Round four - England

Stage one application form

Delivered by Big Lottery Fund on behalf of UK Government and the Devolved Administrations in Northern Ireland, Scotland and Wales

About this form

This application form is for organisations wishing to apply to the Coastal Communities Fund (CCF) in England. Please read the Round four guidance notes on the CCF website before completing this form.

Please complete this form in **full**. If you don't complete all of the questions, your application will not be considered for funding from CCF.

Filling in the form

Make sure you've saved the form to your own computer before you start to fill it in. Type directly into the form. Don't copy and paste from another document as it may cause formatting problems. For example, a bullet point list could cause you to go over the character limit for a question without realising it.

Sending us your stage one application

You can only submit your completed application form by email. Please do not send attachments with your application, unless we have specifically asked for them (see the checklist at the end of this form) as these will not be considered as part of your application.

Please send your application by email to:

ccfengland@biglotteryfund.org.uk (for projects in England)

Include 'Coastal Communities Fund application - England' and the name of your organisation in the email subject header. Please keep a copy of everything you send us.

Deadline for applications

For Round four of CCF in England we will not consider applications received after **midday 30 June 2016.**

Contacting us

If you are not sure how to answer any questions in this form, we will be happy to help. Please email us at ccf@biglotteryfund.org.uk or call us on 0345 4 10 20 30. Please refer first to the Round four guidance notes on the CCF website.

Part one: What will your project do?

1.1 What would you like to call your project?

Give your project a short title, something we can use in publicity. You can write up to 70 characters (including spaces).

Brighton and Hove Madeira Terrace "Lockwood" Regeneration Project

1.2 What is the aim of your project?

The aim is a brief statement of the overall purpose of your project. Try to keep your answer to one or two sentences. The aim should help focus everything that you plan to do and explain the changes your project will bring about to deliver the economic outcomes (i.e. job opportunities) you have identified.

Example: "We aim to improve a coastal path through upgrading, re-routing and improving signage. The project will benefit 20 local businesses and create 32 jobs."

This project will regenerate Brighton's Madeira Terrace to facilitate commercial uses, whilst maintaining its heritage aspects. It will generate 170 jobs, and grow the local economy by £5 million pa.

1.3 What does your project involve?

Summarise what you plan to do and the activities CCF funding will pay for. You can write up to 2,000 characters (about 300 words).

This project involves the renovation of Brighton's iconic Madeira Terrace, an 800 metre-long seafront arcade with raised walkway and associated buildings that runs along the stretch of Brighton's seafront east of the Palace Pier. Madeira Terrace was developed by the borough surveyor Philip C Lockwood as a covered promenade to attract tourists in the late nineteenth century.

The Grade II Listed Madeira Terrace is the principal attraction of Brighton's eastern seafront, however in recent years it has had to be closed to the public due to major structural issues and safety concerns. This detracts from this part of the seafront, reducing visitor numbers despite the world-class heritage architecture of Kemp Town and the eastern seafront's wider attractions.

This project proposes to renew the Madeira Terrace through a reconstruction that will introduce innovative commercial and leisure uses to the structure in order to breathe life back into Brighton's eastern seafront. This redevelopment is part of a wider planned regeneration programme that includes a major new arena at the City's Black Rock seafront site, a major seafront swimming pool development, and associated works to improve the public realm of the area.

Images showing Madeira Terrace and associated planned regeneration projects are set out in Attachment A.

The redevelopment will be sensitive to the Madeira Terrace's heritage by using historic materials and structural solutions. By attracting commercial occupants it will also help ensure that the structure has a sustainable funding stream over the longer-term to prevent future decay.

The estimated cost of redeveloping the Madeira Terrace is £24 million. In order to realise this ambition, a capital contribution is sought from the Coastal Communities Fund of £4 million, which will support co-funding provided by Brighton & Hove City Council of £6 million and identified commercial funding of £14 million.

1.4 When are you planning to start and finish your project?

Make sure your dates fit with CCF timescales detailed in Part seven of the guidance notes and that your start date is after the date when we'll confirm our decision. The start date for revenue projects should be when the first member of staff starts work on the project. The start date for capital projects should be when the contractor commences site set-up. The finish date should be the date when you finish spending the CCF funding. Please note that all CCF funding must be spent by 31 December 2019.

Start date (dd/mm/yyyy)	Finish date (dd/mm/yyyy)
01/01/2017	31/12/2019

1.5 Where will your project take place?

Give the location of the places where your project will happen.

- If your project will take place at (or be run from) a single location, enter its postcode, put 100 per cent and select it as the main location.
- If your project will take place at (or be run from) a number of locations, list the main five and estimate a percentage for each one.
- If the location doesn't have a postcode, use one for a nearby building.

Please make sure you have selected a main location for this project and that totals add up to 100 per cent. You can enter up to five locations in the table. If there are more than this select the top five.

Building name (or number) and street	Postcode	% per location	Main location
Madeira Drive	BN2 1	100	☒
			☐
			☐
			☐
			☐

1.6 In which local authority ward(s) will your project activities take place?

Queen's Park, East Brighton and Rottingdean Coastal wards

1.7 In which local authority area is your coastal community?

Brighton and Hove

1.8 In which region will your project be delivered?

Please tick the relevant box(es).

☐ East Midlands	☐ East of England	☐ London
☐ North East	☐ North West	☒ South East
☐ South West	☐ West Midlands	☐ Yorkshire and Humber

1.9 Are you applying as a Coastal Community Team (CCT)?

Yes ☒ No ☐

If yes, please give the name of your CCT.

Brighton and Hove Seafront Coastal Community Team

1.10 If you are a Coastal Community Team, please provide the name of an appropriate and constituted accountable body that has agreed to take responsibility for the funding and project delivery if your application is successful.

Brighton and Hove City Council

Please provide the details of this organisation when completing Part six of the application form.

1.11 If you answered no to question 1.9, is your project located in a Coastal Community Team area?

Please see the Coastal Communities Alliance website for details of Coastal Community Teams (CCTs).

Yes ☐ No ☐

If yes, please give the name of the CCT and enclose a letter of support for your project from the CCT, or tell us why this is not appropriate for your bid.

Part two: Why do you want to do this?

2.1 Tell us how you know that your project will deliver job and economic growth opportunities.

Tell us:

- How and where you have identified a market opportunity and how your project will address this.
- What planning, preparation consultation or research you have done to support your findings,including with the local community. You can write up to 3,000 characters (about 450 words).

In recent years, the closure of Madeira Terrace has led to the removal of local businesses hosted in these structures, the loss of the terraces as a public amenity and the necessary installation of visually intrusive safety measures to prevent access.

Limited public funding at a time of constrained local authority finances means any redevelopment solution needs to be largely commercially led. This commercially driven approach will support economic and jobs growth in the South East region by building upon Brighton and Hove's unmatched visitor economy strengths, while also harnessing its creative, dynamic local workforce, activating this stretch of the seafront.

Market assessment undertaken in developing this regeneration proposal highlights:

- Ten million visitors to the City per annum, including five million overnight stays
- The City's high rate of population growth and low unemployment rate
- High commercial occupancy rates for the region, particularly for commercial space along the seafront (as seen through a near 0% vacancy rate along the existing seafront arches)

Stakeholder engagement has also indicated support for the proposed redevelopment of Madeira Terrace supported by commercial use. A visualisation of the proposed approach, developed by Brighton & Hove City Council's architect, Wilkinson Eyre, was published in June 2016 (refer Attachment B), to predominantly favourable local comment. The Council has also held a seminar to discuss its proposals with its Seafront Investment Panel, comprising local traders, businesses and community stakeholders, as well as wider one-to-one stakeholder engagement. Again, the sentiment was highly positive providing the commercial uses were genuinely innovative, tailored to the seafront's needs, and in keeping with the area's heritage.

Consistent with this market assessment and stakeholder engagement, the proposal is for a mixture of sympathetic retail, commercial, entertainment and accommodation uses to be developed within the terraces, with development to be organic and phased. These uses could potentially include:

- An iconic seafront hotel development;
- A youth hostel;
- An arts centre and gallery space, an area where Brighton has traditionally been underserved;
- Cafes and restaurants, with a signature facility planned for the Madeira tea rooms;
- Boutique retail; and
- Incubator space for creative and digital industry.

These proposed developments seek to enhance the seafront offering for visitors and locals alike rather than duplicate commercial uses elsewhere around the Brighton and Hove seafront, such as in the arches west of the Palace Pier or Lanes. They seek to build

upon the City's wider regeneration strategy for the eastern seafront, in particular the development of a world-class arena facility at Black Rock.

2.2 Tell us how your project will help to deliver local economic plans and contribute to the CCF England priorities.

Tell us:

- How your project links to and addresses local economic plans or strategies such as those delivered by Coastal Community Teams (CCTs), or Local Enterprise Partnership (LEPs)/ Local Authorities in areas where there are no CCTs.
- How your project will contribute to the CCF England priorities.
- How your project is connected to other work in your community.

You can read about the CCF England priorities in Part three of the guidance notes where there are also links to CCT and LEP plans and contact details. You can write up to 3,500 characters (about 600 words).

Brighton & Hove City Council leads the Brighton & Hove Seafront Coastal Community Team, and is currently finalising a Seafront Investment Plan for the entire stretch of the coast that we manage.

Investment in the City's seafront sits alongside broader strategic work from the Council in brokering a City Deal for the Greater Brighton City Region with Central Government, which is set to unlock around £1 billion private and £100 million public sector investment in key infrastructure, skills and business projects to generate significant productivity, GVA and employment gains in the region.

In the Coast to Capital Local Economic Partnership's 2014 Strategic Economic Plan the seafront is identified as the first of only four key development areas for the region. Development around the associated sites of Brighton Marina and the Black Rock Arena is specifically referred to, indicating the importance of the eastern seafront regeneration efforts. Rejuvenating the terraces is crucial to ensure the collective regeneration of the eastern seafront area.

The Brighton and Hove City Plan (adopted in March 2016) makes specific reference to the regeneration efforts required at the eastern seafront area; identified as a particular priority within the seafront Special Area policy SA1.

The Madeira Terrace project supports the following CCF Round Four objectives. Firstly, the redevelopment of the terraces structures into usable hostel/hotel, entertainment and office space provides additional employment opportunities in additional sectors beyond the visitor retail and leisure activities that already populate the City's seafront. The intention of the Council to maintain an eclectic mix of commercial activities in order to diversify the offer to businesses, residents and visitors, will help support Brighton and Hove's vibrant SME sector also, while supporting economic diversification and innovation.

Secondly, one of the challenges with seafront attractions is their seasonality. By adapting the currently vacant and closed promenade infrastructure into usable commercial space, with improved public realm and accessibility, the structures can be

restored and their usability extended year round, increasing the business rate yield for the Council, as well as helping to activate Brighton's surrounding eastern seafront overall.

Thirdly, unparalleled levels of investment are currently planned for the City's seafront, including the redevelopment of Brighton Marina, King Alfred Leisure Centre and Shoreham Harbour, construction of the i360 observation tower, building new state-of-the-art conference and entertainment facilities and expanding the Churchill Square shopping centre to the seafront. Regenerating Madeira Terrace, with associated public realm and transport improvements, will be part of this wider investment programme to regenerate Brighton's wider seafront through extending the visitor footprint westwards and eastwards.

2.3 Tell us about your organisation, any partners you plan to work with and your proposed approach.

Tell us:

- The skills and expertise of your organisation, and that of any partners, in delivering projects of a similar nature and scale.
- Tell us how this is likely to lead to a successfully delivered project.

You can write up to 3,000 characters (about 450 words).

Brighton & Hove City Council leads the Coastal Communities Team (CCT), alongside representatives from Brighton and Hove's vibrant visitor economy. Brighton & Hove City Council is a unitary authority which provides a full range of governmental services to the 300,000 residents and within its remit.

The Council is a progressive authority which has commisioned and overseen considerable infrastructure and development projects in recent years, including over £80m of residential development at the neighbouring Brighton Marina, as well as the British Airways i360 project which reaches completion in 2016. The Council has a dedicated major projects team which is charged with leading the development and delivery of major investment projects, as well as a dedicated seafront development team responsible for the City's coastal infrastructure, built environment and commercial activity. These teams would be expected to lead the redevelopment of Madeira Terrace.

The Council works closely with its CCT and wider stakeholders such as local business and residential groups in developing its seafront investment programme. A dedicated Seafront Investment Plan is being finalised, which has widespread stakeholder support, to guide the development of Brighton and Hove's 13km long seafront over the next decade. The proposed regeneration of Madeira Terrace will be guided by a wider Eastern Seafront Regeneration Strategy that is in the process of being developed.

In developing the Madeira Terrace project, the Council has worked with Wilkinson Eyre, one of the UK's leading architects and Mott MacDonald, an international engineering and development consultancy. Working with these advisors, the Council has developed outline designs and structural engineering solutions for how the terraces could be redeveloped and populated with commercial activities. These outline designs and plans are set out in Attachment C.

At this stage, it is assumed that the Madeira Terrace can be rebuilt using the same materials and structural solution that currently exists. For example, this would include fabrication in cast iron of replacement components to the original design specification that would be used for the reconstruction.

Central to the planned redevelopment is the proposed "pod" structures, that Wilkinson Eyre has designed to populate the individual terraces. These lightweight, durable structures would be largely prefabricated and inserted into the rebuilt terraces to allow them to be let to commercial tenants.

To progress the project, Brighton & Hove City Council intends to rapidly progress the project to RIBA Stage 4, including through developing detailed designs, and a planning, procurement, phasing and delivery strategy. The Council expects to appoint a dedicated project manager who would lead the project day-to-day, working with external partners and reporting back to a steering committee comprising CCF members and other appropriate stakeholders and, as required, Council Members. This approach has a proven track record of success for Brighton & Hove City Council major projects.

2.4 How are local people, businesses and community organisations involved in your project?

Tell us:

- How your project is connected to other work or projects within your community.
- How the project will build on the strengths of people, businesses and other assets in the area and how you will ensure that your project is embedded within the local community.

You can write up to 3,000 characters (about 450 words).

Brighton and Hove owes its establishment, growth and popularity to its seafront location. Acting as the city's 'shop window', it is one of the main reasons why people choose to live, visit, work, invest and study here.

As mentioned above, Madeira Drive has played a very important role in both the City's events and tourism industries, and given the huge scale of investment planned on sites along Brighton's eastern seafront, this role will be even more important as Brighton's seafront continues to modernise and evolve. The Council and the Brighton and Hove Coastal Community Team view Madeira Terrace as a missing piece in the jigsaw of planned investment in the City's seafront, and this view is shared by the wider business and other community organisations of Brighton and Hove.

In the past few months there have been a number of newspaper articles, television and radio interviews and reports as well as written correspondence from residents. The City's main local newspaper (The Argus) launched a Seafront 2020 campaign in April 2016 to draw more public attention about the plight of seafront sites and infrastructure in Brighton and Hove as well as wider East and West Sussex. As noted above, the Council has also issued a visualisation of the proposed Eastern Seafront regeneration, with the redeveloped Madeira Terraces as the centrepiece of this (refer Attachment B).
All local Members of Parliament have been vocal in their support for the revival of Madeira Terrace, while the Council has made the regeneration of the whole of the eastern seafront area a priority.

The Council has also begun discussions with Historic England to ensure that heritage considerations are taken into account in the proposed Madeira Terrace regeneration project. Historic England has indicated initial support for the proposed redevelopment concepts subject to the retention of certain identified heritage features. The Council, with its partners, has issued a draft Heritage Assessment to Historic England to guide discussions as it progresses this project.

There is huge political, business and community will to act now and prevent this treasured part of Brighton and Hove's seafront falling into further disrepair as well as to activate this important part of Brighton and Hove's seafront.

Part three: What difference will your project make?

3.1 How will your coastal community benefit from your project?

Describe the difference you expect your project to make to the people, communities or organisations who will benefit from it and how your project demonstrates environmental sustainability in its approach to delivering its intended outcomes. See Part three of the guidance notes for links to further information on environmental best practice.
You can write up to 2,000 characters (about 300 words).

The project aims to encourage more widespread use of the seafront for a greater period of the year. This will help improve local quality of life, generate employment and help to address localised social deprivation.

Visitors to Brighton and Hove will benefit from the enhanced offering provided by the rejuvenated eastern seafront. Cafes, retail, office and accommodation housed in Madeira Terrace as well as the area's improved public realm will provide an extended visitor attraction.

The local economy will benefit both, in the short term, from construction activity to redevelop Madeira Terrace and, over the longer-term, from employment and associated activity in and around the terraces. Mott MacDonald has estimated of these economic impacts using its Total Economic Assessment Model, refer Section 3.1.

Local residents will benefit from this project in several ways. The revitalised Madeira Terrace will complement the world famous heritage architecture of Kemp Town and East Cliff, providing a spectacular vista from the Brighton foreshore. Planned transport improvements along Madeira Drive, such as through enhancement to cycling facilities and upgrades to the steps and lift that connect the Marine Parade to the seafront, will improve accessibility and tackle severance.

Finally, local residents will benefit from employment opportunities in Madeira Terrace and surrounding areas. These opportunities will be important to helping address social deprivation in some of the wards around the eastern seafront. As part of this, construction work on the project would be expected to be referred to the Council's Local Employment Scheme, which provides construction training and work placements to local residents.

The Madeira Terrace has an important environmental function in Brighton and Hove. The terraces are built onto the country's longest "green wall", which was planted in the Victorian era when the terraces were built. This green wall features over 90 species and is a designated local wildlife site. The project team is considering options to retain and enhance the green wall through the regeneration of the terraces.

3.2 Tell us how your project will directly or indirectly create new jobs or safeguard existing jobs.

Tell us also about the types, timing and sustainability of the jobs.
How will the economic benefits be sustained after the funding has finished?
Please see the **CCF guidance on measuring economic outcomes** on the CCF website for definitions of direct and indirect jobs. You can write up to 2,000 characters (about 300 words).

Preliminary designs of the Terraces reveal expected floorspace and units that can house accommodation, leisure, retail and office spaces once the project is complete.

The assessment of the economic impacts of redeveloping commercial units within the Terraces has been estimated using Mott MacDonald's Transparent Economic Assessment Model (TEAM), which is a versatile tool designed to calculate the impact of proposed infrastructure intervention and policy measures. Using high level assumptions to run the preliminary data on floor space and expected land use of the Terraces units through TEAM, estimates can be made regards the number of net additional jobs facilitated within the Terraces and economic impact in terms of contribution to Gross Value Added (GVA).

It should be noted that this model applies government recommended methodologies to calculate the level of net employment. It therefore takes account of the neighbouring employment and subsequent risk of displacement, leakage of economic benefits to other economic areas, and deadweight in terms of the level of activity already ongoing at this site. High level findings are displayed below.

A more detailed methodology and underpinning assumptions, as well as an estimation of jobs generated by each sector is set out in Attachment D.

As a commercial redevelopment, it is assumed that these jobs will be self-sustaining over the longer-term. The ongoing comnmercial success of Brighton's arches to the west of the Palace Pier, which have been populated with commercial uses for many years, suggests this model will be durable, providing the attractions offered are sufficient to draw visitors and locals down to the eastern seafront. Planned wider investment around this part of Brighton, such as the Black Rock arena, will support the regeneration of Madeira Terrace and help to provide an activity hub, supporting economic development of the area.

3.3 How many full time equivalent (FTE) jobs will be created or safeguarded as a result of this project?

Please see the **CCF guidance on measuring economic outcomes** on the CCF website for an explanation of what we mean by direct, indirect and safeguarded jobs.

145	direct jobs (FTE)
22	indirect jobs (FTE)
0	safeguarded jobs (FTE)

Please quantify any other employment outcomes such as apprenticeships, training places or construction jobs.

Part four: Capital projects involving land/buildings/construction only

Only complete this section if your project involves land, buildings or construction-related work with capital costs of over £100,000.

How developed is your capital project?

Please note that we would expect projects that can be delivered within CCF programme timescales to have secured all consents and title prior to the stage two application deadline. We expect that projects should have submitted a planning application before applying at stage one, in order to be able to meet CCF timescales and requirements at stage two. See Part six of the guidance notes for further information.

4.1 Planning approval

Does your capital project require planning permission (including any Listed Building and/or Conservation Area consents)?

If yes, tick the relevant box below:

☐ You have obtained planning permission (if so please attach a copy to your stage one application)

☐ You have applied for planning permission but are yet to have it granted

☒ You are yet to apply for planning permission but you have consulted with your local planning authority

☐ You are yet to consult your local planning authority

What is the name of your local planning authority?

Brighton & Hove City Council

What is the date of the planning committee that will consider your application?

n/a

What is your planning application number?

n/a

4.2 Does your project require any other consents (e.g. Marine Licence, Crown Estate Consent, Harbour Authority Permissions, etc)?

☐ Yes ☒ No

If yes, please provide evidence of your negotiations in securing these consents and state the timetable for decision making, below. You can write up to 1,000 characters (about 150 words).

4.3 Do elements of your project involve works to improve protection against flooding, coastal erosion or to improve bathing water quality?

☒ Yes ☐ No

If yes, does the relevant Flood Risk/Coastal Erosion Risk Management Authority (such as the Environment Agency or Coastal Protection Authority) support the proposal?
Please provide a brief description to support your response. You can write up to 1,000 characters (about 150 words).

The Madeira Terrace "Lockwood Project" Regeneration Project forms part of a wider regeneration strategy for the Eastern Seafront (currently being developed)which will involve the integration of other strategic priorities in the area by the Authority, in this instance acting as the Coastal Protection Authority and accessing funding from the Environment Agency. A specific proposal to develop "pocket parks" along this section of seafront is also currently being bid for. The bid focus is on developing a clear and concise business case for local authorities in England and Wales to deliver 'Nature Smart LIFE Cities' that promote the importance of nature as a means of enabling urban areas to adapt to a changing climate and enhance the volume of green and blue infrastructure.

4.4 Does your project require the acquisition or lease of land/property?

☐ Yes ☒ No

If yes, please provide evidence of your negotiations and state the timetable for securing title, below. Please note that projects are required to have secured a valid title prior to the stage two application deadline (or have a legally-binding contract that the purchase/lease will be completed within one month if an offer of CCF funding is made). Please see CCF capital grant terms and conditions on our website for the duration of lease required. You can write up to 1,000 characters (about 150 words).

4.5 Does your project require building regulations full plans approval?

☒ Yes ☐ No If you are in receipt of this please enclose a copy.

4.6 Does your project have a programme/timetable showing key activities and dates, for example: gaining statutory consents, tendering, appointing contractors, start on site and construction completion dates.

☐ Yes ☒ No If this is available, please enclose a copy.

4.7 Do you have a cash flow for your project showing when you would draw down a CCF award if successful? (Note that capital grant is paid monthly on evidence of expenditure.)

☐ Yes ☒ No If this is available, please enclose a copy.

4.8 Tell us if there are any other constraints that would prevent your project starting on site within six months of an offer of funding, and completing CCF spend by December 2019.

You can write up to 1,000 characters (about 150 words).

Brighton & Hove City Council is in the process of developing a detailed project timetable and financial analysis for the project. This will be ready for the Stage Two application.

Part five: How much will your project cost?

5.1 How much will your project cost and how much would you like from CCF?

You can apply for funding of over £50,000. There is no upper limit. See the guidance notes on the CCF website for details of the funding available in England.

Funding is only available for projects where CCF funding can be fully spent by 31 December 2019.

See Part four of the guidance notes for more information on what we may or may not fund.

- In total project cost, include the cost of everything you'll need for your project, even if you're not asking us to fund it.
- Only include VAT if you can't recover it from HM Revenue and Customs.
- **Revenue costs** include things like salaries, training, travel, venue hire, volunteer expenses, monitoring and evaluation. Include any overheads you want us to fund in your revenue costs. Guidance on how to calculate your organisation's overheads can be found in the full cost recovery section of our website.
- **Capital costs** include things like purchase or lease of land, buildings, equipment or vehicles, construction, refurbishment, survey costs and related professional and statutory fees.

If you're asking us for all the costs make sure the total project cost and amount from CCF are the same.

	Total project cost (£)	Amount from CCF (£)
Revenue	£0.00	£0.00
Capital	£23,617,000.00	£4,000,000.00
Total	£23,617,000.00	£4,000,000.00

5.2 Annual project spending

We need to know when you expect to spend funding from CCF and funding from other sources. Once we agree the spend profile for your grant, there is no guarantee that any slippage from one financial year to another can be accommodated and you may lose any grant which you have not spent within the relevant financial year. Any project spending falling beyond the CCF spend deadline 31 December 2019 will need to be funded from other sources.

Please show the proposed project spending by financial year in the table below. Financial years run from 1 April to 31 March.

	2017/18	2018/19	2019/20 (to 31 Dec 2019)	Spend from January 2020	Total
CCF revenue	£250,000.00	£0.00	£0.00	£0.00	£250,000.00
CCF capital	£0.00	£1,750,000.00	£2,000,000.00	£0.00	£3,750,000.00
Other funding	£0.00	£2,000,000.00	£2,000,000.00	£15,617,000.00	£19,617,000.00
Total	£250,000.00	£3,750,000.00	£4,000,000.00	£15,617,000.00	

5.3 Are the total project costs more than the amount you'd like from CCF?

Yes ☒ No ☐

If yes, where will you get the other funding from and have you secured it yet? For any funding not yet secured, please state the expected decision dates. Please note that where these dates fall beyond the stage two application deadline (see Part seven of the guidance notes) we cannot consider your project for CCF.

Tell us here if the other funding will be used for project activity beyond 31 December 2019. If so, what is the completion date for the overall project? You can write up to 1,000 characters (about 150 words).

The project is intended to proceed in a three phase approach. The first phase will complete in 2019/20. Brighton & Hove City Council is looking for match-funding from CCF to enable this to happen, supported by Council-backed financing (via PWLB, subject to approval). This "pump priming" will allow the first phase of the project to be completed and attract commercial occupants. This approach has been used successfully on previous Council projects, such as the British Airways i360 project.

A cost estimate for regenerating the Madeira Terrace is in Attachment E.

The project team have identified potential indicative occupants for each phase of the project. An estimate of commercial revenues that the Council would receive has been developed based on this analysis.

It is then expected that the other parts of Madeira Terrace will be developed on a primarily commercial basis post-31 December 2019. The exact procurement structure of this is to be determined. It is expected the redevelopment of the entire Madeira Terrace structure will be complete by 2023.

5.4 We need to know whether funding your organisation would be classed as State Aid.

State Aid is a specific legal term arising from the European Union treaty which constitutes financial aid to organisations carrying out economic activity (whether or not for profit) which could distort competition. See Part four of the guidance notes for more information.

Please give details of:

- any specialist legal advice you've received about how State Aid legislation impacts on your

project

- how our funding would affect your competitive or financial position in relation to other organisations providing similar goods or services
- the amount of funding you've received in the last three years that was classed as State Aid.

For more information about State Aid visit www.gov.uk/state-aid

Applicants must complete this question. Failure to comply with State Aid rules may mean we cannot award funding. If a project is in breach of State Aid rules then the funded organisation may be required to repay the funding.

Please note that we may require you to provide specialist legal advice if invited to make a stage two application.

You can write up to 1,000 characters (about 150 words).

Brighton & Hove City Council is in the process of obtaining legal advice on state aid considerations for the project. On the basis that the units planned for the redeveloped Madeira Terraces are to be let solely on commercial terms, it is not judged that there are likely to be any state aid implications with this project.

Part six: About your organisation

For applications from Coastal Community Teams, questions 6.1 to 6.8 and 6.10 should be completed with the details of the organisation that has agreed to act as accountable body for any funding awarded (as answered in question 1.10). Question 6.9 should be completed with the details of the Coastal Community Team contact for your application.

6.1 What is the full legal name of your organisation, as shown on your governing document?

Brighton and Hove Seafront Coastal Community Team

6.2 If your organisation uses a different name in your day to day work, what is it?

6.3 What is the main or registered address for your organisation?

If you are successful, this is where we'll send our decision letter to. So make sure you can safely receive post at this address. We recommend this is your organisation's office address, but if you don't have an office, this may be a home address.

Address	Kings House Grand Avenue Hove East Sussex BN3 2LS

Phone number one	01273 293020
Phone number two or text phone	07795336114
Website	www.brighton-hove.gov.uk

6.4 What is the main email address for your organisation?

This should be the email address people use to contact your organisation. It can be a personal email address if your organisation doesn't have an email address.

nick.hibberd@brighton-hove.gov.uk

6.5 What type of organisation are you?

Select all options that are relevant to you.

Charity	☐
Company or mutual society	☐
Public sector	☒
Other	☐

Give any reference or registration numbers you have:

Charity Commission	
Companies House	
Other reference or registration numbers	

Please send us a copy of your governing document if you are:

- an unincorporated association;
- not a registered charity; or
- a private sector business.

6.6 Is your organisation independent, or a branch or department of a larger organisation?

☒ Independent

☐ Branch or department

If you are a branch or department, what is the name and address of the larger organisation?

6.7 How many people are on the board or committee that runs your organisation?

6.8 Please provide figures from your latest approved accounts.

Select one option and fill in the amounts from your accounts or projection.

☐ Information from the latest accounts approved by your organisation.

☐ 12 month projection because you've been running less than 15 months. This should give your expected income and expenditure for the 12 months from the date your organisation was set up.

Accounting year ending (dd/mm/yyyy):	
Total income for the year:	

Total expenditure for the year:	
Surplus or deficit at the year-end:	
Total savings or reserves at the year-end:	

Your contacts

We need some personal details for **two different people** involved in your application – a **main contact** (the person we'll usually deal with) and **a senior contact** (who must be an office bearer of your organisation).

6.9 Please provide a main contact for your application.

They must be someone who works or volunteers for your organisation.

Title	Mr
Forenames	Nick
Surname	Hibberd
Date of birth	(DD/MM/YYYY)
Organisation	Brighton and Hove City Council
Job title or position	Executive Director Environment Development & Housing, Brighton and Hove City Council

Home address	
	Postcode

Daytime phone	
Evening phone	
Mobile number	
Email	nick.hibberd@brighton-hove.gov.uk

The email address should be one they use in your organisation.

If they have lived at the above address for less than three years please give their previous address.

Address	
	Postcode

Please tell us if your main contact has any communication needs.

☐ We'd like to send you information about Big Lottery Fund and other Lottery good causes. Tick this box if you don't want to receive this information.

6.10 Please provide details of a senior contact for your application.

This needs to be a different person and they must be over 18 years old. This person is responsible for ensuring that this application is supported by the organisation applying, the funded activity is delivered, and that the organisation keeps us updated on progress. For Coastal Community Team applications, the **senior contact** should work in the organisation that will act as accountable body for any funding awarded.

Title	Mrs
Forenames	Katharine
Surname	Pearce
Date of birth	(DD/MM/YYYY)
Organisation	Brighton & Hove City Council
Job title or position	Major Projects Project Manager

Home address	
	Postcode

Daytime phone	+44 (0) 1273 29 2553
Evening phone	
Mobile number	
Email	katharine.pearce@brighton-hove.gov.uk

If they have lived at the above address for less than three years please give their previous address.

Address	
	Postcode

Please tell us if your senior contact has any communication needs.

Part seven: Final steps before you send your application

Please check you have answered all questions as we can't assess your application if it is incomplete.

By submitting this application you confirm that:

- ☒ the senior contact named in this application and the board or committee that runs the organisation have authorised this application
- ☒ your organisation is formally constituted
- ☒ your governing body, management committee or board of directors includes a minimum of three unrelated members
- ☐ if your activity will involve working with children, young people or vulnerable adults you have relevant policies and processes in place
- ☒ you will be able to meet our Standard Terms and Conditions of Grant, and our Additional Terms and Conditions for Capital Grants if your project includes capital works over £100,000 involving land, buildings or other construction-related works, which are available on the CCF website
- ☒ you agree we may use the information you have provided for the purposes described under our Data Protection and Sharing Policy
- ☒ you accept that if information about this application is requested under the Freedom of Information Act we will release it in line with our Freedom of Information Policy

Checklist

Where relevant, please ensure you have enclosed the supporting documents requested in the question numbers below:

- ☐ 1.11 a letter of support from your local Coastal Community Team (CCT) – if your project will be delivered in a CCT area
- ☐ 4.1 confirmation of secured planning permission
- ☐ 4.5 building regulations full plans approval
- ☐ 4.6 capital project programme/timetable
- ☐ 4.7 capital project cash flow
- ☐ 6.5 your governing document - if you are an unincorporated association, not a registered charity, or a private sector business

Data protection

We hold and store your information in line with the Data Protection legislation currently in force. There are circumstances where we will share the information you have provided to us in this application in line with the limitations of legislation. We may share information with organisations and individuals with a legitimate interest in Lottery applications and grants or specific funding programmes. We will use the information you give us during assessment and during the life of your grant (if awarded) to administer and analyse grants and for research purposes. More detail on our protection and sharing approach can be found on the Big Lottery Fund website.

Freedom of Information Act

The Freedom of Information Act 2000 gives members of the public the right to request any information that we hold. This includes information received from third parties, such as, although not limited to grant applicants, grant holders, contractors and people making a complaint.

If information is requested under the Freedom of Information Act we will release it, subject to exemptions; although we may choose to consult with you first. If you think that information you are providing may be exempt from release if requested, you should let us know when you apply.

Our approach to fraud

We value our applicants and grant holders. We know the vast majority of the many thousands who seek and use our funding are genuine people seeking to make a difference to those most in need. However, if you provide false or inaccurate information in your application or at any point in the life of any funding we award you and fraud is identified, we will provide details to fraud prevention agencies to prevent fraud and money laundering. If you are a company this will include the names of the Company Directors at the time of the fraud. You must undertake to inform all Directors, Trustees and Committee members of this notice. You can obtain further details explaining how the information held by fraud prevention agencies may be used by emailing dataprotection@biglotteryfund.org.uk, by phoning our advice line on 0345 4 10 20 30, or by writing to: Customer services, Big Lottery Fund, 2 St James' Gate, Newcastle upon Tyne, NE1 4BE.

If you are unable to view the information on Data Protection and Freedom of Information and need a copy of our policies please contact us at 0345 4 10 20 30.

Attachment A – Contextual photos and maps

Figure 1 – The Madeira Terraces in relation to the seafront and the city centre.

The Terraces link the Marina and the eastern seafront through to the Palace Pier, one of the most prominent landmarks on the Brighton and Hove Seafront and a central footfall site close to the city centre.

Figure 2 – The Arches today

The Terraces extend for approximately 865m along the seafront. An event venue called Concorde 2 still operates in the centre of the stretch of the Terraces (see below).

Figure 3 – Typical arch section and elevation

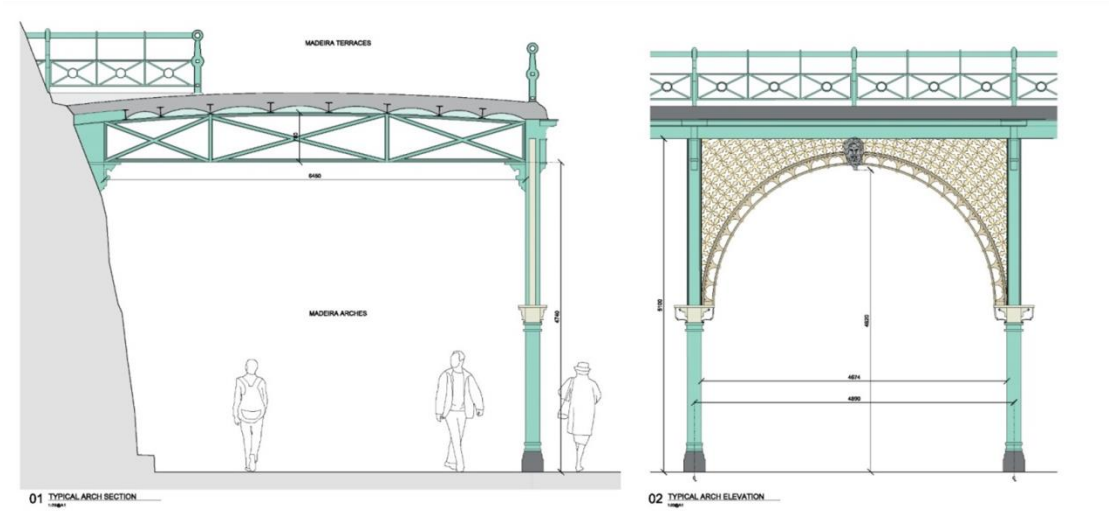
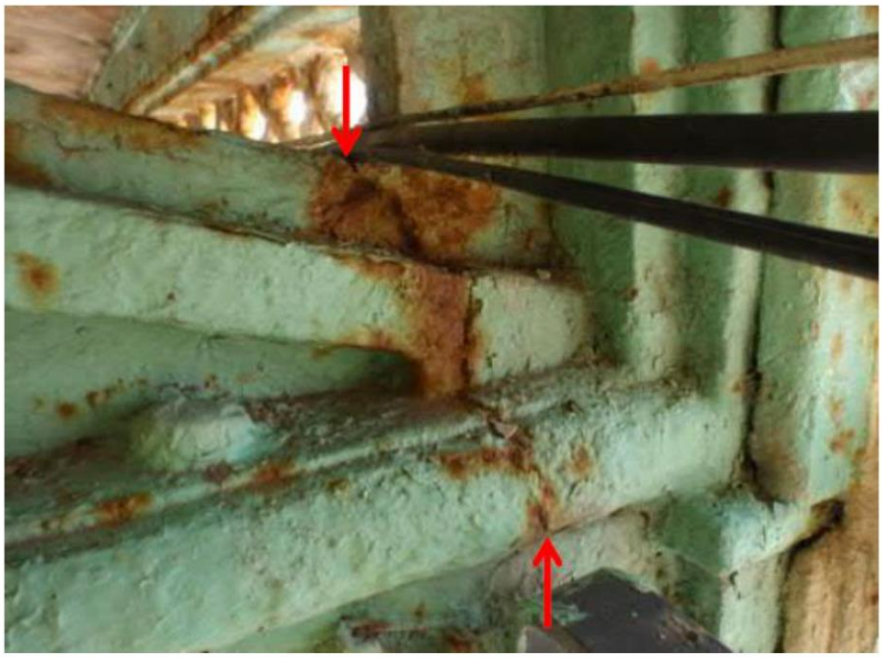


Figure 4 – examples of deterioration

The images below provide some illustration of the weaknesses present throughout the Terraces contributing to their closure.



Attachment B – Visualisations of how the Terraces can be redeveloped

The figures below illustrate how Wilkinson Eyre, the architectural firm, envisage the Terraces could be redeveloped to accommodate commercial use whilst maintaining the heritage nature of the asset.

Attachment C – Recommendations for Remedial Work to the Madeira Terraces

Brighton Madeira Terraces

Recommendations for Remedial Work to the Terrace Structure

Report No. 368587-BNI-BCL-ST01-A

June 2016
Brighton & Hove City Council

Mott MacDonald

Brighton Madeira Terraces

Recommendations for Remedial Work to the Terrace Structure

June 2016

Brighton & Hove City Council

Mott MacDonald, Mott MacDonald House, 8-10 Sydenham Road, Croydon CR0 2EE, United Kingdom
T +44(0) 20 8774 2000 F +44 (0) 20 8681 5706, W www.mottmac.com

Issue and revision record

Revision	Date	Originator	Checker	MM Approver	Description
01	28/06/16	J Haines	N Ling	N Ling	Draft, awaiting client input

Mott MacDonald, Mott MacDonald House, 8-10 Sydenham Road, Croydon CR0 2EE, United Kingdom
T +44(0) 20 8774 2000 F +44 (0) 20 8681 5706, W www.mottmac.com

Contents

1. Introduction

1.1 Scope of Report

The scope of this report is to discuss the feasibility of the structural remedial options for the Madeira Terraces in Brighton. This report forms part of a master plan study, commissioned by Brighton & Hove City Council (BHCC), to review existing asset condition reports and identify options for regeneration of the Madeira Terraces as part of the Eastern Seafront Regeneration Strategy.

Previous inspections by others of the structure have reported on the deterioration of elements and structural defects that have resulted in partial closure of the structure to the public. Mott MacDonald representatives have visited the site but no condition survey or inspection was undertaken. This report is based solely on the available information produced by others.

It looks at the form of the existing structure as described in the inspection reports, discusses the proposed works and provides recommendations for steps to take moving forward, based on the intention to refurbish the Grade II Listed structure and fit out the space beneath the arches for commercial use. Studies have been carried out by Mott MacDonald and Wilkinson Eyre Architects to look into the potential use of the terraces as part of a regeneration appraisal. Consideration was made to renew and enhance the terraces as part of the public realm of the eastern seafront, taking account of its historical context and character.

1.2 Limitations

The sole purpose of this report and the associated services performed by Mott MacDonald is to inform and advise Brighton & Hove City Council (BHCC) in their development of the structural remedial options for the Madeira Terraces in Brighton.

In preparing this report, Mott MacDonald has relied upon, and presumed accurate, information included within the inspection reports prepared by Amey on behalf of Brighton & Hove City Council (BHCC). Except as otherwise stated in the report, Mott MacDonald has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Mott MacDonald derived the data in this report from information sourced from the Client and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observation and conclusions expressed in this report. Mott MacDonald has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Mott MacDonald for use of any part of this report in any other context.

The design described herein is limited by the stage of the project and the designs of other consultants employed by the Client.

This report has been prepared on behalf of, and for the exclusive use of, Brighton & Hove City Council (BHCC), and is subject to, and issued in accordance with, the provisions of the contract between Mott MacDonald and Brighton & Hove City Council (BHCC). Mott MacDonald accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon this report by any third party.

1.3 Status of Design

The advice provided in this report on the refurbishment/repair options for the existing structures of the Madeira Terraces represents an initial appraisal only of the information provided by the Client. Due to the limitations of the available information, the lack of intrusive investigations and of the scope of work of this study, this advice is indicative only at this stage. The a greater understanding of extent of the works required to refurbish the structure will only be known following more a more detailed evaluation and intrusive investigations, including trial works. The full scope of works will only be known when the works are complete on site.

The advice provided on the structure of premises to be constructed beneath the terraces is developed to an early RIBA Stage 1, Preparation, level of detail in conjunction with the Architecture design. There are multiple options available for this structure and the commentary in this report assesses feasibility only at this stage. No reliance should be placed on this advice other than is appropriate for this stage of the design, irrespective of the level of development suggested or implied by the information provided. Any plans, programmes or costing made on the basis of this advice should take full consideration of its stage of development and make appropriate contingencies for risks, further development and change as appropriate.

1.4 Exclusions

The following aspects and issues are excluded from consideration by this report:

- The cliff wall
- Staircases/steps
- Cast iron seating structures and concrete planters
- External works and finishes
- Building services
- Below ground services
- Geotechnical and geo-environmental issues
- Asbestos
- Ecology, landscape and vegetation.

2. Existing Structure

2.1 General

The Madeira Terraces cover a length of approximately 865m beside Madeira Drive along the seafront at Brighton, from the Aquarium Colonnade in the East to the Volks Railway maintenance building in the West, Figure 2.1. The structure is typically a decorative Grade II listed insitu concrete jack arch and steel I-beam deck with cast iron edge beams, lattice beams, columns and spandrels. It is a maximum of 8m wide and located immediately adjacent to a tall, assumed mass concrete retaining wall, behind which is the A259, Marine Parade. There are steps from Marine Parade to the terraces at approximately 125m intervals and a ramp is located at the west end that links the lower and upper levels of the terraces.

Figure 2.1 - Location plan of the terraces

The structure is used by pedestrians at upper and lower levels and it is understood that it has been subject to crowd loading in the past. No vehicle access is permitted on the structure; however vehicular impact to columns is possible due to the area adjacent to the structure currently being used for parking and previously car race events along the seafront.

There is a single storey, Victorian building approximately 750m along the promenade from the West side, which is currently being used as a night-time club and live music venue (Concorde 2). The venue provides a working lift, also Grade II listed, which can be accessed at the road level on Marine Parade. The building features cast iron works similar to the terraces and is operational at present.

The decorative cast iron elements of the structures have particular historic relevance and require conservation. However, due to the marine environment, much of the structure is reported to have corrosive damage causing loss of sections, failed members and connections and the separation of elements.

Several structural inspections of the site have been undertaken by Amey plc on behalf of Brighton & Hove City Council (BHCC) which document the condition and provide recommendation for repair. The assessment reports in Table 2.1 have been referred to during this study.

Table 2.1 – Previously issued inspection reports

Revision	Issue Date	Company	Title	Document Reference
01	January 2013	Amey	Management Report	CO262903/MR
00	October 2013	Amey	Special Inspection 2013	262940/SI01
00	July 2014	Amey	Special Inspection 2014	262941/SI01
01	February 2015	Amey	Special Inspection October 2014	262941/SI02

The most recently issued report reports the closure of bays 13 to 83 due to concern about the condition of the structure. Commencing May 2016, trial works were carried out to bays 22 and 23. The council have advised that the works were intended to replace the deck of these bays to provide a usable section of the terrace however once the deck was removed they found the supporting elements and connections to be in need of repair.

2.2 Structural System

The structural components appear to be simple in nature with clear load paths and functions. The structural load path passes from the concrete jack arch decking to the steel I-beams which are supported on cast iron lattice beams within bracketed connections. The lattice beams span from cast iron columns on the South side to an assumed mass concrete wall or masonry pier on the North depending on the location. The span of each bay is approximately 4.9m and the width varies between approximately 4 – 8m.

Figure 2.2 – Approximate dimensions of a typical bay

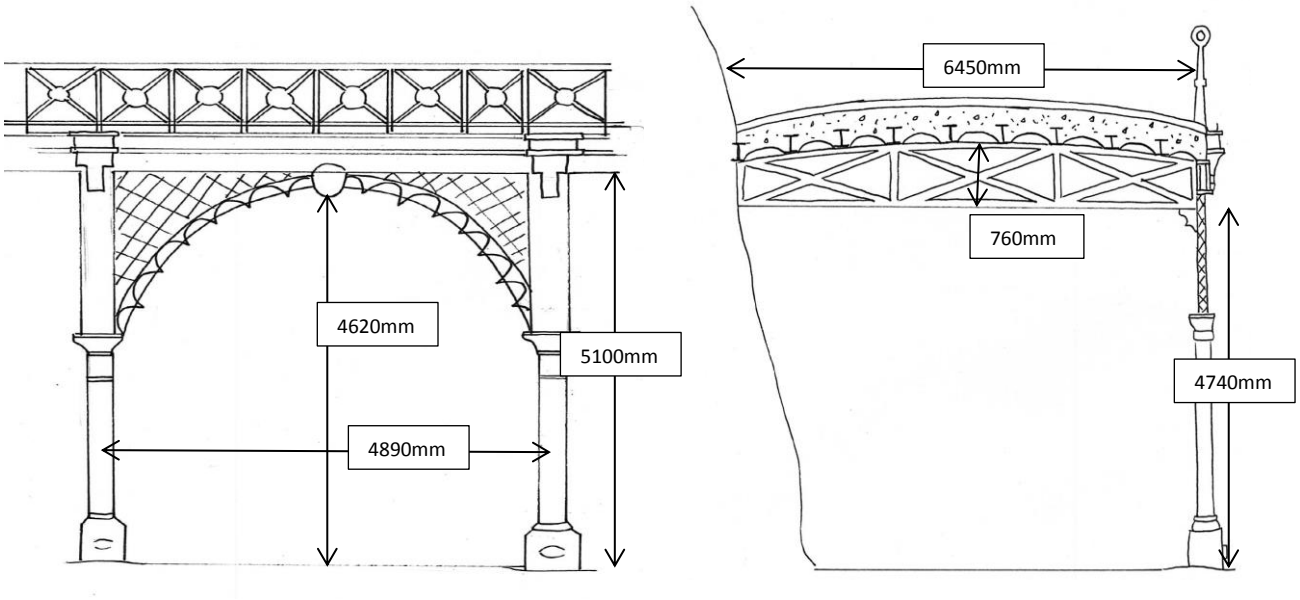


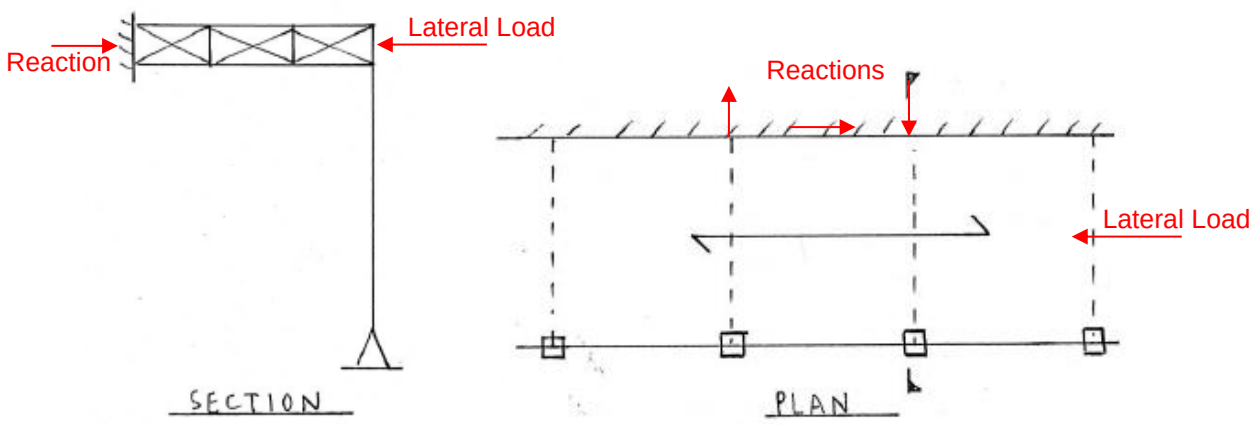
Figure 2.2 shows a typical section where the lattice beam spans from the cast iron column to the mass concrete wall.

Where there are stair cases to Marine Parade, the width of the decking is reduced and the lattice beams typically span onto masonry piers.

The decking system is set with a camber that allows water to drain to both the front and back of the terrace. Water draining to the back (North edge) of the structure flows onto the retaining wall. The retaining wall is covered with vegetation growth that appears in the photographs within the inspection reports to be overgrown and rooting into cracks within the wall. To the front, a cast iron gutter runs along the outside of the edge beam, into a hopper and down through the columns which are hollow with a spout at their base.

Lateral stability to the system is assumed to be provided by the diaphragm action of the decking system against the retaining wall as shown in Figure 2.3. In section, the North-South stability is assumed to be provided by the propping action against the mass retaining wall/masonry pier. The connections to the columns are assumed to be pinned.

Figure 2.3 – Structural stability systems



2.3 Structural Defects

The structural defects described in the four reports referred to in Table 2.1 have been compiled into a summary table, included in Appendix A. It lists the particular defects which are reported by Amey to be present in the various members for the 151 bays and severity of these as described in the reports.

It should be noted that the number of bays inspected was different for each of the Amey reports and there were a number of limitations associated with the inspections. They were non-invasive and mostly based on visuals from ground level without removal of the multiple layers of paint. It is assumed that a number of latent defects will present as the works begin onsite, particularly as the paint is removed.

As for the current reported defects, the following general conclusions have been drawn:

- The structure is heavily corroded, visible in almost all elements, but most severely in the steel I-beams and bolted connections.
- The concrete jack arch deck is insufficient in preventing water penetration through the structure. It is also experiencing cracking, spalling and crazing in most bays.
- A small number of the cast iron lattice beams appear to have fractures that are considered to be severe. Additionally, a few of the cast iron edge beams appear to have various cracks and fractures. A few parapet posts and plates appear to have fractured and the majority of plates are moderately corroded at the surface. The cast iron spandrels appear to have a few fractures and are seen to be separating at the edge plates along the sides against the column and along the top against the edge beam bottom flanges. There are also missing decorative mask elements from the spandrels.
- Most cast iron elements exhibit corrosion, rust staining and bulging to various degrees.
- The drainage system is generally blocked with sections missing, broken and/or mis-aligned, preventing water run-off from of the structure.

- The masonry piers feature a number of cracks to both the brickwork and mortar which have become covered in moss and vegetation. There are also several displacements of brick courses that have led to loose bricks that pose risk of falling.

- No information is provided regarding the stepped access to the upper level of the terrace and to road level.

- The green wall is overgrown and rooting into the cracks of the retaining wall. No information on the structural integrity of the wall is provided.

- No information on the state of Concorde 2 has been provided in the inspection reports; however the structure is currently occupied and hence assumed to be in a condition adequate for its use.

Note that these conclusions are limited by the available information and , as previously stated, additional latent defects are likely to be found following further investigations.

3. Proposed Refurbishment Works

The proposed refurbishment works for the terraces are intended to repair the deck and supporting structure such that is capable of withstanding pedestrian loading at the upper and lower levels. The works aim to refurbish the structure, prevent further decay, give the structure an agreed design life subject to ongoing maintenance and allow for premises to be inserted into bays, beneath the terraces at a later date. The repair works are based on the assumption the structure will be dismantled and refurbished offsite.

The option for preventing further decay and then providing a temporary works solution for the deck has been discussed with the client. However, it was considered to be an expensive solution considering the number of bays needing to be propped and the effectiveness of the repairs was questioned. This solution wouldn't allow for premises to be installed beneath due to the temporary structures occupying the lower level.

The option for carrying out in-situ repairs was also considered but an off-site repair route was favoured due to the environmental, health and safety and access limitations associated with in-situ repairs. In-situ repairs would not allow a full refurbishment and potentially would not reveal hidden defects under paint layers and within connections. The quality of the repair and the working conditions are improved by taking elements off-site.

Premises modules are to be built within the void space under the arches. There are several options for the construction of these modules however the assumed adopted method for pricing purposes is to use a 'flat pack' construction type, made of prefabricated timber SIPS, precast elements or similar. A full design of the modules is to be produced at a later stage. Ground level will be excavated and a raft foundation constructed, such that finish floor level within the units is flush with pavement level when they are installed. It is envisaged that the floor, walls and ceiling, complete with cladding and waterproofing layers, are lifted into place from inside the arch, allowing a gap around the pod for ventilation. Units may be connected to create double, triple etc. module spaces.

The unit spaces will tie in with the proposed redevelopment of the Victorian structure between grid lines 117a and 117n currently occupied as Concorde 2, Figure 3.1.

3.1 Concorde 2

There is no condition report for the building however anticipated repairs might include:

- To refurbish or replace windows.
- Refurbishment and strengthening works to the roof and roof leadwork.
- New building services such as the lift, basic lighting and fire safety services.
- Refurbish/replacement of rainwater goods.
- Refurbish/replace timber fascias/soffits etc.
- Structural repairs to the iron work.
- Internal and external decorations.

This list is not exhaustive but indicates the types of work that might be required to refurbish the outside shell and core of the structure such that the external space can be fitted out by tenants as desired. The scope of these works is to be confirmed following a full condition survey, assessment of the structure and the development of proposals for its intended use.

Figure 3.1 – Victorian building currently occupied as Concorde 2

3.2 External Seating

There is currently external seating provided at locations along the upper level. There is no condition survey for the seating and the extent of the works involved is unknown. It is assumed at this stage that the seating will be removed, repaired and reinstated and as such a provisional sum has been included for these works.

Figure 3.2 – Seating areas provided at the upper promenade level

4. Remedial Options

4.1 Steel I-beams and Concrete Jack Arch Decking

The steel I-beam and concrete jack arch system in its current condition is considered in the Amey reports to be not fit for purpose and proposing a risk of safety in terms of the utilisation of the steel beams in bending. Capacity has been assessed by Amey to be far less than the 5kN/m² associated with crowd loading however assumptions of loss of section of the steel beams would have been made as beams are not accessible.

Figure 4.1 – Steel I-beams with concrete jack arches removed

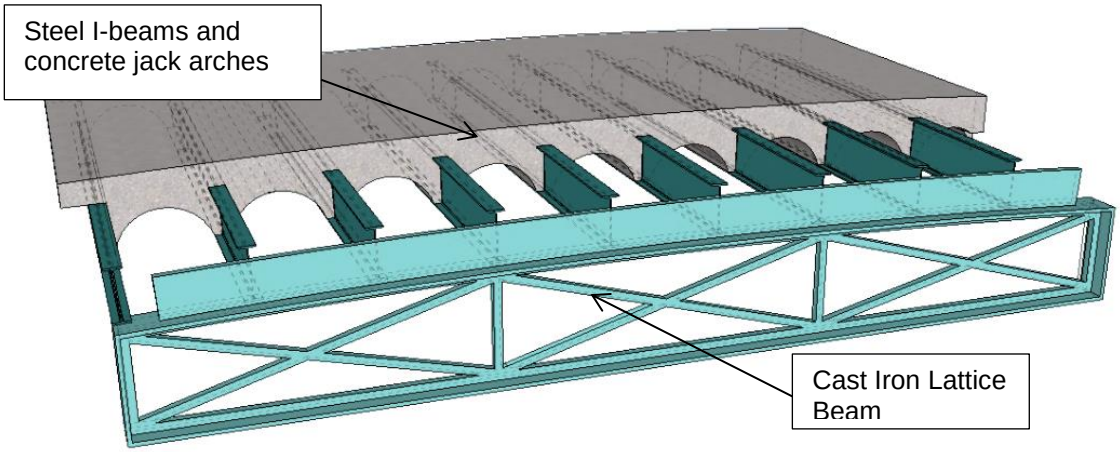
The described deteriorated nature suggests that the unreinforced concrete is carbonated and chlorinated causing spalling and rusting of the steelwork. There is a need to remove the decking from the structure in order to further inspect the supporting elements, replace the steel I-beams and install a new waterproofing system without locking in moisture already contained within the slabs.

As such, it is recommended that the concrete jack arch system should be removed and then both the steel I-beams and concrete arches replaced as new. The considered options for replacement of the decking system include a like-for-like replacement of the steel I-beams and concrete jack arches or a modern replacement option that uses a vaulted precast concrete system, spanning without the need for the steel beams.

The like-for-like replacement would use steel beams that have a 100mm maximum flange width in order to slot into the cast iron lattice beam connection brackets. The time period of the original construction, 1890's, would lead to the assumption that the beams are early steel of low grade and quality. Use of S355 steel grade is recommended to obtain an increase in capacity whilst using the same approximate dimensions. A

protective paint system of a high quality specification, further discussed in Section 4.9, is applied to the beams prior to being brought to site. The concrete jack arches are then to be cast in-situ. Appropriate admixtures may be introduced to increase the concrete durability and resistance to the marine environment.

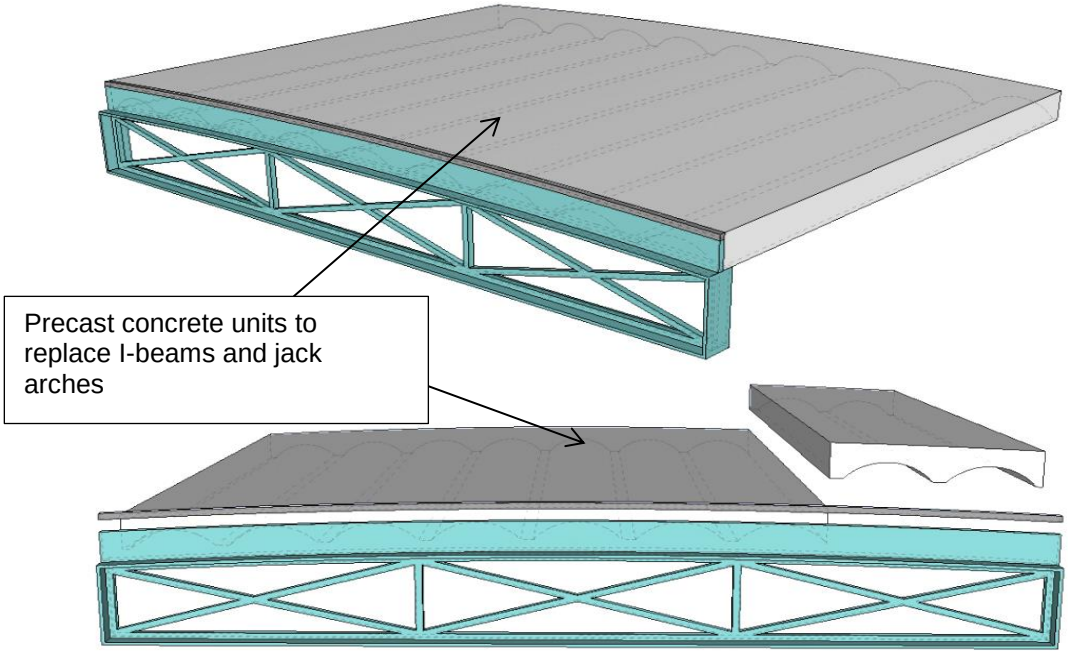
Figure 4.2 - Steel I-beam and in-situ jack arch replacement



Alternatively, a modern replacement option could adopt a vaulted precast system, cast in sections of 2-3 arches, such that the number of units can be adjusted to suit the various bay widths possible.

A typical maximum depth of 300mm at the 'beam' section of the vault, will achieve the span-to-depth requirements whilst reducing the overall thickness and weight of the decking system compared to the current system. This may ultimately reduce the load on the cast-iron support system.

Figure 4.3 - Precast concrete vaulted arch deck replacement



Consideration should be made to the thermal expansion and shrinkage effects of the decking system selected.

4.2 Waterproofing and Surfacing

Following the reinstatement of the deck, a protective sheet membrane or similar should be installed to provide sufficient waterproofing to protect the structure.

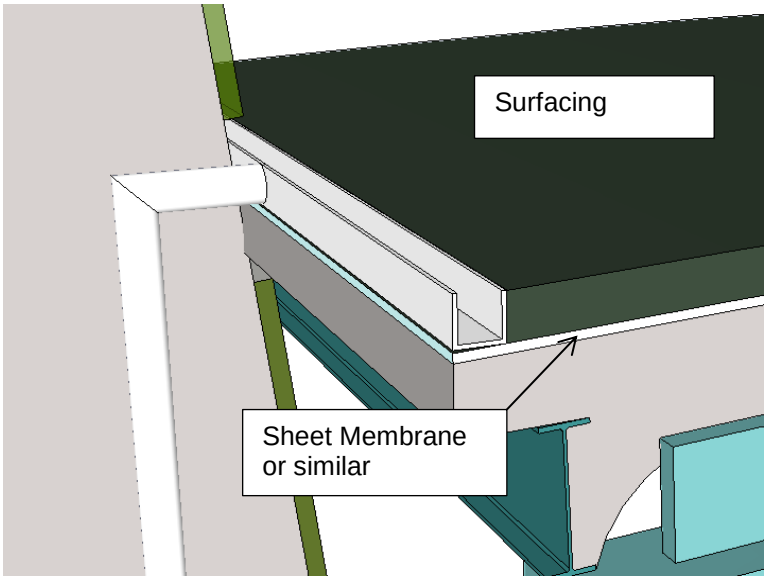
The Amey investigations show that the corrosion is most prevalent immediately adjacent to the lattice beams where the construction joints allow water penetration. The detail at these joints should be considered to ensure continuity of the waterproofing system across the joints.

The dead weight of the deck slab could be reduced by the adoption of an epoxy waterproofing & surfacing system such as Cicol ET or similar, rather than the bituminous surfacing currently in place. Laying of such surfacing would avoid the potential need for vibrating rollers on the deck which could induce and propagate any cracks in the cast iron. Also, the reduced thickness could benefit the parapet height which is currently not deemed to be compliant modern standards. The use of thinner surfacing may well result in level complications at the access locations and suitability of laying on high falls should be considered.

The cambered deck encourages water run off to the front and back of the terrace. At present there is no guttering provided at the back and water is allowed to run off onto the retaining wall and it's covering vegetation. A proposed solution is to provide a gutter along the back of the terrace that fits within the tarmac/surfacing layer and includes down pipes that are cast in to the concrete retaining wall.

This would prevent water flowing down onto the wall, improve water management around the cast iron structure and accommodate for any inserted modules in the future. The drainage system, including the front side, is further discussed in Section 4.8.

Figure 4.4 - Waterproofing and surfacing



4.3 Cast Iron Lattice Beams

The Amey inspection assessments highlight that 3 of the main cast iron lattice beams which were surveyed are known to have fractures that compromise the structural integrity of the members. 1 additional beam has a less severe fracture.

It is anticipated however that latent defects will be uncovered during the works since the inspections were done visually where members are coated in multiple layers of paint and the member is in a stressed state, possibly preventing cracks from opening. An allowance should therefore be made for additional replacements and/or major repair works.

Figure 4.5 – Cast iron lattice beams

The beams will require grit blast cleaning, repair works, salt washing and painting with a proprietary protective system as described in Section 4.8. The repairs are assumed to be carried out offsite in a controlled environment. This has the benefits of allowing heat control during welding, health and safety control and increased precision. There is however a risk of unlocking stresses during the disassemblement that causes cracking.

The following repair options may be feasible and might be preferable to re-casting and replacement:

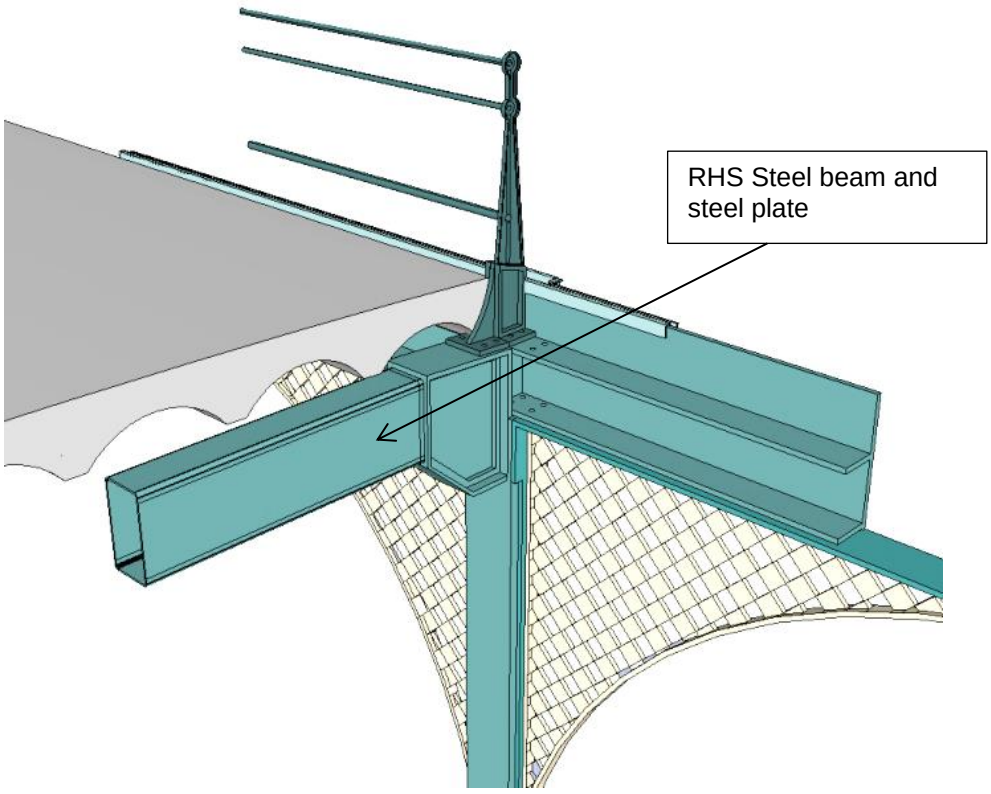
- Metalock mechanical stitching of cracks.
- Steel / Carbon fibre plate bonding of cracks.
- Metal welding by a specialist subcontractor under a controlled environment, subject to check of metallurgy and weld procedure trials.

There are again two suggested options for the replacement of the lattice beams. A like-for-like replacement would recast the lattice beam in its entirety. This involves making a pattern and a mould for the beam type that can be used to make subsequent beams of the same span.

The load capacity of the lattice beam and the metallurgy of the cast iron is unknown. It is assumed, based on the historic loading to the structure that the existing beams will have the capacity, once in its repaired state, to withstand the desired pedestrian load requirements. However this requires further study.

A modern replacement option could be to span using an RHS steel beam approximately 450mm deep with a fabricated steel plate end that fits into the cast iron connection arrangement along the southern edge. The beam would be coated with a high quality proprietary paint system. Although the modern replacement would look different to the remaining bays, the increased headroom would make the bay more suitable for a two bay module unit with mezzanine floor. In this case, the beam would not be seen externally with the other lattice beams and the difference would be disguised.

Figure 4.6 - Modern lattice beam replacement RHS beam and steel plates



In order to take down the lattice beams, the connection into the mass concrete retaining wall or brickwork piers will have to be broken out. The repair works in the vicinity of these connections and the connection detail is further discussed in Section 4.11. On reinstatement the lattice beam should be protected from water at this connection.

4.4 Cast Iron Edge Beams

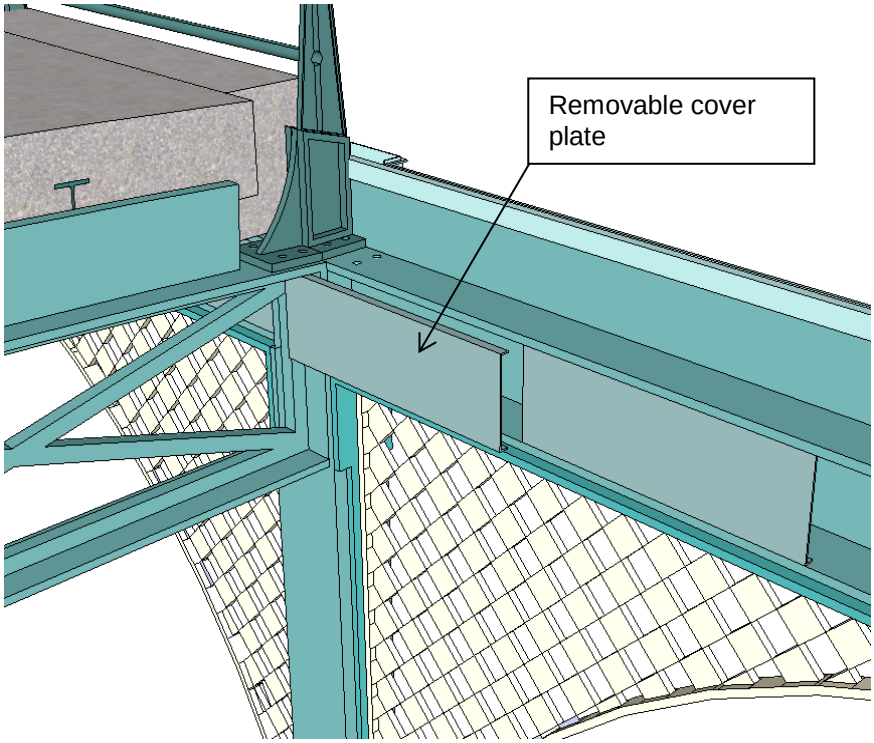
The Amey inspection reports suggest that the condition of the cast iron edge beams is generally good structurally however various cracks have been highlighted. It is anticipated that these cracks can be repaired using, for example, plate bonding; however a contingency for beam replacements should also be made for any serious defects discovered during the works. The beams are to be disassembled, grit blasted, salt washed, repaired and painted as per the lattice beams. Minor and major latent defects are likely to be found which should be repaired accordingly. Similarly to the lattice beams, the load capacity of the edge beam is unknown.

Figure 4.7 – Cast iron edge beam

Bolting of strengthening plates is not recommended due to stress concentrations in the cast iron due to drilled holes and torqueing of bolts. Future rust forcing of the mild steel elements is also a risk. Plate bonding using either steel plates or carbon fibre plates is preferred. Plate bonding can be utilised both for shear and tension bending. Metalock cold stitching would be appropriate for repair of shear cracks if appropriately specified.

The current edge beam plate on the inside of the terrace provided a problem for access during the inspections. A number of plates have reportedly fallen off or had been taken down. Amey have suggested that all are removed to allow the access and future maintenance, however within these voids pigeons had been found to be nesting. It is hence suggested to install a removable plate, made from a non-corrosive material, into the back of the edge beam.

Figure 4.8 - Removable cover plate for edge beams

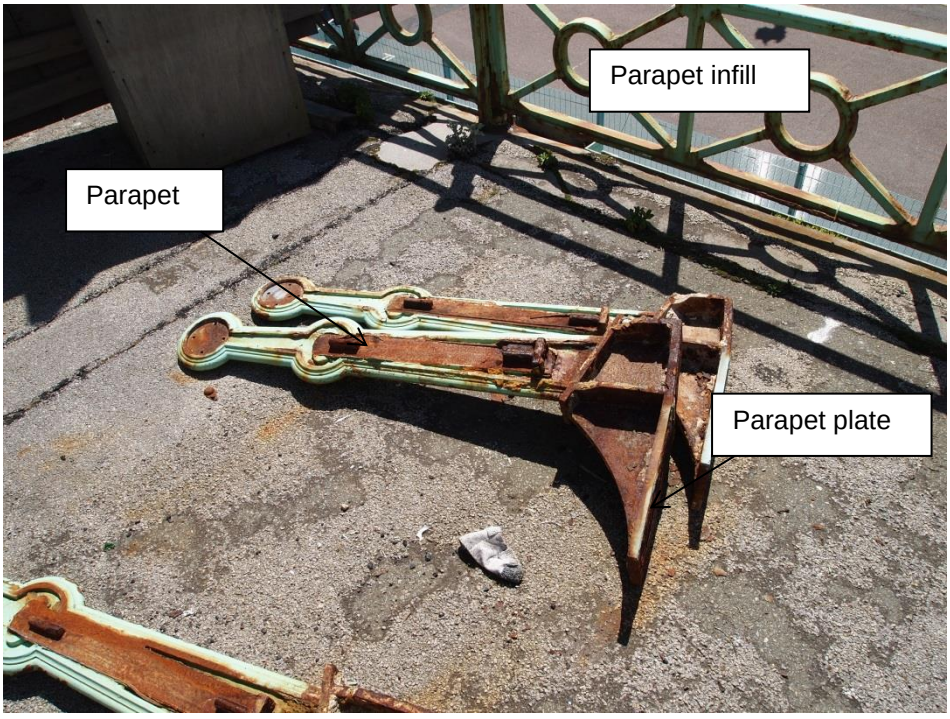


4.5 Cast Iron Parapets and Parapet Plates

The Amey inspections found that the majority of the parapet base plates are moderately corroded at the surface. There are also a number of known fractures in the plates, at least 1 per bay recorded in approximately 18% of the bays surveyed. It appears that cracking has occurred to the base plate at the final pair of connecting bolts. The bolts appear to be corroding which may have induced cracking due to rust forcing which should be confirmed following closer inspections.

It also appears that the base plate provides a secondary function of splicing the top flanges of the cast iron truss to the top flange of the edge beams which in turn are bolted to the top of the column.

Figure 4.9 – Cast iron parapets, parapet plates and infills



It is worth undertaking a local assessment of this connection as it may perform satisfactorily as is. However at present, no analysis has been performed on the parapet plates and posts and therefore these cracks within the parapet base plates are assumed to compromise the bending capacity of the plates. It is suggested these plates are repaired or replaced.

Replacement in steel would not be preferable as it would eventually corrode and damage the cast iron. If the final pair of bolts are found to be necessary, the following options may be appropriate:

1. Enhancing strength of connection by bonding the base plate to the top flange of the cast iron truss using structural adhesive.

2. Repair of the base plate by welding may be possible under a controlled environment by a specialist subcontractor, subject to checking the metallurgy and weld procedure trials.

At present, the height of the current parapet posts handrail system is not considered adequate to current statutory requirements. Should the system be required to resist crowd loading and provide pedestrian containment, then it may not be adequate and the entire system may need to be recast.

There are several possible solutions for parapets that include:

1. Refurbish and replace where necessary the parapet posts and parapet base plates and undertake an analysis that can provide justification for the height of the handrails. This may incorporate the history of the structure and its safety record.

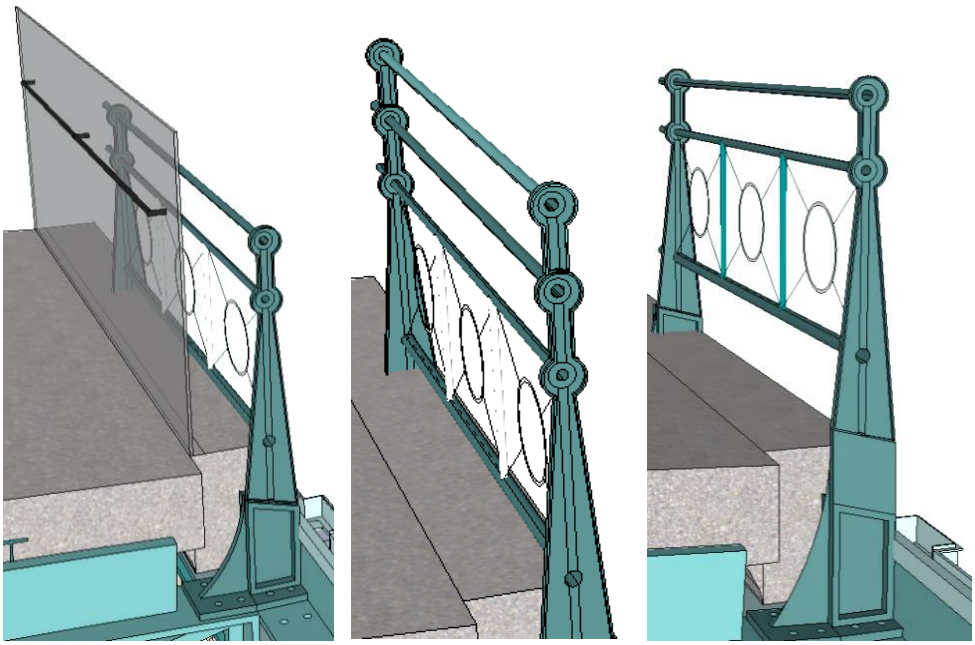
2. Refurbish and replace where necessary the parapet and parapet base plates and provide a secondary system that complies with statutory requirements on the inside of the existing parapet.

3. Refurbish and replace where necessary the parapet and parapet base plates, undertake an analysis that can provide justification for the proposed loads and then fabricate a ‘bolt on’ handrail piece to increase the height to statutory requirements.

4. Refurbish and replace where necessary the parapet base plates and replace all parapets with additional in-built upstand height to achieve the statutory requirements. An analysis should be performed for the design of this system to withstand the proposed loads.

These solutions assume that the openings in the parapet infill between the posts are satisfactory to suit statutory requirements. No information has been provided on the parapet infills and their condition is unknown. This scope of works assumes no replacements are required however a detailed survey should be carried out to better understand to works involved.

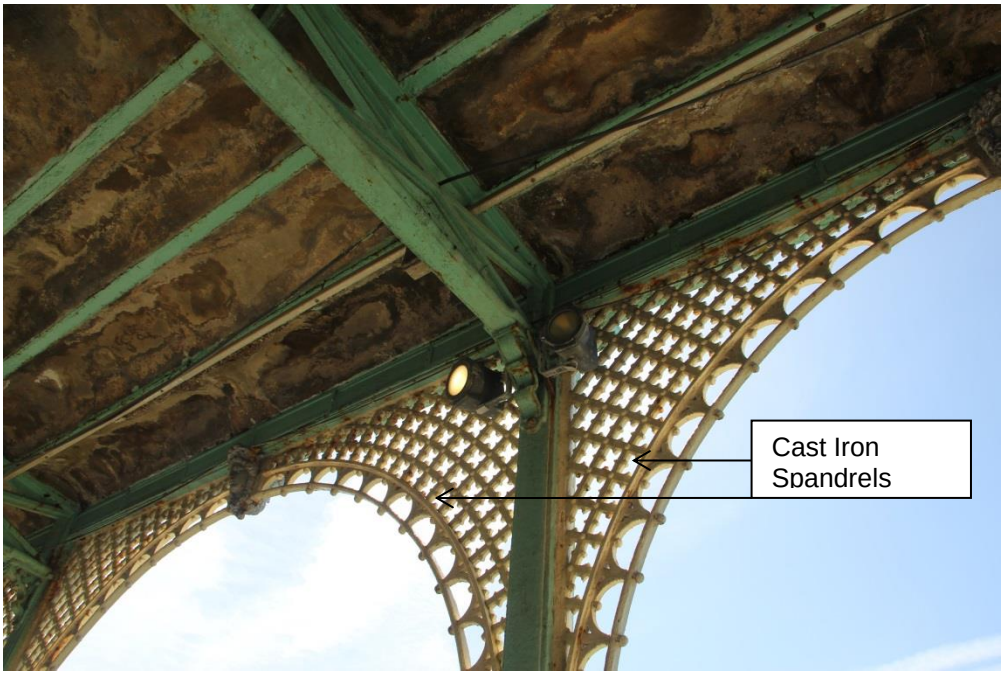
Figure 4.10 - Parapet handrail options 2 – 4 (Left –Right)



4.6 Cast Iron Spandrels

As discussed in Section 2.2, it is assumed that the cast iron spandrels are not structural although they may provide lateral stiffening to the portal formed by the columns and edge beams.

Figure 4.11 – Cast iron spandrels



The current view is that fractures in the spandrels shall be repaired however from previous experience it is possible that on release from its stressed state the spandrel may fracture and/or fall apart. The primary objective of any repairs would be to safeguard against whole sections or small parts of the spandrels falling and causing injury or damage to third parties.

Various options exist to contain, restrain or repair and this might be preferable to wholesale re-casting and replacement.

The types of repairs might include:

- Metalock mechanical stitching of cracks.
- Metal welding by a specialist subcontractor under a controlled environment, subject to check of metallurgy and weld procedure trials.

There appear to be hidden connections into the hollow columns which would be challenging to reinstate. Cast iron elements are often built up in a defined sequence and often have to be fully dismantled in the reverse order to gain access to certain connections.

Many of the spandrels inspected by Amey are experiencing separation between the top plate and the bottom flange of the edge beam or between the side plate and the column. It is expected that cleaning the connecting elements, cutting back corroded metal to reach sound material and providing new bolts and

washers will achieve a flush connection without gaps. Should gaps remain, filling them with a waterproof sealant could help to prevent water ingress.

For both the columns and the spandrels several missing sections were recorded, namely the shoulder plate sections and the decorative mask at the meet point of the spandrel arches. Since these elements are described as decorative only, they are not to be replaced as part of the structural works considerations. Nevertheless, decorative masks would be feasible to re-cast and reinstate should it be required.

4.7 Cast Iron Columns

The recorded defects in the columns are not described as severe or to be affecting their structural capacity. It is assumed for now therefore that no columns are to be recast and that should defects be found during the works they will be repairable. However there is a risk that more severe defects maybe be found. The casting of hollow columns is difficult and might well now be a lost trade. The use of Metalock cold stitching could be used to repair any fractures.

It is advised that columns are inspected using an endoscope through the hollow section onsite to check the condition of the columns. Offsite, once in the factory, the columns can be cleaned both inside and out before being lined for continued use as a drainpipe.

Figure 4.12 – Cast iron columns

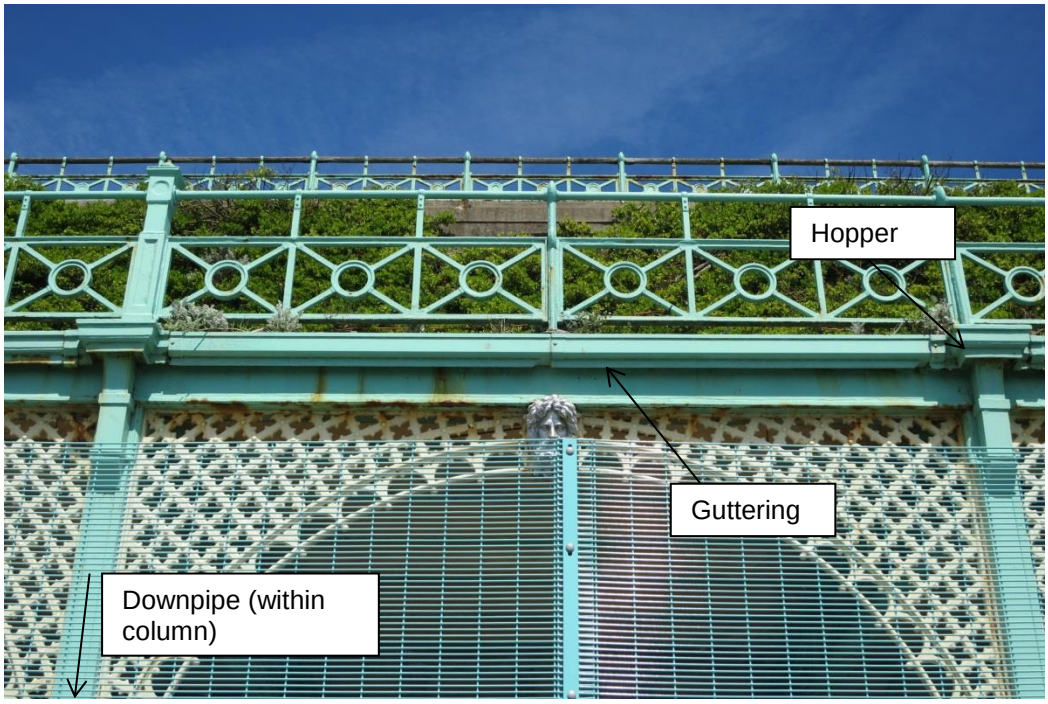
The load capacity of the column should also be tested for the desired use of the structure.

4.8 Drainage

It can be concluded from the Amey inspection reports that the existing rainwater drainage system is damaged, blocked or non-existent in many areas. This is a primary cause of the water retention on the structure, encouraging the corrosive mechanisms.

The precamber of the deck allows water run off both the front and rear of the structure. Much of the front gutter is described as poorly aligned and not watertight between sections. A full removal and reinstatement is recommended by Amey, using watertight seals between sections and corrosion protected fixings. Where sections of the guttering, mainly the hopper, are reportedly missing, a functional replacement in a more durable material is suggested to keep the continuity of the drain. It is anticipated that approximately 50% of the guttering, hoppers and downpipes will need to be replaced for a like-for-like design. The remaining will need to be cleaned and repaired as per the other cast iron elements.

Figure 4.13 – Rainwater drainage system along front face



The front downpipe is proposed to continue to be positioned inside the column but the column may be lined to protect the inside surface.

As described previously, it is proposed that the rear of the structure is to be fitted with a new drainage channel with down pipes cast in to the retaining wall. The drain pipes should be located at the midspan of the decks, away from the lattice beams supports. At the supports a flashing detail around the drainage channel should provide a waterproof seal between the gutter and lattice beams.

The rear drainage should consider the potential for modules to be inserted beneath the terrace and allow for water to be drained away.

4.9 Paintwork

A full protective proprietary system is required for all steel and cast iron elements, designed to protect in an aggressive environment, C5M environment as per ISO 12944.

On consultation with Akzo Nobel a preliminary specification has been prepared for the cast iron elements, included in Appendix B. The steel elements will have a similar specification to achieve the required protection.

A maintenance scheme should be prepared for the upkeep of the painting system.

4.10 Bolted Connections

The reports recommend replacement of all bolts as a high priority. Being cast iron, the structural components have clear 'joinery' and the functions of many of the bolts should be assessed to consider how critical they are. Corroding bolts do however have the potential for cracking the cast iron due to rust forcing, particularly where steel replacement bolts have been used. Care must be taken not to specify higher grade bolts and the tensioning thereof as these have the potential of cracking the cast iron. This might have been the case for some of the historical repairs. If cracking has not already been highlighted it might be exposed when paint is removed.

4.11 Retaining Wall

The assessment of the retaining wall is outside the scope of the Amey works. However, the typical works involved are indicated in the inspection reports to be the removal of vegetation growth, attention to the stability and movement of the wall and its waterproofing.

The retaining wall will need to be opened up in order to disassemble and install a new support for the lattice beams. The durability of the connection for the lattice beam is reliant on the integrity of the cliff wall and also its water absorption properties. Consideration will need to be made to the detail of the support as to prevent further corrosion within the wall, such as applying a bitumen coating and then backfilling the void with concrete.

4.12 Masonry Piers

The masonry piers will also need to be opened up to disassemble the lattice beams. The bricks will be taken down to remove the lattice beams and the piers then repaired as necessary. The repairs might include stitch repairs to cracks and repointing of the mortar and also the replacement of any loose bricks. There is a risk with the masonry piers that opening them to extract the lattice beams may cause further damage and more bricks to come loose/fall away. Any replacement brickwork is to be keyed into the existing to ensure adequate load transfer.

4.13 Foundations

No information is provided for the type or condition of the foundations. The works required are to be confirmed following ground investigation works. The foundation system should tie in with the proposed raft foundations for the module units.

4.14 Stairs

Stairs are located at approximately 125m intervals along the terraces. No information is provided with regards to the condition of the stairwells and their assessment is beyond the scope of these works.

4.15 Collision Protection

Should the adjacent area be continued to be used by vehicles then a collision protection system should be installed. Cast iron is not suited to withstand impact loading and the lack of redundancy within the framing system could result in local collapse of the slab above. Mitigating measures could include trief kerbs, heavy planters, bollards or full vehicle restraint systems. A suggested option would be to use 2 no. 1000mm tall bollards at 1500mm spacings at each column.

5. Risks and Assumptions

Area of Work	Risk / Assumption	Consequences	Risk Control Measures / Actions to Mitigate	Owner
DESIGN	Prescribed project works are dependent on the quality and quantity of information available regarding condition/strength of the terraces as detailed within the Amey inspection reports. Limitations associated with these reports are transferred and only the defects highlighted in these reports are known and dealt with in this design.	Additional project work involved if defects are uncovered following a new assessment/during site works. More elements may need repairs or replacing, creating additional costs and adding to the programme.	Take a comprehensive record of all defects described in the four currently available reports. State assumptions regarding existing information and the type of works involved. Include a contingency for anticipated additional repairs and/or replacements. Carry out a trial implementation of the proposed methodology on a section of the structure to determine potential issues/strategised costs.	BHCC/MM
DESIGN	The disassemblement and repair/replace works to each bay assume that the adjacent structure will remain stable during the works.	Works may cause further damages and deterioration to adjacent bays. Stability of the terraces may be compromised requiring emergency propping works.	State assumptions as part of proposal/scope such that the contractor can provide adequate stabilising temporary structures during the works.	BHCC
DESIGN	The lateral stability of the system is assumed to be provided by the diaphragm action of the decking system against the retaining wall. Spandrels are assumed to be decorative elements only.	Spandrels may fracture due to lateral stresses.	Ensure the design of the terraces utilises the diaphragm action of the decking, making the deck sufficiently stiff to provide restraint.	BHCC
DESIGN	The works are based on the assumption that the members will be disassembled and taken to a factory for the refurbishment.	Any works performed onsite require additional control measures in terms of the environment, health and safety and precision of work. The finish at edges and connections may be of lesser quality than if taken offsite due to accessibility.	State assumptions as part of proposal/scope and agree an offsite suite of works with client and contractor.	BHCC/MM
DESIGN - LATTICE BEAMS	The lattice beam support condition within the concrete wall / masonry piers is unknown.	The support may be in poor condition, unable to support the lattice beams and protect it from future corrosion.	It has been assumed that all padstone are to be broken out and replaced as new when the lattice beams are reinstated. A protective infill will be included to retain the watertightness of the support. Contingency required for works.	BHCC
DESIGN- DECKING	Expansion and contraction due to temperature effects	Temperature effects may be contributing to the deterioration of the structure.	Study required to assess temperature effects and any remedial measures required.	BHCC
DESIGN -	It is assumed based on the	The supporting elements	Strength tests should be	BHCC

LATTICE BEAMS, EDGE BEAMS, COLUMNS	historic loading to the structure that the existing cast iron lattice beams, edge beams and columns will have the desired capacity following the refurbishment works.	may require strengthening works to support the desired loading.	performed on the cast iron elements. Details of the metallurgy and a full inspection of each element will help to provide an understanding of strength. Strengthening works may be required or limitations are given for the use of the structure.	
DESIGN - PARAPET	Suggested solutions for the parapet and parapet posts are assuming that the bending strength of the parapet post, the plate and infill material are sufficient for current standard parapet loading. Also that the gaps in the parapet fence are satisfactory to statutory requirements.	May require additional works to upgrade parapet to current statutory requirements.	State assumptions as part of the proposed works and include solutions that satisfy the requirements. Contingency required.	BHCC
DESIGN - DRAINAGE	Missing sections of guttering considered decorative will not be replaced with like-for-like cast iron pieces. Cast Iron decorative mask sections will also not to be replaced.	Aesthetics are not the exact same as original terraces construction.	State intentions within report. Consult and agree with Historic England.	BHCC
DESIGN - MASONRY PIERS	Masonry bricks may become loose or fall away during the works.	Masonry piers may require more repair works than immediately present.	Highlight risk to contractor.	BHCC
EXISTING PAINTWORK	Existing paintwork may contain lead.	Risk to health of workers. Working with lead regulations apply.	In-situ paint testing. Off-site refurbishment.	BHCC
EXISTING FOUNDATIONS	Unknown type and condition of foundations.	May require demolition to remove columns.	Allow contingency for new foundations in pricing.	MM
DAMAGE FROM VEHICLES	Vehicle impact could cause significant structural failure.	Risk to health and safety of users, plus risk of disproportionate collapse.	Protection measures required.	BHCC
CLIFF WALL	Cliff wall in poor structural condition.	Wall requires repairs.	BHCC to commission survey and investigation. Any works required should be implemented before or during terrace works.	BHCC
CLIFF WALL VEGETATION	Damage by planting to cliff wall and terrace structure. Damage to planting from new works.	Further deterioration of wall and structure following the refurbishment works. Planting may be incompatible with reinstatement of terraces and installation of useable internal space beneath.	BHCC to commission study to determine appropriate plan for the future of the green wall which is compatible with the future of the Madeira terraces.	BHCC
FUTURE MAINTENANCE	Refurbished structure is not properly maintained.	Structure will deteriorate again without a properly implemented maintenance strategy.	Design decisions that affect the durability and maintenance to include a strategy, developed with BHCC, to ensure maintenance obligations are understood, achievable and budgeted for.	BHCC
STAIRCASES	Not considered as part of this study.	Possible defects which may need rectifying.	BHCC to commission surveys and investigations to determine the works required.	BHCC
CONCORDE 2	Potential defects in the fabric and structure.	Repair and refurbishment required.	BHCC to commission surveys and investigations to determine the works required.	BHCC

6. Recommendations for Future Work

It is recommended that the next steps for this project are as follows:

1. Carry out a detailed structural survey, bay-by-bay, of the entire structure to complement existing information.

2. Carry out a detailed survey of Concorde 2 and prepare a scope of works for its refurbishment and development.

3. Paint samples should be taken to determine the lead content. At this stage it should be assumed that working with lead regulations will apply. The Amey reports make reference to unknown fillers which may well be white lead paste.

4. Carry out trial pits for foundations and existing services survey for the terraces and Concorde 2.

5. Develop the concept design for the refurbishment. Issues to address regarding the deck design include:

    - Providing lateral restraint to the top flange of the cast iron whilst avoiding concrete adhesion to the cast iron.

    - Details for the joints at the lattice beam should be developed to ensure watertightness.

    - A practical and maintainable solution of the surface water drainage should be developed.

    - Consideration of temperature expansion and contraction.

    - Consideration to the durability of reinforcement and/or pre-stressed tendons should be made.

6. The components not already assessed should be subject to a structural analysis for load capacity. The analysis would also help to determine the repair types required.

7. Undertake a further trial for the disassembly, repair and replacement of a minimum of 2 bays but preferably a sample of 5% of the bays that includes the ‘worst’, ‘average’ and ‘good’ areas. The paint from the cast iron elements should be removed to base metal and a touching distance survey carried out. Defects should be logged and assessed where necessary and generic repairs developed, costed and implemented. This study will aim to determine the presence of latent defects, determine typical costs for the works and ultimately assist with pricing of the whole scheme.

8. Material testing and strength testing during this trial will improve understanding of the cast iron properties.

9. Paint trials should be undertaken to validate the suitability of any proposed paint system prior to wholesale application.

Appendix A - Defects Summary Table

Information

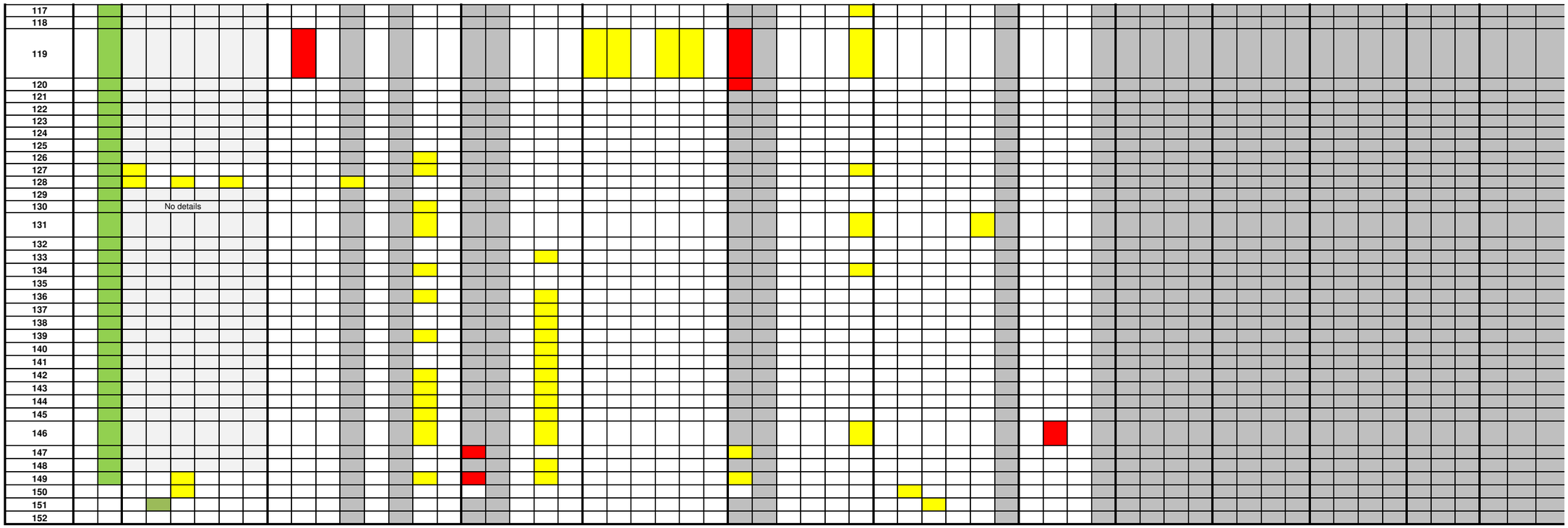
This information is based on the recorded defects as described in the Amey inspection and management reports. The key for the urgency of the repairs is based on the recommendations within the Amey reports in terms of timescales for commencing work and the described severity of the defect.

Urgency of Repair

- Short Term for Structural Function
- Short Term for Safety of Public
- Immediately for Safety of Public
- Works required generally across all bays for particular element

Grid Line/ Bay Number	Steel Deck Beams		Concrete Jack Arches						Cast Iron Lattice Beams								Parapet & Parapet Base Plates					Masonry Piers						Cast Iron Edge Beams						Columns						Spandrels				Guttering				Hopper				Down Pipe				Paintwork			Waterproofing & Resurfacing		
	Corrosion	Exceedance of Capacity	Minor Cracking	Major Cracking	Spalling	Water leakage through deck	Crazing	Moss Present	Corroded Previous Splice Connection	Cracking/Fracture	Corroded Sections	Corroded Bolted Connections	Pitting	Pigeon Nesting	Displacements/Gaps to Spandrels	Member Bulging	Corroded Bolted Connections to Lattice Beams	Corroded Base Plates	Fracture in Plate	Recessed Shanks	Separation of Parapet Base Plate from Lattice Beams	Minor Cracking	Major Cracking	Displacements	Moss and Vegetation	Missing Mortar Joints	Spalling	Corroded Bolted Connections	Cover Plate Removed - Beneficial	Member Bulging	Pigeon Nesting	Fractures/Cracks	Displacement / Gaps	Corroded Bolted Connections	Fractures/Cracks	Loss of Section	Skewed Bolts	Displacements/Gaps to Spandrels	No Collision Protection	Missing Elements	Fractures/Cracks	Corrosion	Rust Staining	Damaged Drainage	Blocked Drainage	Non-Existent	Poor alignment/fitting	Damaged Drainage	Blocked Drainage	Non-Existent	Poor alignment/fitting	Damaged Drainage	Blocked Drainage	Non-Existent	Poor alignment/fitting	Multiple Layers of Inappropriate Paint System	Water Entrapment Behind Paint	Fully Protective System Not Present	Water Borne Chloride Concentration	Leakage	Ponding
DEFECTS RECORDED IN INSPECTION REPORTS																																																												
ALL																																																													
1																																																												
2																																																												
3																																																												
4																																																												
5				No details																																																										
6																																																												
7																																																												
8																																																												
9																																																												
10																																																												
11																																																												
12																																																												
Closed Off	13																																																												
Closed Off	14																																																												
Closed Off	15																																																												
Closed Off	16																																																												
Closed Off	17																																																												
Closed Off	18																																																											
Closed Off	19																																																											
Closed Off	20																																																											
Closed Off	21				No details																																																								
Trial Bay	22																																																											
Trial Bay	23																																																											
Closed Off	24																																																											
Closed Off	25																																																											
Closed Off	26																																																											
Closed Off	27																																																											
Closed Off	28																																																											
Closed Off	29																																																											
Closed Off	30																																																											
Closed Off	31																																																											
Closed Off	32																																																											
Closed Off	33																																																											
Closed Off	34				No details																																																								
Closed Off	35																																																											
Closed Off	36																																																											
Closed Off	37																																																											
Closed Off	38																																																											
Closed Off	39																																																											
Closed Off	40																																																											
Closed Off	41																																																											

Closed Off	42	
Closed Off	43	
Closed Off	44	No details
Closed Off	45	
Closed Off	46	
Closed Off	47	
Closed Off	48	
Closed Off	49	No details
Closed Off	50	
Closed Off	51	
Closed Off	52	No details
Closed Off	53	
Closed Off	54	
Closed Off	55	
Closed Off	56	
Closed Off	57	
Closed Off	58	No details
Closed Off	59	
Closed Off	60	
Closed Off	61	
Closed Off	62	
Closed Off	63	
Closed Off	64	
Closed Off	65	
Closed Off	66	
Closed Off	67	No details
Closed Off	68	
Closed Off	69	
Closed Off	70	
Closed Off	71	
Closed Off	72	
Closed Off	73	
Closed Off	74	
Closed Off	75	
Closed Off	76	
Closed Off	77	
Closed Off	78	
Closed Off	79	
Closed Off	80	
Closed Off	81	
Closed Off	82	
	83	
	84	
	85	
	86	
	87	
	88	
	89	
	90	
	91	
	92	
	93	
	94	
	95	
	96	
	97	
	98	
	99	
	100	No details
	101	
	102	
	103	
	104	
	105	
	106	
	107	
	108	
	109	
	110	
	111	
	112	
	113	
	114	
	115	
	116	


117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
No details

Grid Line/ Bay Number	
	COMMENTS FOR BAY
ALL	Typically all spandrels have rust staining to varying degrees. Most edge beam cover plates have been removed, considered beneficial to allow inspections. Typically edge to edge beam connections have suffered severe corrosion, with coning and over 50% section loss to the nuts and 50 – 80% section loss to bolt heads. Top bolts connecting to the parapet base plate varied in condition from minor corrosion to complete failure. No collision protection is provided to the columns. Pigeon nesting can be found generally within the voids in the edge beams. Parapet plates are considered moderately corroded at the surface of the majority.
1	Fractures present in lattice work and top plates. The top plate is rotated out of alignment. Diagonal fractures up to 10mm wide are present in edge beams causing a 20mm displacement at connection. 4 tie bars fixed to edge beams to prevent displacements. Hopper has fractured at the web and is rotated out of alignment.
2	Fractures and subsequent missing shoulder plate sections. Vertical gaps from spandrel to column and/or main beam viewed from outside at ground level at the east edge & along 75% height adjacent to column. 4 tie bars fixed to edge beams. Suspected fracture at spandrel bracket to column.
3	Suspected fracture to the column-spandrel connecting bracket of column 3 which supports spandrel.
4	
5	
6	
7	
8	
9	Fractures and subsequent missing shoulder plate sections.
10	
11	
12	Fractures and subsequent missing shoulder plate sections. Rust staining from corrosion. Suspected fracture in lattice work.
13	
14	
15	Fracture in parapet base plate.
16	Fracture in parapet base plate.
17	Decorative mask missing. Fractures and subsequent missing shoulder plate sections. Suspected fracture in parapet base plate. Separation between spandrel and edge beam.
18	
19	Decorative mask missing
20	
21	
22	
23	Severe fracture at column to edge beam to spandrel connection.
24	Concrete spalling 25 - 83mm deep.
25	Concrete spalling 25 - 83mm deep. 1mm wide fracture in parapet base plate.
26	Concrete spalling 25 - 83mm deep. Separation at the bottom flange of the edge beam. Fracture in parapet base plate.
27	Concrete spalling 25 - 83mm deep.
28	Concrete spalling 25 - 83mm deep. Separation between spandrel and edge beam at centre of both east and west lattices - 5 mm max displacements. 20mm wide fracture in parapet base plate both sides.
29	Concrete spalling 25 - 83mm deep. 5mm gap at base plate between parapet and lattice beam. Fractured parapet plate.
30	Separation between spandrel and edge beam at inner half of east lattice, 5 mm max displacements. 2.5mm wide fracture in parapet base plate.
31	1mm wide fracture to bottom flange resulting in 4mm displacements of edge beam, downwards and outwards. Separation between spandrel and edge beam of 7mm. Suspected fracture in spandrel.
32	3.5mm wide fracture in parapet base plate.
33	Fractures and subsequent missing shoulder plate sections.
34	
35	Fractures and subsequent missing shoulder plate sections. 0.5mm wide fracture in parapet base plate.
36	Hairline fracture in parapet base plate.
37	3mm wide fracture in parapet base plate. Suspected fracture in spandrel.
38	Separation between spandrel and edge beam at centre half of west lattice, 7 mm max displacements.
39	
40	Vertical gaps at east edge, adjacent to main beam - 8mm. 2.5mm wide fracture in parapet base plate. Crack in edge beam cover plate.
41	Lattice beam needs to be propped immediately. Diagonal crack 5mm wide and vertical crack 1mm wide in main lattice beam.
42	Two diagonal cracks of max width 0.4mm in parapet base plate.
43	Decorative mask missing. Separation between spandrel and edge beam at outer half of east lattice, 8 mm max displacements.
44	Separation between spandrel and edge beam along 75% of east lattice,- 3 mm max displacements.
45	
46	Diagonal crack 0.9mm in arch H. Hairline cracking on all other arches, 2mm width. Corroded edge-to-edge beam bolt heads.
47	A number of cracks in more than 50% of the arches. Longitudinal hair line and small diagonal cracks. Suggested differential movement of supporting beams. Corroded edge-to-edge beam bolt nuts.
48	13.5mm separation at parapet base plate.
49	Separation between spandrel and edge beam at inner half of east lattice, 8 mm max displacements. Corrosion to the eastern half of the spandrel. 15% section loss to spandrel top plate.
50	Vertical gaps, 6mm, at east edge between spandrel and main beam.
51	Large area (640mm x 540mm x 79mm deep previously) 710mm x 570mm x 80mm deep of spalling. 19mm displacement in brick course. Mortar loss/cracking also present of max width 7.5mm.
52	Vertical gaps, 10mm, at spandrel along east edge 60-70% height adjacent to column.
53	Vertical gaps, 10mm, at spandrel along east edge 60-70% height adjacent to column.
54	Severe spalling in arch B, measuring 350x300mm x 42mm deep. Separation between spandrel and edge beam, 20mm max displacement to full extent of east lattice, 20 mm at west end & 7 mm adjacent to column.
55	Gaps between spandrel and edge beam at outer half of east lattice, 7 mm max displacements. Vertical gaps, 5mm, at east edge 50% height adjacent to column and main beam.
56	Vertical gaps, 7mm, at east edge, adjacent to main beam. Fractured parapet base plate.
57	5mm wide fracture west and a hairline fracture east side in parapet base plate.
58	Central third of west lattice, 4 mm max displacements. Vertical gaps, 5mm, at east edge, adjacent to main beam.
59	Spandrel to edge beam separation along >75% of west lattice, 7 mm max displacements.
60	Spandrel to edge beam separation at centre of west lattice, 6 mm max displacements. Fractured parapet base plate.
61	Hairline wide fracture in parapet base plate.
62	Fractured parapet base plate.
63	Decorative mask missing. Severe double fracture in line with bolts in parapet base plate.
64	Spandrel to edge beam separation isolated throughout, 5 mm max displacements to edge beam.
65	Tear measuring 100 x 20mm to diagonal chord of main lattice beam. Separation of 20mm. Not considered a significant defect.
66	
67	
68	4mm wide fracture in parapet base plate both sides.
69	
70	

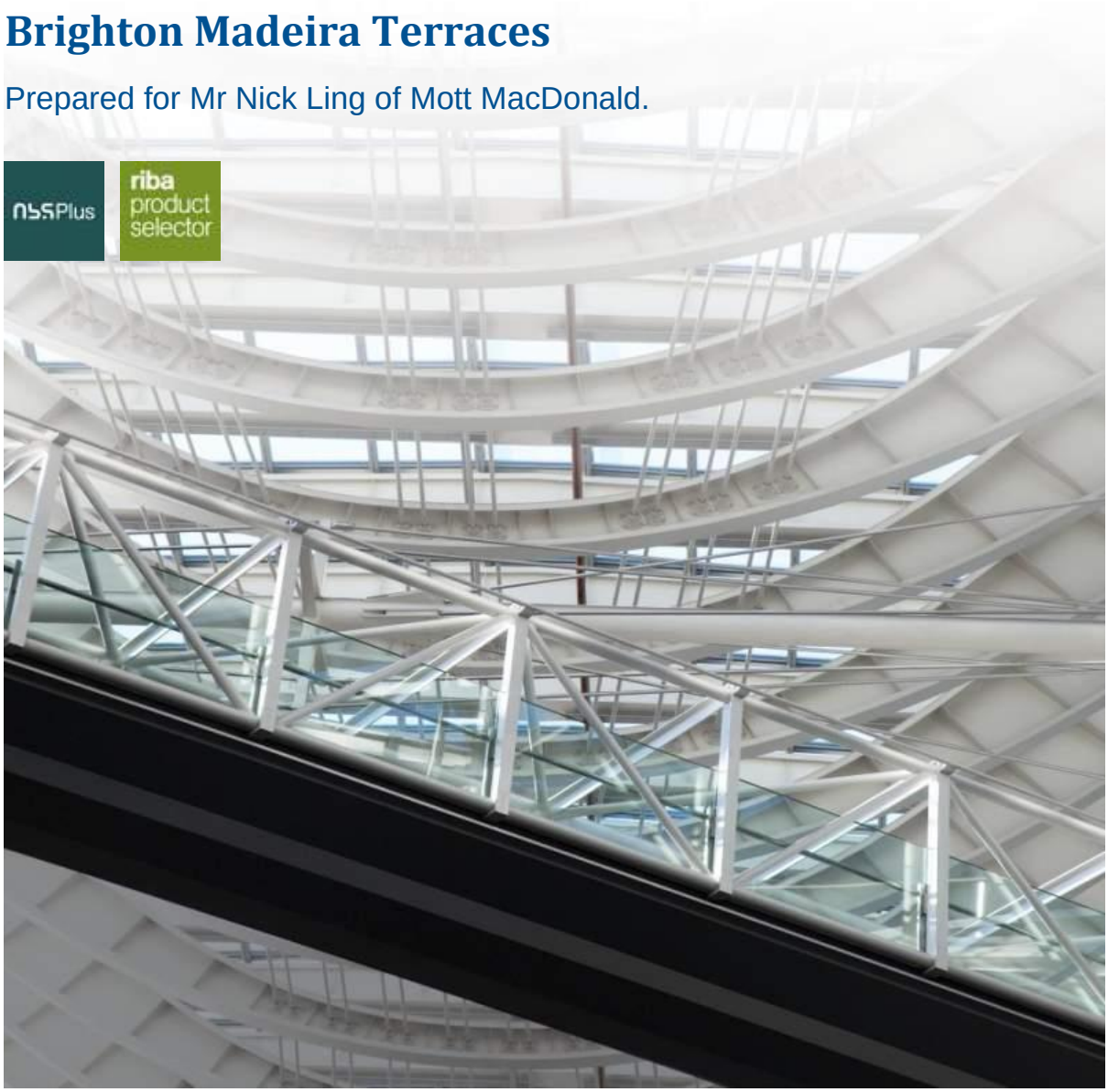
71	
72	
73	Southern arch contains approx. 25% spalling (from 30-45mm previously) up to 50mm deep. Need to be propped immediately. Fractures in the bottom chord of the main lattice beam measuring approximately 5.5 mm in width and 10mm in depth, with localised displacement of between 2.6 and 4 mm . Evidence of corrosion observed to the East face to the upper diagonal chord, in the vicinity of the edge beam and rear jack arches; and to the West face where faces were welded.
74	Spandrel to edge beam separation to full extent both lattices. Filler previously applied, 15 mm max displacements.
75	Corrosion to the east end of the top plate in the vicinity of the fixing bolt. Large crack in pier continues seven courses down with a width (ranging between 4.4 and 13.8mm) up to 16mm, and a 3.1 mm crack through a brick directly above this crack. Spalling of 25.8mm. Cracking and spalling in padstone. Mortar joints missing resulting in a gap of 7mm. Supporting bracket to lattice has displaced by 12.5mm. Spandrel top plate corroded with up to 15% section loss.
76	Fractures and subsequent missing shoulder plate sections.
77	1mm wide fracture in parapet base plate.
78	14mm wide fracture in parapet base plate.
79	
80	
81	
82	
83	
84	Vertical gaps at west edge, approx. 25% adjacent to column - 6mm. Diagonal crack in brickwork up to 1.6mm wide. Spalling up to 26.3mm deep. Displacements outwards and vertically.
85	
86	Vertical gaps at west edge, adjacent to main beam - 10mm.
87	
88	Spandrel to edge beam separation to full extent east lattice, 47 mm max displacements. 25mm separation at main beam and parapet base plate.
89	
90	Vertical gaps between column and spandrel at east edge north-south separation adjacent to main beam, max displacement 30mm. Multiple fractures to spandrel.
91	5mm wide fracture in parapet base plate.
92	Vertical gaps at east edge, adjacent to main beam - 8mm.
93	
94	
95	Multiple fractures to spandrel.
96	Spandrel to column separation along west edge, adjacent to main beam: expansion deformation due to corrosion.
97	
98	
99	Vertical displacement at west edge, top 50% adjacent to column and main beam - 8mm.
100	
101	
102	
103	Vertical displacement at east edge north-south separation adjacent to main beam - 5mm.
104	4.5mm wide west and 2mm east fractures in parapet base plates.
105	
106	
107	
108	
109	
110	
111	Vertical displacement at west edge, adjacent to main beam - 5mm.
112	Vertical displacement at east edge, adjacent to column at mid-height - 9mm.
113	
114	Fractures and subsequent missing shoulder plate sections.
115	
116	
117	Spandrel to edge beam separation along full extent of edge beam, partially infilled, 20 mm max displacements.
118	
119	Should be repaired within the next two years (now is permanently propped with over its full length by a good condition UB). Fracture in the bottom chord of the main lattice beam measuring 4.5 mm in width. Displacement to east lattice (infilled) 30mm max. Up to 15 mm gap to west lattice. Partially infilled gap of max 20mm at parapet to edge beam connection. 2 piers in conjunction with a UB provides propping to cracked lattice beam. Piers showing mortar loss up to 10mm deep.
120	
121	
122	
123	
124	
125	
126	Vertical displacement at west edge, adjacent to main beam - 7mm.
127	Vertical displacement at east edge, adjacent to main beam. 1:24 approx. outward lean of spandrel.
128	
129	
130	Vertical displacement at west edge, adjacent to main beam - 5mm.
131	Spandrel to edge beam separation at centre of west lattice, 6 mm max displacements. Vertical displacements to east edge, adjacent to column full height (5 mm to both edges adjacent to main beams).
132	
133	
134	Vertical displacement at east edge, top 50% adjacent to column and main beam - 10mm.
135	
136	Vertical displacement at west edge, adjacent to main beam - 3mm.
137	
138	
139	Vertical displacement at west edge, adjacent to main beam - 9mm.
140	
141	
142	Vertical displacement at west edge, adjacent to main beam - 6mm.
143	Vertical displacement at west edge, adjacent to main beam - 5mm.
144	Vertical displacement at west edge, adjacent to main beam - 5mm.
145	Vertical displacement at west edge, adjacent to main beam - 6mm.
146	Fracture causing displacement of top plate of approximately 10 mm. Previously filled with unknown material. Spandrel to edge beam vertical separation at west edge, adjacent to main beam - 3mm.Fracture in spandrel.

147	
148	
149	Vertical displacement at west edge, adjacent to main beam - 13mm. Jack arch repair in good condition.
150	Jack arch repair in good condition. Fracture to top of column and top plate at column to spandrel bracket. Considered cosmetic only.
151	Outside face of the column missing. Jack arch repair in good condition. Recently repaired pier in good condition.
152	Jack arch repair in good condition.

Appendix B – Paint Specification

High Performance Coatings for Cast Iron Structure Brighton Madeira Terraces

Prepared for Mr Nick Ling of Mott MacDonald.



Ian R Baldry
UK Business Development
T: 01386 860028
M: 07836 218257
E: ian.baldry@akzonobel.com

Martin Fenny
Technical Support Desk
T: 0191 4012186
E: martin.fenny@akzonobel.com

Contents

PROTECTIVE COATING SYSTEM

643 Two pack fast curing epoxy zinc phosphate/mio,epoxy mio, acrylic polysiloxane compliant coating

• Use/Location	All external exposed cast iron steelwork.(C5 Environment as per ISO 12944 Classification – To provide 25 years Life to First Major Maintenance)
• Paint Manufacturer	International® Paint Ltd
• Shop Preparation	High Power water wash to remove any salts. Gritblast to Preparation Grade Sa2½.Check for soluble salts. Readings <75gms/ m^2 of soluble salts allowed prior to application of the coating system. If readings >75gms/m^2 of soluble salts then above process to be repeated until salt levels are an acceptable level.
• Shop Primer	Intercure 200
• Dry Film Thickness	75 microns nominal
• Colour	Red,Buff
• Special Requirements	VOC: 200 gms/kg Volume Solids: 67%
• Shop Undercoat(s)	Intercure® 384
• Dry Film Thickness	125 microns nominal per coat.(Apply two coats).
• Colour	Silver, Natural
• Special Requirements	VOC: 169 gms/kg Volume Solids: 72%
• Shop Top Coat	Interfine® 979
• Dry Film Thickness	100 microns nominal
• Colour	As required
• Special Requirements	VOC: 162 gms/kg Volume Solids: 76% Epoxy Polysiloxanes and Polyurethanes are explicitly not approved

Refer to International Protective Coatings' Interfine® 979 Recommended Working Procedures to be read in conjunction with the Interfine® 979 technical data sheet and material safety data sheet (MSDS). Provided information is to be strictly adhered to. Any painted areas damaged in transit or following erection to be touched up in accordance with International Protective Coatings recommendation.

Attachment D - Economic impact assessment assumptions

The economic impact assessment focuses on the number of net jobs and net additional level of Gross Value Added realised as a result of the space within Madeira Terraces becoming utilised as commercial units. The economic impact assessment has been completed using Mott MacDonald's Transparent Economic Assessment Model (TEAM), which is a versatile tool designed to calculate the economic impact of proposed infrastructure intervention and policy measures.

Using preliminary data on land use within the renovated Terraces as well as high level assumptions based on governmental guidance and best practice to run the input data through TEAM, estimates can be made regards the impact of creating commercial space within the Terraces in terms of number of net additional jobs and contribution to GVA.

What is GVA?

GVA is most commonly understood as the value of the output (i.e. sales, turnover) minus the cost of bought-in goods and services used in the production of that output (intermediate consumption). Intermediate consumption relates to costs used in the production process (these could relate to raw materials, rental costs, utilities, transport, legal and business costs etc.). When jobs are facilitated in the local economy their salaries and associated investment from their employer contribute positively to local GVA. The ONS calculate regional estimates for GVA per filled job in each region.

GVA is used to calculate Gross Domestic Product (GDP) for national accounting purposes. GDP cannot be calculated at the level of the individual business, which renders it an infeasible metric for measuring economic activity at sub-national or industry level. Therefore, as is standard practice, we estimate economic impact of interventions through contribution to the local/regional economy in terms of GVA.

The potential economic benefits of those development units and sites identified within the Phase 3 improvement works areas have been calculated through the following steps:

- Inputting of key site details into TEAM including the site of sizes and proposed land uses (by land use classification) and the key assumptions. These are based on preliminary plans for each of the commercial units emerging from the Wilkinson Eyre-Mott MacDonald architectural and structural engineering team. Due to the preliminary nature of this study most assumptions around employment densities and economic multipliers are based on governmental recommended best practice, but where possible given the presence of local data, these have been adjusted to increase accuracy.
- Calculation of direct economic impacts through feeding the proposed uses by size through TEAM to calculate:
  - Direct effects of the units/sites in terms of employment and economic output (measured by GVA) of the sites being fully occupied/developed.
  - Indirect and induced effects of the units/sites being occupied/developed from those supported further down the supply chain and employment and activity supported by the incomes of those directly or indirectly employed (through consumption multiplier effects).
  - The economic impacts have been presented at both a gross and net level throughout the analysis. The net position adjusts the gross impacts for additionality and deadweight by considering what levels of employment are already present within the development areas.

Land use assumptions within TEAM relate to type of use, land utilisation and occupancy levels and employment densities of the potential development areas. These assumptions are fully listed in this section of the report and the tables below and have been undertaken on a site by site basis using information about the development proposed. It is important to note that:

- An occupancy rate of 100% has been used for all potential development areas as we are presenting the total economic benefit that could be realised from these vacant premises being developed and becoming occupied. As the site is currently vacant, it has been modelled that development brought forward at these units would boost the occupancy rate to 100%.
- In cases where Net Internal Area is not yet estimated, a building footprint of 80% has been used; as the units will not include large spaces such as car parks or gardens that would lead to a lower proportion (from best practice assumption of 50%), it is likely that the full net internal area of the properties will be used for the appropriate land use. A floorspace footprint of 90% to convert gross external areas to net internal areas (where applicable) has been used.
- Estimates for employment in hostels and hotels are based on estimates of the number of rooms/beds within the allocated development space. For the hostel employment space, the lower range estimate for average room size for a budget hotel has been used ($16m^2$). For the hotel it is understood that a boutique hotel would occupy this space; for which an average room size of $60m^2$.
- Given the nature of the development, it has been assumed that all development will be one storey.
- Employment densities are sourced from the HCA Employment Density Guide.

- GVA per worker estimates are based on Average GVA per worker for the South East 2015, using NUTS 1 GVA workplace data and Workforce Jobs (both ONS).

Additionality assumptions

The impacts have been adjusted for additionality to provide estimates of the potential net additional impact that the developments will bring to Brighton and Hove (the target area). It is useful to think of additionality in the following terms:

> 'the success of government intervention in terms of increasing output or employment in a target area is usually assessed in terms of its 'additionality'. This is its net, rather than its gross, impact after making allowances for what would have happened in the absence of the intervention. Additionality can also be referred to as a 'supply side' or 'structural' impact, which operates by altering the productive capacity of the economy' (Source: HM Treasury, The Green Book, p.52) .

The economic impacts and assumptions developed (particularly around additionality) have been assessed using best practice guidelines, the latest employment densities from the HCA, the latest GVA and other relevant economic data. The level of additionality for each of the sites has been assessed based on adjusting for the following to determine the net additional impacts:

- Degree of leakage - the level of benefits that are likely to go to residents outside of Brighton and Hove. This is set at 31% based on 2011 census travel to work flow data.
- Degree of displacement - the proportion of economic benefits that are displaced from elsewhere (e.g. through the relocation of business activities). This is set at 25%, following guidance from the 2014 Additionality Guide which provides ready reckoners for displacement. Low displacement (assumed given the nature of retail and travel to work within the city of Brighton and Hove) is set at 25%.
- The knock-on multiplier effects within the economy from:
  - Supply linkages due to purchases made as result of the intervention and further purchases associated with linked firms along the supply chain (indirect effects).
  - Income or induced effects associated with local expenditure as a result of those who derive incomes form the direct and supply linkage impacts of the intervention.
  - For simplicity and given the lack of survey data or knowledge about which specific sectors indirect spending will relate to (which would facilitate the use of input output modelling) this study assumes a composite multiplier value of 1.3 for the benefits associated with the key developments based on the guidance within the Additionality Guide (HCA, Additionality Guide 2014, p. 25).
- Deadweight associated with the developments - the level of economic activity that would have occurred without the project. In this case, an estimate of 0% is used to recognise the risk of further deterioration at the Terraces deterring future development going forward.

Economic impact estimates

The table below sets out preliminary potential economic impacts of the Madeira Terrace units once fully occupied.

Gross and net economic impacts, all potential development sites within the Madeira Terraces development sites

	Jobs			GVA, £000 pa		
Commercial uses	Gross direct	Indirect	Total net direct, indirect and induced jobs	Gross	Indirect GVA	Total net direct, indirect and induced GVA
Retail units	16	2	11	£0.7	£0.1	£0.5
Museum/gallery space	1	0	1	£0.1	£0.0	£0.0
Bar/restaurant units	47	7	32	£1.9	£0.4	£1.4
Office space	13	2	9	£1.0	£0.1	£0.6
Event venue	2	0	1	£0.1	£0.0	£0.1
Hostel	3	0	2	£0.2	£0.0	£0.1
Hotel space	60	9	41	£3.1	£0.5	£2.1
Spa space	1	0	1	£0.0	£0.0	£0.0
Cinema space	1	0	1	0.04	0.01	0.03
Total	**145**	**22**	**97**	**£7.1**	**£1.1**	**£4.8**

Source: Mott MacDonald

Attachment E – Brighton Madeira Terrace Budget Estimate

MOTT MACDONALD

BRIGHTON & HOVE CITY COUNCIL
MADEIRA TERRACES

REDEVELOPMENT OPTIONS - FEASIBILITY STUDY
Revision: 0
Issued: 27th June 2016

Mott MacDonald Ltd
10 Fleet Place
London
EC4M 7RB
United Kingdom
T: +44 (0)20 7651 0301
F: +44 (0)20 7248 2698

Contact:
Tom Woodbury tom.woodbury@mottmac.com

Revision: 0 **Issue date:** 27th June 2016 **Base date:** 2Q 2016 **Project No.** 368587

Issue and Revision Record

Rev	Status	Originator	Checker	Approver	Date	Reason For Issue
-	Estimate	T Woodbury	L Pannu	T Woodbury	24.06.16	Draft for comment
-	Estimate	T Woodbury	L Pannu	G Sims	27.06.16	Final Issue following review with NL / JH

Disclaimer

OVERVIEW

Brief description of the works

Client :	Brighton & Hove City Council
Location :	Madeira Terraces, Brighton
Nature of the works :	Structural repairs, refurbishment and development of existing structures.
Description :	Feasibility Study to determine the future strategy for repairs of the existing structures and to investigate development opportunities to inform future business plan.

Summary - By Phase	**Cost**
2019 Works	**£ 8,025,000**
2021 Works	**£ 7,703,000**
2023 Works	**£ 7,889,000**
Total	**£ 23,617,000**

Please refer to detailed Basis of Cost information.

ADDITIONAL COST INFORMATION

1 This document refers solely to the Madeira Terraces Feasibility Study.

2 This document is issued for the party which commissioned it and for specific purposes connected with the captioned project only. It should not be relied upon by any other party or used for any other purpose. We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

3 The following costs are excluded from the estimated cost, unless specifically stated within the detailed build-up, and provision should be made in the overall budget as necessary:-

VAT
Surveys
Land purchase, legal fees and finance charges
Finance charges
Development taxes, levies or other 'planning gain' items
Section 106 / 278 agreements
Landfill tax higher levy for Active Waste
Allowance for out of hours working
On site renewables / 'Zero Net Carbon' requirements etc.

4 Specific Exclusions

Repairs / maintenance to existing facilities except where specifically stated
Abnormal ground conditions or buried objects
Decontamination works
Asbestos removal
Diversion of existing services except where specifically stated
Contributions to Statutory Authorities
FF+E and ICT costs
Loose furniture and equipment
Removals / move management costs
Temporary accommodation
Fit out of 'Pod' units - constructed to shell and core specification only.

BASIS OF ESTIMATE

1 Generally

1.1 It is anticipated the works will be tendered competitively and procured on a traditional basis using a standard lump sum contract.

1.2 We have produced the estimate using the following information:

Mott MacDonald - Summary of Amey Management Report and Structural Inspections (not dated)
Mott MacDonald - Potential Refurbishment Works (not dated)
Wilkinson Eyre - Arch Module Design Concept 26.05.16
Wilkinson Eyre - Typical Elevation & Section
Mott MacDonald Indicative Phasing Schedule

1.3 We are assuming that the project will be phased in accordance with the phasing schedule provided by Mott MacDonald within the main report. For clarity, the following dates are assumed:

2019 Completion Works - Start on site Jan 2018
2021 Completion Works - Start on site Jan 2020
2023 Completion Works - Start on site Jan 2022

The costs assume that the works will be delivered as separate works packages for:
1 - Restoration of deck
2 - Restoration of terraces
2 - Restoration and refurbishment of Concorde 2
3 - Construction of retail 'pod/ units to shell and core specification for tenant fit-out.

However it is likely that some of these works packages will be grouped together for programme efficiency and buildability reasons. The programming and phasing of all works requires further discussion.

1.4 No allowance has been made for asbestos removal works. It is recommended surveys are undertaken ASAP in order to assess the cost risks of such works.

1.5 No improvement works have been assumed to existing hard/soft landscaping unless specifically identified within the estimate.

1.6 Costs for restoration of terraces are generally based upon budget costs provided by Shepley Engineering, a specialist restoration contractor. At this stage of development it has not been possible to fully define the exact repair requirements. We have therefore assumed a that repairs will be carried out on the following basis:

CAST IRON LATTICE BEAMS
Removal from site and off site shot blasting / cleaning / recoating
Replacement of complete member to 20% of existing
Major Repairs - e.g. new angles, plates, fixings to 20% of existing

CAST IRON EDGE BEAMS
Removal from site and off site shot blasting / cleaning / recoating
Replacement of complete member to 10% of existing
Major Repairs - e.g. building up edges, welding, plates, splicing, overplate repair to 20% of existing

CAST IRON COLUMNS
Removal from site and off site shot blasting / cleaning / recoating
Replacement of complete member to 10% of existing
Major Repairs - e.g. building up edges, welding, plates to 50% of existing
Line column with new cast iron downpipe

BASIS OF ESTIMATE

CAST IRON SPANDRELS (each 1/2 arch)
Removal from site and off site shot blasting / cleaning / recoating
Replacement of complete member to 10% of existing
Major Repairs - typically one-off localised repairs to 20% of existing

BRACKETS
Removal from site and off site shot blasting / cleaning / recoating
Replacement of complete member to 10% of existing
Major Repairs - e.g. building up edges, welding, plates to 20% of existing

GUTTERING, HOPPER & DOWNPIPE
Removal from site and off site shot blasting / cleaning / recoating
Replacement of complete member to 20% of existing
Major Repairs - e.g. brazing welds, plate repairs etc. to 20% of existing

BALUSTRADES
Removal from site and off site shot blasting / cleaning / recoating
Replacement of complete balustrade and panel to 10% of existing
Major Repairs - e.g. building up edges, small plate repair to 20% of existing

RETAINING WALL / MASONRY PIER
Replacement Padstones/Connection Detail

FOUNDATIONS
Allowance for new column bases

SEATING
Allowance for refurbishment of components, re-roofing and replacement of seating slats

1.7 No allowance has been made for the following in our arch refurbishment costs for the following:

Lighting to arches
Lighting to protection bollards
CCTV
Signage
Fire protection works

1.8 We have assumed that the replacement of the deck will be on a like-for-like basis with a steel structure infilled with concrete and topped in a tarmacadam finish. We have also allowed for the existing concrete jack arch interface with the retaining wall to be replaced by breaking out and recasting in situ concrete to the wall.

1.9 It is noted that the existing balustrading to the edge of the deck is not currently compliant with Building Regulations and there may be a requirement to either increase the height of the balustrade, or install a 'secondary' structure to achieve compliance. This requires further investigation, and is currently excluded from the estimate.

2.0 We have assumed that all excavated material will be removed from site.

2.1 Where areas under arches have been indicated as 'open event space' on the indicative phasing programme, we have allowed only for the area to be resurfaced with no allowance for further construction / upgrading.

2.2 We have assumed that the retail 'pods' will be constructed in a SIPS modular building system and will have no interfaces with the existing structure. The design of same is at a very early concept stage and requires further development.

2.3 We have approached two specialist building contractors who have provided costs for constructing the SIPS pods using Kingspan's TEK system. We have used these costs to inform our inclusion in the estimate for same.

BASIS OF ESTIMATE

2.4 The servicing strategy for the 'pod' installations is currently unclear. At present we have included an allowance in each phase for statutory authorities to provide incoming mains services to a convenient position near the site. We have not allowed for major new services infrastructure other than for a new substation to serve the pod units. It is advisable that this be investigated further by specialists as soon as possible.

2.5 Wilkinson Eyre have shown a mezzanine floor within the retail pod. We have assumed that this will be provided to 25% of the units in total.

2.6 We have assumed that the pods will be finished to shell and core level only, with the fit-out works to be undertaken by tenants. Shell and core specification is deemed to include:
- Installation of floor slab, SIPS structure
- Provision of capped electrical and water services to each unit
- Task lighting and life safety
- Glazing and external doors

2.7 No allowance has been made in the units for sprinklers, fire suppression systems or smoke extract.

2.8 No allowance has been made for any construction works to any area other than the pods under the terrace (i.e. any developments at deck level.

2.9 No scope of works is available for Concorde 2. We have assumed that the building will be subject to some dilapidations works, restoration of windows, internal strip out and refurbishment to shell and core specification for fit-out by tenant.

3.0 Design and construction contingency has been included at 15%

3.1 Professional fees have been included at 15%

BRIGHTON & HOVE CITY COUNCIL

MADEIRA TERRACES

REDEVELOPMENT OPTIONS - FEASIBILITY STUDY

MOTT MACDONALD

2019 Completion Works **(Assume 2018 Start on Site)**

Summary of Works Programme:

1. Arch Refurbishment 52 arches total

Arch	Potential Use	Arch	Potential Use	Arch	Potential Use	Arch	Potential Use
73	Event space (Open)	113	Spa	126	Bar	139	Cinema
74	Event space (Open)	114	Spa	127	Bar	140	Cinema
75	Event space (Open)	115	Spa	128	Café	141	Café
76	Event space (Open)	116	Spa	129	Café	142	Bar
77	Event space (Open)	117	Spa	130	Bar	143	Open
78	Event space (Open)	118	Art gallery	131	Bar	144	Open
79	Event space (Open)	119	Art gallery	132	Café	145	Open
80	Event space (Open)	120	Art gallery	133	Café	146	Open
81	Event space (Open)	121	Art gallery	134	Bar	147	Open
82	Event space (Open)	122	Art gallery	135	Bar	148	Open
83	Event space (Open)	123	Art gallery	136	Bar	149	Support Services
84	Event space (Open)	124	Art gallery	137	Cinema	150	Support Services
85	Event space (Open)	125	Art gallery	138	Cinema	151	Support Services

2. Replacement of deck

GIFA **1,677** m2

3. Concorde 2 Refurbishment

GIFA **600** m2

	quant	unit	rate	£/p
Enabling				
removal of safety fencing; breaking out posts, making good areas disturbed etc.	260	m	100.00	26,000
Allowance for temporary works, establishing site access, compounds etc.	1	item	10,000.00	10,000
Allowance for breaking out existing column bases	52	nr	250.00	13,000
Civils and infrastructure works related to services for pods; ducts etc. - excluded				
			Enabling total	**49,000**
Restoration of terrace structure				
Preliminaries:				
Management and Supervision	1	Item	133,120.00	133,120
Overnight accommodation	1	Item	8,632.00	8,632
Logistics, HSE and Environmental Management	1	Item	23,296.00	23,296
Site temporary services	1	Item	988.00	988
On site plant / tool hire	1	Item	4,108.00	4,108
Transport	1	Item	4,368.00	4,368
Measured Works:				
On Site Measured Works	52	Nr	5,770.83	300,083
Off site Restoration	52	Nr	6,046.13	314,399
Repairs - allowance per bay to include repair works to:	52	Nr	2,483.75	129,155
Columns				
Edge beams				
Gutters / hoppers				
Downpipes				
Spandrels				
Brackets				
Balustrades				
I-Section beams				
Lattice plates				
Re-casting - pattern and cast / fabrication; allowance per bay	52	Nr	3,800.00	197,600
Structural Engineer Design Fees	1	Item	5,500.00	5,500

Allowance for replacing existing column bases;	52	nr	350.00	18,200
Allowance for works to existing staircases - making good, compliant handrails etc.	1	nr	10,000.00	10,000
Allowance to replace foundations as may be partially damaged during the works	1	nr	10,000.00	10,000
Replacement Padstones / Connection Detail to retaining wall / masonry pier	52	nr	1,100.00	57,200
New bollards	104	nr	350.00	36,400
			Restoration total	**1,253,048**

Construction - Replacement of deck **Approximate area to be replaced =** **1,677** m2

Like-for-like replacement of the steel I-beams using S355 galvanised steel approximate size 305x102x33UB and in-situ concrete jack arches

Form temporary access, scaffold, netting etc.	1	Item	10,000.00	10,000
Strip off existing, deposit in skips	1,677	m2	8.00	13,416
Disposal costs - allowance	82	t	250.00	20,592
Replacement steel beams	82	t	2,100.00	172,973
Replacement concrete edge beam to jack arch	624	m	200.00	124,800
Precast concrete curved panels forming substrate	1,677	m2	90.00	150,930
Concrete topping 300mm	503	m3	135.00	67,919
Reinforcement 125kg/m3	63	t	1,250.00	78,609
Tarmacadam topping	1,677	m2	24.00	40,248
Waterproofing	1,677	m2	18.00	30,186
Drainage - cast iron gutters to retaining wall edge	260	m	300.00	78,000
Drainage - cast iron downpipes to the above	260	m	300.00	78,000
Allowance for restoration of existing seats / shelters	1	item	20,000	20,000
Allowance for secondary balustrade to meet current regs - excluded				
Allowance for breaking out existing planters	1	Item	50,000.00	50,000
Main Contractors Preliminaries	15%	Item	885,672.68	132,851
Main Contractors Overheads and Profit	5%	Item	1,068,523.58	53,426
			Construction - Replacement of deck total	**1,121,950**

Construction - Pod installation

Note: 13 nr arches left open for event space

Substructure

Site preparation works	1,170	m2	1.50	1,755
Reduce level dig for GB slab 6 x 5.00 x 39	351	m3	12.00	4,212
Disposal of excavated material off site	351	m3	38.00	13,338
300mm GB slab	351	m3	140.00	49,140
Reinforcement say 100kg/m3	35	t	1,250.00	43,875
DPM	1,170	m2	3.00	3,510
e.o waterproofing to slab edges	402	m	18.00	7,236
Form upstands to slab along line of GF curtain wall / windows	195	m	55.00	10,725
Allowance for slab penetrations for underslung drainage	39	nr	75.00	2,925

Superstructure

SIPS system to form retail pods - Kingspan TEK system, to include transport to site and erection	39	nr	15,000.00	585,000
Shopfront doors / glazing	780	m2	500.00	390,000
Mezzanine structure - allowance to provide to 25% of units	10	nr	5,000.00	48,750
Balustrade to mezzanine where installed	10	nr	2,300.00	22,425
Staircase to mezzanine where installed	10	nr	2,700.00	26,325
Internal finishes - dust seal slab only	1,170	m2	5.00	5,850
Waterproofing rear wall - vertical	1,170	m2	12.00	14,040
Waterproofing 'roof' panel- horizontal	1,170	m2	12.00	14,040

Mechanical and Electrical Services

Allowance for shell and core level fit-out, to include:	39	nr	7,500.00	292,500
Installation of incoming building MEP services to a capped point on each unit				
Fire alarm installation				
Intruder alarm installation				
Task lighting				
Installation of below ground drainage with capped connection points				

BWIC; services penetrations, patresses etc.						3%	Item	292,500.00	8,775
Allowance for works to open event areas	6	x	5.00	x	13	390	m2	90.00	35,100
Main Contractors Preliminaries						15%	Item	1,544,421.00	231,663
Main Contractors Overheads and Profit						5%	Item	1,811,184.15	90,559
Site Incoming Services									
Allowance for services connections to serve 52 nr pods						1	Item	100,000.00	100,000
Allowance for construction of new substation						1	Item	100,000.00	100,000
								Construction - Pod installation total	**2,101,743**

Construction - Concorde 2 refurbishment	**Approximate GIFA =**	**600**	m2

Allowance for dilapidations works	600	m2	500.00	300,000
Restoration of windows	36	nr	1,500.00	54,000
New roofing and rainwater goods - allowance	600	m2	145.00	87,000
Internal strip out works	600	m2	45.00	27,000
Internal refurbishment - allowance £/m2	600	m	900.00	540,000
Extra for stage etc.	1	Item	30,000.00	30,000
Allowance for landscaping works to area around new site	1	Item	20,000.00	20,000
			Construction - Concorde 2 refurbishment total	**1,058,000**

Abnormals				
Removal of asbestos - excluded	1	item		Excl.
			Abnormals total	-
			Sub total	**5,583,741**
Contingency and Inflation				
Contingency	15.0%		5,583,741.25	837,561
Tender price escalation - from current day (2Q16) to 3Q18 (construction midpoint)	8.66%		6,421,302.44	556,358
			Contingency and Inflation total	**1,393,920**
			Sub total	**6,977,661**
Professional fees				
Generally	15.0%		6,977,660.77	1,046,649
			Professional fees total	**1,046,649**
			Total	**8,024,310**

Summary

Enabling	49,000.00
Restoration of terrace structure	1,253,048.14
Construction - Pod installation	2,101,743.36
Construction - Concorde 2 refurbishment	1,058,000.00
Construction - Replacement of deck	1,121,949.76
Abnormals	0.00
Contingency and Inflation	1,393,919.52
Professional fees	1,046,649.12
2019 Completion Works total	**8,024,309.89**

BRIGHTON & HOVE CITY COUNCIL

MADEIRA TERRACES

REDEVELOPMENT OPTIONS - FEASIBILITY STUDY

MOTT MACDONALD

2021 Completion Works **(Assume 2020 Start on Site)**

Summary of Works Programme:

1. Arch Refurbishment 52 arches total

Arch	Potential Use	Arch	Potential Use	Arch	Potential Use	Arch	Potential Use
1	Retail	14	Café	87	Hotel	100	Hotel
2	Retail	15	Open	88	Hotel	101	Hotel
3	Mod Museum	16	Open	89	Hotel	102	Hotel
4	Mod Museum	17	Open	90	Hotel	103	Hotel
5	Mod Museum	18	Open	91	Hotel	104	Hotel
6	Mod Museum	19	Open	92	Hotel	105	Hotel
7	Bar	20	Open	93	Hotel	106	Hotel
8	Bar	21	Open	94	Hotel	107	Hotel
9	Retail	22	Open	95	Hotel	108	Hotel
10	Retail	23	Open	96	Hotel	109	Hotel
11	Retail	24	Retail	97	Hotel	110	Hotel
12	Café	25	Retail	98	Hotel	111	Hotel
13	Café	86	Hotel	99	Hotel	112	Hotel

2. Replacement of deck

GIFA **1,560** m2 stair 1.00

	quant	unit	rate	£/p
Enabling				
removal of safety fencing; breaking out posts, making good areas disturbed etc.	260	m	100.00	26,000
Allowance for temporary works, establishing site access, compounds etc.	1	item	10,000.00	10,000
Allowance for breaking out existing column bases	52	nr	250.00	13,000
Civils and infrastructure works related to services for pods; ducts etc. - excluded				
			Enabling total	**49,000**
Restoration of terrace structure				
Preliminaries:				
Management and Supervision	1	Item	133,120.00	133,120
Overnight accommodation	1	Item	8,632.00	8,632
Logistics, HSE and Environmental Management	1	Item	23,296.00	23,296
Site temporary services	1	Item	988.00	988
On site plant / tool hire	1	Item	4,108.00	4,108
Transport	1	Item	4,368.00	4,368
Measured Works:				
On Site Measured Works	52	Nr	5,770.83	300,083
Off site Restoration	52	Nr	6,046.13	314,399
Repairs - allowance per bay to include repair works to:	52	Nr	2,483.75	129,155
Columns				
Edge beams				
Gutters / hoppers				
Downpipes				
Spandrels				
Brackets				
Balustrades				
I-Section beams				
Lattice plates				
Re-casting - pattern and cast / fabrication; allowance per bay	52	Nr	3,800.00	197,600
Structural Engineer Design Fees	1	Item	5,500.00	5,500

Allowance for replacing existing column bases;	52	nr	350.00	18,200
Allowance for works to existing staircases - making good, compliant handrails etc.	1	nr	10,000.00	10,000
Allowance to replace foundations as may be partially damaged during the works	1	nr	10,000.00	10,000
Replacement Padstones / Connection Detail to retaining wall / masonry pier	52	nr	1,100.00	57,200
New bollards	104	nr	350.00	36,400
			Restoration total	**1,253,048**

Construction - Replacement of deck **Approximate area to be replaced =** **1,677** m2

Like-for-like replacement of the steel I-beams using S355 galvanised steel approximate size 305x102x33UB and in-situ concrete jack arches

Form temporary access, scaffold, netting etc.	1	Item	10,000.00	10,000
Strip off existing, deposit in skips	1,677	m2	8.00	13,416
Disposal costs - allowance	82	t	250.00	20,592
Replacement steel beams	82	t	2,100.00	172,973
Replacement concrete edge beam to jack arch	624	m	200.00	124,800
Precast concrete curved panels forming substrate	1,677	m2	90.00	150,930
Concrete topping 300mm	503	m3	135.00	67,919
Reinforcement 125kg/m3	63	t	1,250.00	78,609
Tarmacadam topping	1,677	m2	24.00	40,248
Waterproofing	1,677	m2	18.00	30,186
Drainage - cast iron gutters to retaining wall edge	260	m	300.00	78,000
Drainage - cast iron downpipes to the above	260	m	300.00	78,000
Allowance for restoration of existing seats / shelters	1	item	20,000	20,000
Allowance for secondary balustrade to meet current regs - excluded				
Allowance for breaking out existing planters	1	Item	50,000.00	50,000
Main Contractors Preliminaries	15%	Item	885,672.68	132,851
Main Contractors Overheads and Profit	5%	Item	1,068,523.58	53,426
			Construction - Replacement of deck total	**1,121,950**

Construction - Pod installation

Substructure

Site preparation works	1,560	m2	1.50	2,340
Reduce level dig for GB slab 6 x 5.00 x 52	468	m3	12.00	5,616
Disposal of excavated material off site	468	m3	38.00	17,784
300mm GB slab	468	m3	140.00	65,520
Reinforcement say 100kg/m3	47	t	1,250.00	58,500
DPM	1,560	m2	3.00	4,680
e.o waterproofing to slab edges	532	m	18.00	9,576
Form upstands to slab along line of GF curtain wall / windows	260	m	55.00	14,300
Allowance for slab penetrations for underslung drainage	52	nr	75.00	3,900

Superstructure

SIPS system to form retail pods - Kingspan TEK system, to include transport to site and erection	52	nr	15,000.00	780,000
Shopfront doors / glazing	1,040	m2	500.00	520,000
Mezzanine structure - allowance to provide to 25% of units	13	nr	5,000.00	65,000
Balustrade to mezzanine where installed	13	nr	2,300.00	29,900
Staircase to mezzanine where installed	13	nr	2,700.00	35,100
Internal finishes - dust seal slab only	1,560	m2	5.00	7,800
Waterproofing rear wall - vertical	1,560	m2	12.00	18,720
Waterproofing 'roof' panel- horizontal	1,560	m2	12.00	18,720

Mechanical and Electrical Services

Allowance for shell and core level fit-out, to include: Installation of incoming building MEP services to a capped point on each unit Fire alarm installation Intruder alarm installation Task lighting Installation of below ground drainage with capped connection points	52	nr	7,500.00	390,000
BWIC; services penetrations, patresses etc.	3%	Item	390,000.00	11,700

Main Contractors Preliminaries	15%	Item	2,059,156.00	308,873
Main Contractors Overheads and Profit	5%	Item	2,368,029.40	118,401
Site Incoming Services				
Allowance for services connections to serve 52 nr pods	1	Item	100,000.00	100,000
			Construction - Pod installation total	**2,586,431**
Abnormals				
Removal of asbestos - excluded	1	item		Excl.
			Abnormals total	-
			Sub total	**5,010,429**
Contingency and Inflation				
Contingency	15.0%		5,010,428.77	751,564
Tender price escalation - from current day (2Q16) to 3Q20 (construction midpoint)	16.25%		5,761,993.08	936,064
			Contingency and Inflation total	**1,687,628**
			Sub total	**6,698,057**
Professional fees				
Generally	15.0%		6,698,056.94	1,004,709
			Professional fees total	**1,004,709**
			Total	**7,702,765**

Summary

Enabling	49,000.00
Restoration of terrace structure	1,253,048.14
Construction - Pod installation	2,586,430.87
Construction - Replacement of deck	1,121,949.76
Abnormals	0.00
Contingency and Inflation	1,687,628.17
Professional fees	1,004,708.54
REDEVELOPMENT OPTIONS - FEASIBILITY STUDY total	**7,702,765.48**

BRIGHTON & HOVE CITY COUNCIL

MADEIRA TERRACES

REDEVELOPMENT OPTIONS - FEASIBILITY STUDY

MOTT MACDONALD

2023 Completion Works **(Assume 2022 Start on Site)**

Summary of Works Programme:

1. Arch Refurbishment 47 arches total

Arch	Potential Use	Arch	Potential Use	Arch	Potential Use	Arch	Potential Use
26	Retail	39	Retail	52	Retail	65	Hostel
27	Retail	40	Retail	53	Café	66	Hostel
28	Co-work Office	41	Retail	54	Café	67	Hostel
29	Co-work Office	42	Retail	55	Exhibition / Event	68	Hostel
30	Co-work Office	43	Retail	56	Exhibition / Event	69	Hostel
31	Co-work Office	44	Retail	57	Exhibition / Event	70	Hostel
32	Co-work Office	45	Retail	58	Exhibition / Event	71	Hostel
33	Co-work Office	46	Retail	59	Exhibition / Event	72	Hostel
34	Co-work Office	47	Retail	60	Exhibition / Event		
35	Co-work Office	48	Retail	61	Exhibition / Event		
36	Co-work Office	49	Retail	62	Restaurant		
37	Café	50	Retail	63	Restaurant		
38	Café	51	Retail	64	Restaurant		

2. Replacement of deck

GIFA **1,516** m2 stair 2.00

	quant	unit	rate	£/p
Enabling				
removal of safety fencing; breaking out posts, making good areas disturbed etc.	235	m	100.00	23,500
Allowance for temporary works, establishing site access, compounds etc.	1	item	10,000.00	10,000
Allowance for breaking out existing column bases	47	nr	250.00	11,750
Civils and infrastructure works related to services for pods; ducts etc. - excluded				
			Enabling total	**45,250**
Restoration of terrace structure				
Preliminaries:				
Management and Supervision	1	Item	120,320.00	120,320
Overnight accommodation	1	Item	7,802.00	7,802
Logistics, HSE and Environmental Management	1	Item	21,056.00	21,056
Site temporary services	1	Item	893.00	893
On site plant / tool hire	1	Item	3,713.00	3,713
Transport	1	Item	3,948.00	3,948
Measured Works:				
On Site Measured Works	47	Nr	5,770.83	271,229
Off site Restoration	47	Nr	6,046.13	284,168
Repairs - allowance per bay to include repair works to:	47	Nr	2,483.75	116,736
Columns				
Edge beams				
Gutters / hoppers				
Downpipes				
Spandrels				
Brackets				
Balustrades				
I-Section beams				
Lattice plates				
Re-casting - pattern and cast / fabrication; allowance per bay	47	Nr	3,800.00	178,600
Structural Engineer Design Fees	1	Item	5,500.00	5,500
Allowance for replacing existing column bases;	47	nr	350.00	16,450
Allowance for works to existing staircases - making good, compliant handrails etc.	1	nr	10,000.00	10,000
Allowance to replace foundations as may be partially damaged during the works	1	nr	10,000.00	10,000
Replacement Padstones / Connection Detail to retaining wall / masonry pier	52	nr	1,100.00	57,200
New bollards	94	nr	350.00	32,900
			Restoration total	**1,140,515**

Construction - Replacement of deck **Approximate area to be replaced =** **1,516** m2

Like-for-like replacement of the steel I-beams using S355 galvanised steel approximate size 305x102x33UB and in-situ concrete jack arches

Form temporary access, scaffold, netting etc.	1	Item	10,000.00	10,000
Strip off existing, deposit in skips	1,516	m2	8.00	12,126
Disposal costs - allowance	74	t	250.00	18,612
Replacement steel beams	74	t	2,100.00	156,341
Replacement concrete edge beam to jack arch	624	m	200.00	124,800
Precast concrete curved panels forming substrate	1,516	m2	90.00	136,418
Concrete topping 300mm	455	m3	135.00	61,388
Reinforcement 125kg/m3	57	t	1,250.00	71,051
Tarmacadam topping	1,516	m2	24.00	36,378
Waterproofing	1,516	m2	18.00	27,284
Drainage - cast iron gutters to retaining wall edge	235	m	300.00	70,500
Drainage - cast iron downpipes to the above	235	m	300.00	70,500
Allowance for restoration of existing seats / shelters	1	item	20,000	20,000
Allowance for secondary balustrade to meet current regs - excluded				
Allowance for breaking out existing planters	1	Item	50,000.00	50,000
Main Contractors Preliminaries	15%	Item	815,396.46	122,309
Main Contractors Overheads and Profit	5%	Item	987,705.92	49,385
			Construction - Replacement of deck total	**1,037,091**

Construction - Pod installation

Substructure				
Site preparation works	1,410	m2	1.50	2,115
Reduce level dig for GB slab: 6 x 5.00 x 47	423	m3	12.00	5,076
Disposal of excavated material off site	423	m3	38.00	16,074
300mm GB slab	423	m3	140.00	59,220
Reinforcement say 100kg/m3	42	t	1,250.00	52,875
DPM	1,410	m2	3.00	4,230
e.o waterproofing to slab edges	482	m	18.00	8,676
Form upstands to slab along line of GF curtain wall / windows	235	m	55.00	12,925
Allowance for slab penetrations for underslung drainage	47	nr	75.00	3,525
Superstructure				
SIPS system to form retail pods - Kingspan TEK system, to include transport to site and erection	47	nr	15,000.00	705,000
Shopfront doors / glazing	940	m2	500.00	470,000
Mezzanine structure - allowance to provide to 25% of units	12	nr	5,000.00	58,750
Balustrade to mezzanine where installed	12	nr	2,300.00	27,025
Staircase to mezzanine where installed	12	nr	2,700.00	31,725
Internal finishes - dust seal slab only	1,410	m2	5.00	7,050
Waterproofing rear wall - vertical	1,410	m2	12.00	16,920
Waterproofing 'roof' panel- horizontal	1,410	m2	12.00	16,920
Mechanical and Electrical Services				
Allowance for shell and core level fit-out, to include:	47	nr	7,500.00	352,500
Installation of incoming building MEP services to a capped point on each unit				
Fire alarm installation				
Intruder alarm installation				
Task lighting				
Installation of below ground drainage with capped connection points				
BWIC; services penetrations, patresses etc.	3%	Item	352,500.00	10,575
Main Contractors Preliminaries	15%	Item	1,861,181.00	279,177
Main Contractors Overheads and Profit	5%	Item	2,140,358.15	107,018
Site Incoming Services				
Allowance for services connections to serve 47 nr pods	1	Item	80,000.00	80,000
			Construction - Pod installation total	**2,327,376**

Abnormals

Removal of asbestos - excluded	1	item		Excl.

		Abnormals total	-
		Sub total	**4,550,232**
Contingency and Inflation			
Contingency	15.0%	4,550,231.94	682,535
Tender price escalation - from current day (2Q16) to 3Q22 (construction midpoint)	31.09%	5,232,766.73	1,626,624
		Contingency and Inflation total	**2,309,159**
		Sub total	**6,859,391**
Professional fees			
Generally	15.0%	6,859,390.76	1,028,909
		Professional fees total	**1,028,909**
		Total	**7,888,299**

Summary

Enabling	45,250.00
Restoration of terrace structure	1,140,514.67
Construction - Pod installation	2,327,376.06
Construction - Replacement of deck	1,037,091.22
Abnormals	0.00
Contingency and Inflation	2,309,158.82
Professional fees	1,028,908.61
total	**7,888,299.37**