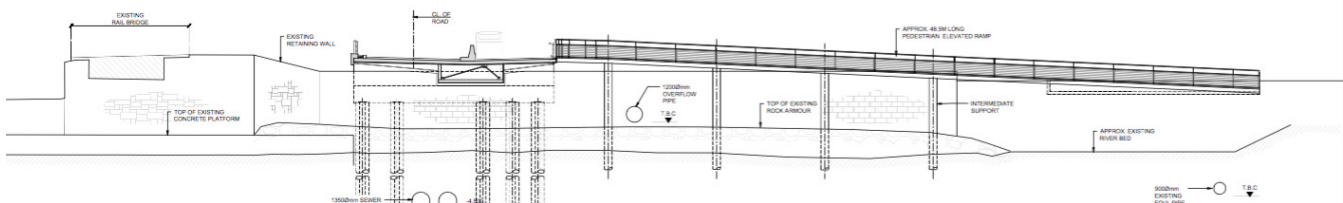
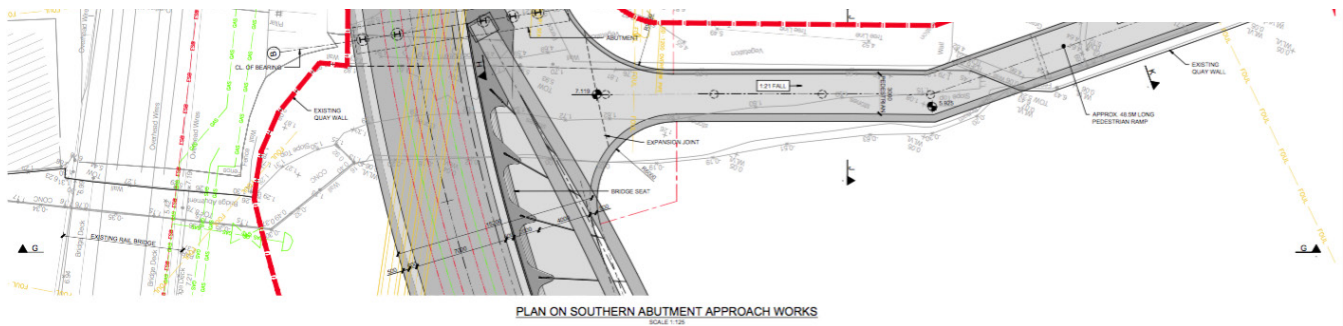
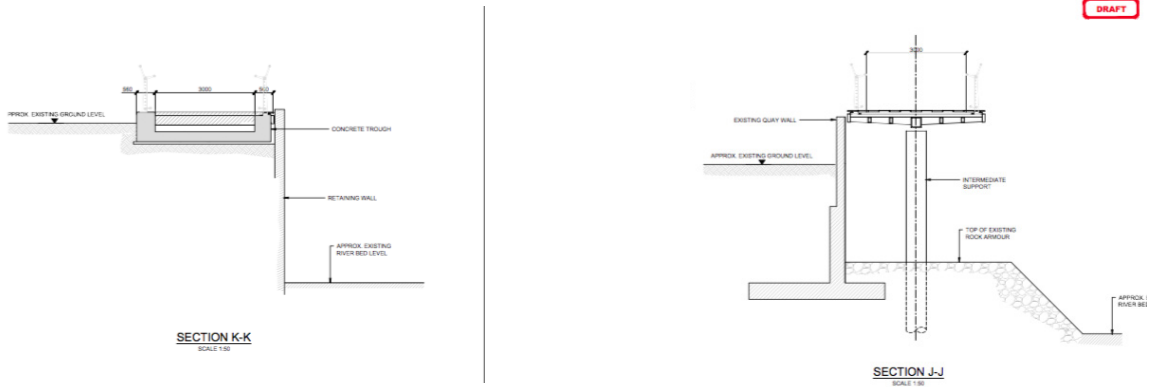
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### 13. South approach boardwalk

The south approach boardwalk links the existing riverside promenade on the south side of the river to the west side of the new bridge. On plan it sweeps round on a large curve to meet the bridge to aid movement, and to feel like the bridge is firmly and fluently connected to its immediate surroundings, rather than a bridge that has been “dropped from the sky” as a foreign object into location.

The boardwalk starts as a ground based concrete trough and then emerges to be a lightweight elegant steel structure supported on intermediate supports, as it spans onto the bridge proper. Visual continuity is provided by using a similar lightweight balustrade and handrail design.



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