EXECUTIVE COUNCIL

PUBLIC

Title:	Response to the Public Accounts Committee – Review of the Public Jetty Phase One (letter dated 10/10/2022)
Paper Number:	73/23
Date:	30th May 2023
Responsible Director:	Director Public Works
Report Author:	Director Public Works
Portfolio Holder:	MLA Peter Biggs
Reason for paper:	This paper is submitted to Executive Council: To meet a statutory requirement
Publication:	This report should be made public after submission to the legislative
Previous papers:	N/A
List of Documents:	Appendix A – PAC Letter 10/10/2022 and associated report

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1. Recommendations

Honourable Members are recommended to:

(a) **Approve** the submission of the attached response to the Assembly;

(b) **Approve** that this report be made public after submission to the Legislative Assembly on 30 July 2020.

2. Additional Budgetary Implications

None

3. Executive Summary

3.1 This report contains the proposed response to the Public Accounts Committee letter PAC/22/10/01 of 10th October 2022 - Review of the Public Jetty Phase One

4. Background

4.1 The Chair of the Public Accounts Committee submitted a letter (Ref: PAC 22/10/01) to the Clerk of the Legislative Assembly and Executive Council, dated 10 October 2022 with an associated report titled Review of the Public Jetty Project Phase One. The purpose of the report was to consider whether the funds spent on the work carried out on the Public Jetty represented value for money in terms of economy, efficiency and effectiveness.

4.2 One of the difficulties with this review, and the responses offered, is both the extended duration of the project and the time which has lapsed since its delivery. This time period has not only seen a number of changes with the organisational processes but has also seen a number of key staff changes within FIG and MFL (Now RSK Falklands Ltd) which has meant that some weren't available to be interviewed.

4.3 The report has focus mainly on the period from November 2011, when the first works were approved, through to the final sign off in September 2017. However, the inception of this project can be evidenced as far back as 2003.

4.4 It is unfortunate that the PAC were unable to interview the Director of Public Works, Contracts Engineer or Regional manager of the time as this may have helped to give some context to the decisions taken through the extended period. Without them the report relies on interpretation of documentation and the views of one of the local contractors.

4.5 The theme of 'optimism bias' identified for the Public Jetty, Falklands College and the Fisheries building is of interest. While it is accepted that this does appear to be the case, it would be interesting to understand if there were any internal or external factors which have influenced the original budget submissions and/or the final project outcome as in the preceding period (10+ years) the budget vs outrun cost on the partnership works were reported to be within +/- 3%, which would be considered to be reasonable.

4.6 The review made five specific recommendations. The legislative Assembly are required to provide a response to the Public Accounts Committee and is proposed as below:

4.6.1 Recommendation one: Clarity of scope and aims

a) The PAC recommends that the intended scope and aims of the capital projects is made clear in ExCo papers at the earliest stages;

b) The PAC recommends that when projects change, any change in aims be made clear for decision-makers and the public to asses value for money

These twin issues are a common failing. This lack of clarity has been found in other projects and risks being endemic in capital projects. This review suggests that where capital projects increase (or decrease) in size form the originally approved design, that this increase (or decrease) is weighed up against the original goals, and an evaluation is made as to whether the larger or smaller design is realistically likely to deliver value for money against the original scope of the project.

Response

The capital bid and project initiation document processes, now in place, require a clear scope or project brief to be included.

It should be noted that Executive Council and elected members do not approve designs. They do however approve the project scope or brief and it is noted that any proposed changes to these and the impacts should be clearly communicated. The project governance structures, now in place, should clearly indicate the level of change which can be made at project team level and which would need to be escalated to either the project board or back to Executive Council for a decision.

4.6.2 Recommendation two: Uncertainties in site conditions

The PAC recommends that financial risks associated with site conditions are clear in ExCo papers.

The review identified some lessons that could be learned from this project, such as that the site investigation and geotechnical data requirements of capital projects be made clear in Executive Council papers. Similarly, where data gaps exist, that these gaps are explained in terms of the financial risk they add to the project.

Response

The recommendation is noted.

Lessons were learned from the Public Jetty project and where possible site investigation works have been carried out to determine ground conditions prior to works commencing. Where possible these investigations are carried out during the concept design stage therefore allowing them to be incorporated into the design before final approval is given. Where early investigation is not possible or not sanctioned under the initial brief then measures will be taken to ensure it is included in the risk register and then correctly communicated as required.

4.6.3 Recommendation three: Optimism in capital projects

The PAC recommends that the risk of 'optimism bias' needs to be addresses across FIG capital projects.

The Public Jetty overspend continues a trend in many FIG capital projects of consistent overspend. There appears to be a form of unfounded optimism in project budgets, where assumptions are made that all will go to plan. It would be beneficial if FIG could recognise and address this 'optimism bias' in project design, and importantly, budgeting.

Response

It should be noted that the Public Jetty project ran concurrently with or predated projects previously reviewed. Therefore, it is believed that these trends of overspend and any perceived 'optimism bias' have been addressed. Phasing of projects and gate way approvals allow the projects designs to be developed to enable a greater level of cost certainty before final approval for the project are sought.

It would be useful to understand if there were any other internal or external factors which may have affected these submission or outcomes as it is noted that in the preceding period

the MFL budget vs outrun cost had been within +/- 3% which would be considered to be within reasonable margins.

4.6.4 Recommendation four: Whole life costs

The PAC recommends that future proofing needs to be incorporated into the initial build to enable whole life costings, not just the initial capital costs

The PAC notes that this review is addressing Phase One of the Public Jetty project, it had been intended that further phases would take place, however there was no indication of the scope, plans or cost of future phases.

Response

FIG has ambitions to ensure that infrastructure projects include assessment of long-term sustainability as part of assessing their viability and approach, as per the Environment Strategy 2021 – 2040. Including whole life costing will help significantly with this and so growing that capacity is a priority. The Executive Council paper format specifically includes sustainability implications and ensures officers consider this element of in any submission.

In this particular case this was a multi-phase project proposal but with only phase one having been approved by elected members. At the time of approval, it was expected that phase two would follow. However, a change in political ambition and alternative technical solutions being offered, after the phase one works were completed, led to future phases not proceeding. Although such changes cannot be anticipated it is noted that when seeking a phased approval all interdependencies and risks associated with future phases not proceeding should be presented with the initial submission.

4.6.5 Recommendation five: Contingency

a) The PAC recommends provision of adequate contingency in budgeting for large capital expenditure.

b) The PAC recommends that consideration of resource constraints and better use of local knowledge should all be part of the planning of projects to be able to minimise the impact on timescales and to allow budgets to be more realistic.

The PAC notes that risks associated with projects and respective designs should be fully explored and reflected in realistic contingency budgets, particularly when new or complex projects are being undertaken.

Response

The recommendation is noted. Where practicable contingency sums are now included in both capital bid submissions and project initiation documents.
The use of ‘local knowledge’ and in particular stakeholder engagement is encouraged in all stages of project delivery.

5. Options and Reasons for Recommending Relevant Option

None

6. Resource Implications

6.1 Financial Implications

There are no financial implications associated directly with this paper.

6.2 Human Resource Implications

There are no human resource implications associated directly with this paper.

6.3 Other Resource Implications

There are no other resource implications associated directly with this paper.

7. Legal Implications

7.1 There are no immediate legal implications associated with this paper.

8. Environmental & Sustainability Implications

8.1 FIG has ambitions to ensure that infrastructure projects include assessment of long-term sustainability as part of assessing their viability and approach, as per the Environment Strategy 2021 – 2040. Including whole life costing will help significantly with this and so growing that capacity is a priority.

9. Significant Risks

9.1 There are no significant risks associated with this paper.

10. Consultation

10.1 This response has been prepared in consultation with the Chief Executive and relevant Departments for FIG, along with the Corporate Management Team.

11. Communication

The response to PAC will be made formally through the Legislative Assembly, which will be public.

Public Accounts Committee
PO Box 420 Dean Street Stanley Falkland Islands FIQQ1ZZ
Tel +500 22905 Email: pacsecretary@horizon.co.fk

Ref: PAC/22/10/01

10th October 2022

Cherie Clifford
Clerk of the Legislative Assembly and Executive Council
Legislative Assembly and Executive Council Members
Gilbert House
Stanley
Falkland Islands

Dear Members

Review of the Public Jetty Project Phase One

The Public Accounts Committee (PAC) as part of their work plan committed to reviewing the Public Jetty project. This work had featured on the PAC's previous work programs but had been delayed due to staff resource issues to facilitate the review and indications that the Public Jetty project was incomplete.

The PAC has now utilised the resources available to it to facilitate background research and review. Findings are provided in the attached report.

The purpose of the review was to consider whether the funds spent on the work carried out on the Public Jetty represented value for money in terms of economy, efficiency and effectiveness.

Key Conclusion:

The review concluded that the Public Jetty Phase One did not represent value for money and that the lack of accurate geotechnical data was the main cause of project delays and overspend. The report found that the Public Jetty Phase One project did not intend to offer direct berthing capability and, although successful in providing a mooring point for pontoons to be attached to, is over-engineered for that task. Value for money may only be obtained if any further development of the jetty has a robust business case underpinning it.

Planning of works, reasoning behind key decisions; tendering process; oversight of project and additions and variations from the original ExCo paper

1.1 The refurbishment of the Public Jetty was originally approved by Executive Council in November 2011. This comprised the complete removal of the existing jetty and construction of a new, sheet-piled jetty. The Government's construction partner, Morrisons Falklands Limited (MFL), was asked to submit budgets for the original and

several other designs. A revised design was approved in May 2012, with a budget of £1,297,200. The chosen design was to be a tubular-piled, concrete-decked jetty built parallel to the existing timber jetty, with the timber section being refurbished and retained as part of a new, wider jetty. The project was signed off as completed in October 2017, some 5 years later, at a total cost of £2,072,224. An overspend of approximately 37% over the original budget.

1.2 The chosen design depended on strong bedrock beneath the seabed to anchor the piles. Little was known about the depth of the bedrock at the time, and the only site investigation carried out prior to finalising the design could not provide this depth with any certainty. As construction commenced, problems were encountered with the first two piles, and it became clear that assumptions made about the depth of the bedrock were inaccurate.

1.3 Sediment and rock cores were then taken using a drilling rig that had not previously been available in the Falklands, and this was complemented with a sub-bottom profile survey. The site investigation showed the bedrock layers to be much deeper than anticipated and required the pile design to be revised. New, longer piles had to be bought. These piles required further engineering and strengthening to account for the extra length.

1.4 The PAC found that the underestimation of the depth of the bedrock was the main immediate cause behind the project's delays and overspend. From the evidence examined, the PAC has further concluded that this should have been a known and material risk to the project, and one which it transpired incurred considerable cost and time overruns. However, this risk was neither communicated to Executive Council nor accounted for in the original design or budget.

1.5 Other factors that drove up the cost of the project include a more complex rebuild of the timber section than had been envisioned; and the purchase of a piling hammer and dolly, which had not been included in the original costings. The latter is of particular concern, as both MFL and PWD had been made aware prior to the budgets being prepared and accepted that this plant would be required.

1.6 The choice of a tubular-piled design over a sheet piled design further increased the risk of the project. A sheet-piled jetty had recently been built at Port Howard, and it was certain that the skills, experience, and plant needed to build such a jetty were already present in the islands. This certainty did not exist with a tubular-piled design. Again, this risk was not communicated to Executive Council at the time they approved the design.

1.7 The PAC found that this original change of design was driven by two key factors over others: not interrupting cruise ship tender disembarkation during the tourist season; and future-proofing the jetty for a possible future extension housing a cruise ship terminal. Together, these two factors acted as multipliers on the project and drove up its complexity, cost, and risk.

1.8 The PAC has found that the jetty refurbishment was only successful in providing a mooring point for pontoons to be attached to, but it is over-engineered for that task alone. It is also currently used as a parking area during busy cruise ship days, and, to a very limited extent, as a promenade. The PAC therefore concluded that the refurbished public jetty, in its current form and use, offers little value for money in terms of the effectiveness in the spend of public money.

1.9 The Public Jetty in its current form offers no berthing capability other than to small craft through the affixed pontoons. Nor did it ever intend to – the construction addressed in this report was always intended to be a first phase in a wider development, with vessel-berthing facilities only becoming available in later stages. This has been one of the reasons for the delay in the PAC reviewing the work, despite the public interest in doing so, as further stages of work were anticipated. However in light of the planned new port development, the PAC were advised that there were no further works anticipated. The PAC therefore further concludes that any hope of obtaining value for money from the public jetty would rest on further future development, and on a robust business case underpinning such further development of the Public Jetty.

Recommendations:

In light of the findings of the review the PAC recommends:

Recommendation One: Clarity of scope and aims

a) The PAC recommends that the intended scope and aims of capital projects is made clear in ExCo papers at the earliest stages;

b) The PAC recommends that when projects change, any change in aims be made clear for decision-makers and the public to assess value for money.

These twin issues are a common failing. This lack of clarity has been found in other projects and risks being endemic in capital projects. This review suggests that where capital projects increase (or decrease) in size from the originally approved design, that this increase (or decrease) is weighed up against the original goals, and an evaluation is made as to whether the larger or smaller design is realistically likely to deliver value for money against the original scope of the project.

Recommendation Two: Uncertainties in site conditions

The PAC recommends that financial risks associated with site conditions are clear in ExCo Papers.

The review identified some lessons that could be learned from this project, such as that the site investigation and geotechnical data requirements of capital projects be made clear in Executive Council papers. Similarly, where data gaps exist, that these gaps are explained in terms of the financial risk they add to the project.

Recommendation Three: Optimism in capital projects
The PAC recommends that the risk of 'optimism bias' needs to be addressed across FIG capital projects.

The Public Jetty overspend continues a trend in many FIG capital projects of consistent overspend. There appears to be a form of unfounded optimism in project budgets, where assumptions are made that all will go to plan. It would be beneficial if FIG could recognise and address this 'optimism-bias' in project design, and importantly, budgeting.

Recommendation Four: Whole life costs
The PAC recommends that future proofing needs to be incorporated into initial build to enable whole life costings, not just the initial capital costs.

The PAC notes that this review is addressing Phase One of the Public Jetty project, it had been intended that further phases would take place, however there was no indication of the scope, plans or cost of future phases.

Recommendation Five: Contingency
a) The PAC recommends provision of adequate contingency in budgeting for large capital expenditure.
b) The PAC recommends that consideration of resource constraints and better use of local knowledge should all be part of the planning of projects to be able to minimise the impact on timescales and to allow budgets to be more realistic.

The PAC notes that risks associated with projects and respective designs should be fully explored and reflected in **realistic** contingency budgets, particularly when new or complex projects are being undertaken.

In Summary:

This review addresses the background to the project and concludes, as stated above, that the original cost estimates were unrealistic as the project lacked sufficient site investigation to complete the work as planned. The delays, challenges and solutions caused an overspend on the original budget and a considerably longer timescale to complete the work.

The PAC recognises that the Falkland Islands Government has made progress in project management and procurement processes over recent years and that this project preceded those changes, however there is more work which must be done in this area. The PAC also recognises that the Public Jetty, as part of the waterfront of Stanley, is considerably safer and more attractive than it was in its deteriorated state.

The PAC has made recommendations in its reviews on the Fisheries Building and the Falkland College (previously Training Centre) that the scope and aims of any given capital project be made clear from its inception. If this scope grows or changes following initial project approval, consideration should be given to the risks associated with those changes, and whether the revised project design is realistically likely to deliver value for money against that of the initial scope.

It is our intention to publish this report at our earliest convenience, but the committee wanted to give the Government prior notice of our intention.

Yours sincerely

Andrew Newman
Chair, Public Accounts Committee

c.c. HE The Governor
Chief Executive

Enc. Public Accounts Committee Review of the Public Jetty Phase One Project

PUBLIC ACCOUNTS COMMITTEE

REVIEW OF THE PUBLIC JETTY PROJECT

September 2022

Contents

Abbreviations

ExCo	Executive Council
PWD	Public Works Department
FIG	Falkland Islands Government
DPW	Director of Public Works
DDPW	Deputy Director of Public Works
MFL	Morrisons Falklands Limited
FITB	Falkland Islands Tourist Board

Executive Summary

1.1 The refurbishment of the Public Jetty was originally approved by Executive Council in November 2011. This comprised the complete removal of the existing jetty and construction of a new, sheet-piled jetty. The Government's construction partner, Morrisons Falklands Limited (MFL), was asked to submit budgets for the original and several other designs. A revised design was later approved in May 2012, with a budget of £1,297,200. The chosen design was to be a tubular-piled, concrete-decked jetty built parallel to the existing timber jetty, with the timber section being refurbished and retained as part of a new, wider jetty. The project was signed off as completed in October 2017 at a total cost of £2,072,224.

1.2 The chosen design depended on strong bedrock beneath the seabed to anchor the piles. Little was known about the depth of the bedrock at the time, and the only site investigation carried out prior to finalising the design could not provide this depth with any certainty. As construction commenced, problems were encountered with the first two piles, and it became clear that assumptions made about the depth of the bedrock were inaccurate.

1.3 Sediment and rock cores were then taken using a drilling rig that had not previously been available in the Falklands, and this was complemented with a sub-bottom profile survey. The site investigation showed the bedrock layers to be much deeper than anticipated and required the pile design to be revised. New, longer piles had to be bought. These piles required further engineering and strengthening to account for the extra length.

1.4 The PAC found that the underestimation of the depth of the bedrock was the main immediate cause behind the project's delays and overspend. From the evidence examined, the PAC has further concluded that this should have been a known and material risk to the project, and one which materialised into considerable cost and time overruns. However, this risk was neither communicated to Executive Council nor accounted for in the original design or budget.

1.5 Other factors that drove up the cost of the project include a more complex rebuild of the timber section than had been envisioned; and the purchase of a piling hammer and dolly, which had not been included in the original costings. The latter is of particular concern, as both MFL and PWD had been made aware prior to the budgets being prepared and accepted that this plant would be required.

1.6 The choice of a tubular-piled design over a sheet piled design further increased the risk of the project. A sheet-piled jetty had recently been built at Port Howard, and it was certain that the skills, experience, and

plant needed to build such a jetty were already present in the islands. This certainty did not exist with a tubular-piled design. Again, this risk was not communicated to Executive Council at the time the design was approved.

1.7 The PAC found that the original change of design was driven by two key factors over others: not interrupting cruise ship tender disembarkation during the tourist season; and future-proofing the jetty for a possible future extension housing a cruise ship terminal. Together, these two factors acted as multipliers on the project and drove up its complexity, cost, and risk.

1.8 The PAC has found that the jetty refurbishment was only successful in providing a mooring point for pontoons to be attached to, but it is overengineered for that task alone. It is also currently used as a parking area during busy cruise ship days, and, to a very limited extent, as a promenade. The PAC therefore concluded that the refurbished public jetty, in its current form and use, offers little value for money.

1.9 The Public Jetty in its current form offers no berthing capability other than to small craft through the affixed pontoons. Nor did it ever intend to – the construction addressed in this report was always intended to be a first phase in a wider development, with ship-berthing facilities only becoming available in later stages. The PAC therefore further concluded that any hope of obtaining value for money from the public jetty rests on further development, and on the business case underpinning that development.

1.10 In considering what lessons could be learned from this project, the PAC could recommend that the site investigation and geotechnical data requirements of capital projects be made clear in Executive Council papers. Where data gaps exist, the PAC could recommend that these gaps are explained in terms of the risk the add to the project.

1.11 Futher, the PAC could recommend that the risks associated with projects and respective designs be fully explored and reflected in realistic contingency budgets, particularly when new or complex projects are being undertaken.

1.12 The PAC also has made recommendations in its reports on the Fisheries Building and the Falkland College (previously Training Centre) that the scope and aims of any given capital project be made clear from its inception. If this scope grows or changes following initial project approval, consideration should be given to the risks associated with those changes, and whether the revised project design is realistically likely to deliver value for money against the initial scope of the project.

About the Public Accounts Committee

2.1 The Public Accounts Committee (PAC) was established by section 81 of the Constitution[1] and it is regulated by the Public Accounts Committee Ordinance 2009.[2]

The PAC's membership

2.2 The PAC has five members:

- After consulting Members of the Legislative Assembly (MLAs), the Governor appoints the PAC Chair and two other PAC members. (None of these can be MLAs. Nor can the Financial Secretary, described in the Constitution as Director of Finance, be a member of the PAC.)

- The Legislative Assembly elects 2 MLAs to be the other two PAC members.
  (An MLA cannot serve on the PAC at the same time as being a member of Executive Council nor at the same time as being the Chair or Deputy Chair of the Standing Finance Committee - see section 81(1) of the Constitution and section 5 of the Ordinance.)

2.3 The current members of the PAC are:

- Andrew Newman (Chair)
- Sacha Cleminson (Deputy Chair)
- Nadia Knight (Lay Member)
- MLA Teslyn Barkman
- MLA Peter Biggs

2.4 The work of the PAC is supported by a full time Clerk, Nancy Locke, and it can also engage other people to assist in its work.[3]

The PAC's role

2.5 The functions of the PAC[4] can be summarised as follows:

- to examine and report on public accounts and audit reports, including those of FIG itself, as well as statutory bodies, bodies that receive public money and bodies in which FIG or a statutory body is a shareholder;[5]
- to advise on external audit arrangements and to examine and report on all reports produced by FIG's Internal Audit Department;

1 https://www.legislation.gov.uk/uksi/2008/2846/schedule/paragraph/81/made
2 https://legislation.gov.fk/view/whole/inforce/2021-04-11/fiord-2009-11
3 See section 81(4) of the Constitution and sections 9 and 9A of the Ordinance.
4 See section 81(5) of the Constitution and section 11(1) of the Ordinance.
5 The bodies covered by this include Falklands Conservation, FLH, FIDC, FIMCo, the Museum and National Trust, the Media Trust, SAAS, SAERI and Stanley Services.

- to consider and report on the effectiveness of the regulation of bodies that have been granted franchises to provide services of a public nature;
- to consider and report on any other matter that the Governor may refer to the PAC.

2.6 When carrying out its functions, the PAC has to look at the value for money derived from the public money that has been spent. It can also look at the arrangements made to manage financial risk.[6]

2.7 The Ordinance uses the terms "economy, efficiency and effectiveness",[7] which are widely used in relation to PAC activities worldwide. Economy, efficiency and effectiveness can be described as "spending less, spending well, and spending wisely".[8]

2.8 One way[9] of measuring these involves looking at:

- Inputs, such as staff and buildings vs costs in monetary terms (economy)
- Outputs of a particular good or service vs inputs (efficiency)
- Outcomes in terms of the impact on society vs outputs (effectiveness)

Value for money is the overall relationship between costs and outcomes.

2.9 The role of the PAC does not include considering matters of policy: the PAC's job is not to look at why money has been spent, but how.[10]

2.10 However, although the Ordinance provides that the PAC's functions do not include considering matters of policy,[11] it does not define what are matters of policy and there is a clear potential for overlap between policy and delivery, particularly when looking at effectiveness.

2.11 A common sense approach is being taken in this review to determine what are matters of policy and what are matters of delivery.

6 See section 11(3) of the Ordinance
7 Section 11(3)(a)
8 Joachim Werner, "Best Practices of Public Accounts Committees" (22 November 2002), p8
The paper, originally contributed for the Handbook for Public Accounts Committees commissioned by the Association of Public Accounts Committees (APAC) in South Africa, is published online by the International Budget Partnership at https://www.internationalbudget.org/wp-content/uploads/Best-Practices-of-Public-Accounts-Committees.pdf
9 "Measures of Achievement" to Kristensen, Groszyk and Bühle, "Outcome-focused Management and Budgeting", OECD Journal on Budgeting Volume 1 Number 4 (2002), pp32-33
The article, cited by Werner in his paper, is available online at https://www.oecd.org/gov/budgeting/44526575.pdf
10 See section 11(2) of the Ordinance.
11 Section 11(2)(a)

The Public Jetty Refurbishment Project

Terms of Reference

In carrying out this review, the following terms of reference were considered:

- To examine and report on the process from design, commission through to execution and final outcome of the capital project to build a new Public Jetty (Phase 1) and its suitability for purpose.

- To determine whether in its current form, the Public Jetty represents value for money.

- To determine whether, if further funds were spent on it, would the project represent better value for money?

- To determine whether there are any plans to proceed with phase 2 and, if not, why not?

- To determine why, with the experience from the successful construction of both Port Howard and Newhaven facilities, a different method of construction adopted?

- To determine what lessons can be made from the project going forward and make recommendations accordingly

Background

3.1 The Public Jetty was built in the late 19th Century and consisted of a masonry section leading to a timber structure, which in turn led out to a T-shaped, 11-metre-wide berthing face. The structure rested on timber piles, about half of which were refurbished in 1994.

3.2 Calls for the Public Jetty to be refurbished or replaced intensified in 2001. Cruise passenger numbers were increasing, and the industry expressed concerns about the safety of the disembarkation steps on the east side of the jetty. These steps served as the only disembarkation point for passengers from cruise ship tenders. In addition to being unsafe, the steps did not provide adequate access for passengers with limited mobility, and they proved a bottleneck in times of high passenger volumes.

3.3 A solution involving mooring pontoons and ramps was sought. The then PWD Design Engineer approached two companies to seek quotes for the provision of such a solution. One company declined to provide a quote, considering pontoons unsuitable for the intended purpose and predominant wind and sea conditions. Another company provided a quote in excess of the Government's expectations, and, with no budget available, the project was not progressed.

3.4 A second set of steps were approved, but never built. Later, the Falkland Islands Tourist Board (FITB) purchased and installed a set of pontoons attached to the east side of the Public Jetty and another, 'finger' pontoon attached to the north side of what is now the Jetty Visitors Centre car park.

3.5 The Public Jetty continued to deteriorate. In 2002 the northernmost end, known as the tee-head, was closed off. Surveys of the timber piles found that the ones that had not been refurbished in 1994 were subject to severe damage by marine borers. A tender was launched for the upgrade of the tee-head, but only one bid was submitted. The tender was then revised to cover a wider refurbishment of the public jetty, and the same local contractor submitted a bid to construct a sheet piled jetty. A proposal was also sought from the Government's construction partner, but neither option was progressed.

3.6 In 2004, the masonry section was refurbished, and a passenger processing hut was built to comply with international port security regulations.

3.7 There was renewed impetus in 2007 from the Tourism Development Strategy and FITB Public Jetty Report to push forward with a refurbishment. Preliminary drawings outlining what a refurbished public jetty could look like were produced and the project costed. In 2009 DPW submitted a paper to ExCo (244/09) requesting that £850,000 be

approved to knock down the Public Jetty and replace it with a sheet piled jetty. The funding was not approved by Executive Council, who concluded:

> *"that the proposed cost was too expensive and that the work should be put out to tender if possible. Tenders should be sought on cheaper options – either a shorter breakwater for landing tourists or some form of extension."*[12]

3.8 There is no record in the examined documentation of tenders having been sought. In early 2010, the PWD Design Engineer approached two overseas companies to request expressions of interest for the construction of a sheet piled jetty to replace the Public Jetty. These, however, amounted to proposals outlining the company's proposed approach and relevant experience, but no costings were included.

3.9 In November 2011, a paper was submitted to ExCo (261/11) requesting £1,047,110 over two financial years for the complete removal of the old Public Jetty and the construction of a sheet piled jetty (of the same design as had been submitted in the previous ExCo paper) to partially replace it (see appendix 2). The funding for phase 1 was approved.

3.10 The decision was made in the context of wider discussions about how to develop the whole of the Stanley waterfront. As such, the design proposed was part of a long-term plan. It sought to retain the option for a tee-head, possibly allowing vessels to berth, to be added at a later stage. Although the paper included indicative drawings for such a development, the tee-head was not included at the time as it was considered premature to do so, given that consultations and discussions on the wider waterfront development were still ongoing. Parallel to this, solutions for a new deep water port were being progressed[13], and further fed into the thinking behind the design and decision. The Executive Council paper reads:

> *"Following preliminary discussions with operators, captains, visitors, Sullivan Shipping and FITB it is suggested that transfer of visitors via the cruise ships own tenders is a perfectly acceptable as well as attractive means of arrival and departure for visitors; This is a well accepted practice in many cruise ship ports of call worldwide and FITB evidence indicates that the actual downtime likely to be caused by the Falklands winds would in reality be very infrequent.*

[12] Executive Council Minute ref SHIP 13/1 26 November 2009

[13] It is also worth noting (though not mentioned explicitly in the examined papers) that a deep-water port solution located in Port William was being progressed at the time.

> *From this it follows that the issues of providing a new fishing and commercial port and those of meeting the visitor needs of cruise vessels can be best accommodated entirely separately. If a cruise ship needs to berth alongside the new port for short term emergency repairs or services this can be provided for."*[14]

3.11 In opting for a sheet-piled, concrete-decked design, the ExCo paper said that such a design would be longer-lived and more robust than timber and allow for future extensions with relative ease. It was also proposed to keep the width of the jetty at 8 metres, the same as the old jetty.

3.12 In January 2012 PWD approached MFL in relation to the project. MFL responded with some notes for consideration regarding three different designs: a mass structure made from precast concrete blocks or concrete caissons filled with rock/concrete; a sheet piled solution as had been envisioned in the ExCo paper; and an open work structure of tubular piles topped with a concrete deck.

3.13 In the above letter, MFL outlined some of the advantages, disadvantages, and relative costs of each option. In discussing the options, several references were made to the lack of data about the sub-seabed layer levels. In considering the mass concrete structure option, MFL said:

> *"The gravity structure needs to founded on a solid rock base. Whilst the level of the solid rock base can be established at the time of construction, it would be beneficial to establish this at the time of design. Without this information, it will not be possible to determine the number of building blocks required, which, in turn, will make it difficult to establish a programme and cost."*[15]

3.14 The letter elsewhere says:

> *"Site investigation information is limited. The PWD drawing shows up to 2.4m of silt overlying rock. Wash probes and a diver held airlance, could be used to confirm the rock level. If the overlying material is more gravelly with cobbles an airlift would be required. Alternatively the Concordia Bay could be used as a platform to allow test piles to be driven at selected locations and a driving log maintained to provide design feedback."*[16]

[14] Executive Council paper 261/11
[15] Notes for consideration when considering design options, MFL to DPW 17/2/12
[16] Notes for consideration when considering design options, MFL to DPW 17/2/12

3.15 Of the above, only test piles were driven. However, the extent to which these could provide accurate data about the rock make-up below the sea-bed was severely limited (see sections 3.26-3.31).

3.16 It is not clear why, having made the implications of limited site data clear in discussing the mass concrete option, these were not included in the discussion of the sheet-piled and tubular/h-section piled options. Nor is it clear why this lack of data was not perceived to affect the ability to produce a budget estimate for the piled options. As it was, lack of site investigation data went on to have a huge impact on the final project cost.

3.17 On 17 February 2012, following a meeting in Stanley, the International Operations Director of Galliford Try, wrote to DPW. Referring to the letter discussed in paragraphs 3.12 to 3.14, the email read:

> *"Our belief is that option 3* [the tubular or H-section piled design]*, which is an open work structure, would provide a lower cost alternative and less disruption to the centre of Stanley during construction. There is a possibility that piling could cause some damage to adjacent stone and brick structures but this would need to be monitored. We can adapt the base of the circular/ H section piles with a shoe to assist in getting a toe in to the bedrock or, for the sheet piling, attach pins to the base of each pile. The only way of avoiding piling altogether is to use option 1* [mass precast concrete structure] *but I think that, although this would provide the longest design life, it would also be the most costly option."*[17]

3.18 In February 2012, the Director of Public Works sent MFL a letter of instruction requesting that MFL proceed with the preliminary design of option 3 (tubular piles decked with concrete). In an email to Galliford Try, DPW said "it does look worthwhile exploring that option," adding:

> *"One of the positive aspects of using the piled/concrete deck approach is obviously that of much reduced haulage in to site due to there being no need for fill, and in that particular location this is very much a positive, both from the point of view of impacts on the adjacent section of road which is already not in good condition and traffic management as it is probably one of the busiest sections in Stanley"* [18]

[17] Email from Operations Director, Galliford Try, to DPW, 17 February 2012
[18] Email from DPW to Galliford Try Operations Director, 22 February 2012

3.19 In March 2012, MFL's Marine Design partners, Arch Henderson, produced initial designs. The drawing shows the silt depth at the site to be approximately 2.4m at its deepest point. This was further refined following test piles, though these designs were not present in the available documentation.

3.20 MFL initially submitted five Budget Cost options to DPW in April 2012:

1) The original sheet piled design, for £1,095,445, with works expected to last 44 weeks

2) A sheet piled design off new fill from Ross Road parallel to the existing jetty, for £1,180,000, with works expected to last 49 weeks

3) A tubular piled design off the existing masonry section, for £947,815, with the works expected to last 38 weeks

4) A tubular piled design off Ross Road, for £1,333,000, with works expected to last 53 weeks,

5) A tubular piled design off new fill parallel to the existing, for £1,033,507, with works expected to last 39 weeks

Of these five options, only options 2 and 5 would retain part of the existing timber jetty. All five options included a 5% contingency.3.21 On 22 May 2012 Executive Council considered paper 150/12 on the matter. The paper laid out the above options as follows:

Option	Cost	Timescale
Previous allocation for sheet piled replacement of existing [from paper 261/11]	£1,047,110	
Budget estimate from MFL for sheet piled replacement of existing [option 1 above]	£1,120,000	44 weeks
Budget estimate from MFL for sheet piling and stone fill parallel to existing [option 2 above]	£1,207,300	49 weeks
Budget estimate from MFL for tubular steel piled concreted deck replacement of existing [option 3 above]	£947,820	38 weeks
Budget Estimate from MFL for tubular steel piled concreted deck parallel to existing [option 4 above]	£1,335,094	53 weeks
Budget Estimate from MFL for tubular steel piled with concrete deck and stone fill parallel to the existing [option 5 above]	£1,027,000	39 weeks

3.22 The paper asked members to approve option 5, which, with the cost of refurbishing part of the existing timber jetty, totalled £1,297,200 (for the purposes of comparison to the final cost, the PAC has taken this figure to be the project budget.) Of the two options that retained part of the

existing timber jetty, option 5 had the lowest cost. The proposed design is shown in appendix 3. A Phase 2 option was not included in the drawings, although it was heavily referenced in the paper itself.

3.23 In justifying the choice to retain part of the timber jetty and build a new jetty parallel to that, the paper read:

> *"The option of building parallel to the existing structure was also examined as this appeared to offer both a solution not having the jetty out of use for part of a cruise ship season, but also that of increasing space and improving what could be offered on and from the jetty. In basic terms it will double the available usable space and allow retention of the traditional form of structure.*
>
> *"This potentially means that costs for both the originally planned works and the additional structure might need to be met. However, as the new structure could provide a working platform from which the existing could be refurbished and that this would not need to take greater traffic loads than it had been originally designed for, as the new structure could instead be used as the route for both further construction works and traffic.*
>
> *"Consideration was also given to the potential future needs suggested in the Waterfront Masterplans and the broader needs as set out in the agreed Tourism Development Strategy. The proposed parallel construction option better meets the objectives of these in providing more space and will facilitate, if this is needed, further extension northwards to take small cruise vessels including deck loadings for those works and such traffic as can be expected to use the jetty if it were to become a small ship terminal. The existing part of the jetty need not be affected by these works and this would mean that future works are also not limited to being undertaken outside the cruise ship season."*

3.24 Executive Council approved the project and additional funding of £250,000 on top of the £1,047,200 previously approved in paper 261/11.

3.25 Prior to the paper going to Executive Council, the then Chief Executive questioned why MFL had been chosen instead of a tender process. DPW responded:

> *"Aside from the obvious one of there being little point in having a partnering arrangement if we are not going to use it, [we] have used MFL to develop the design of the tubular pile option in parallel with their costing our sheet piled option and the tubular pile design will need a bit more work before construction starts, and if we tendered [we] would have to prepare all the necessary documentation and detailed design before we could even go to tender and not resourced* [sic] *for that at the moment."*

3.26 By way of a site investigation, MFL asked Martech Falklands to drive two test piles (a scaffold pole driven by a 185kg post driver), into the seabed around the Public Jetty. The first test pole was located at "the north of the old steps" and reached a corrected driven depth of 2.958m from the seabed surface to the "possible rock layer". The second was located 3m north of the first pole, and reached a corrected driven depth of 2.931m from the seabed surface.

3.27 According to the record of a later meeting held in May 2013, this site investigation fed into the Jetty Design prepared by Arch Henderson, with both Arch Henderson and MFL confirming as much. The MFL regional manager is recorded to have said:

> *"[Site investigation] prior to [Arch Henderson] design was carried out by [Martech Falklands] but restricted to simple driving of a scaffold tube to assess spot depth of rock head."*[19]

3.28 The Martech report is dated 7 August 2012, three months after the decision to proceed was taken by Executive Council.

3.29 In its report, Martech also outlined the limitations of the test pile method employed:

> *"exactly what the sub-surface material came up against is not known at this point, but could only be a stiffer type of material that could possibly be driven through with a dedicated piling hammer."*[20]

3.30 A year later, in September 2013, responding to a question from the press on site investigations, DPW said of this site investigation:

[19] Record of Conference call to discuss public Jetty piling issues, Galliford Try, MFL, PWD, and Arch Henderson, 13/5/13
[20] Report from Martech Falklands to MFL 7/8/12

> *"The point at which refusal was reached reasonably matched the depth at which rock was shown on the section drawings produced for the public jetty when it was originally built, so although it was not possible to determine with certainty that rock had been reached this appeared to be a reasonable conclusion."*[21]

3.31 In an interview with the PAC, Martech Falklands reiterated doubts that Martech staff had at the time about the material that the test pile had reached:

> *"[I said] I don't know if that's thick layer of clay we can't get through"*[22]

3.32 Construction began in September 2012 with the placement of mass fill and rock armouring of the first section. It was planned to complete that first section before the start of the tourist season in the summer, with the fill being left to settle before work was restarted in April 2013, after the tourist season had finished.

3.33 In January 2013, the PWD Design Engineer submitted a calculation sheet for the purchase of a hydraulic pile hammer at a cost of £98,000. It was agreed to buy the pile hammer "and keep for future projects this would enable us to charge for hire roughly based on the [provided hire] rate". A note on the calculation sheet reads:

> *This cost is an additional cost to the scheme it was envisaged that the pile hammer used for the New Haven and Port Howard works would be adequate. Unfortunately, because of the design and the use of tubular steel piles it necessitated the purchase of a larger pile hammer. As a consequence, MFL did not allow any pile hammer cost for this item of work".*[23]

3.34 However, an earlier email from Arch Henderson to the Operations Director of Galliford Try from March 2012 shows that it was already known that a new pile hammer would be needed. The MFL Regional Manager was copied into the email, and he later forwarded it on to the PWD Contracts Engineer. The email reads:

> *"As discussed, the piling hammer on the islands is not large enough to install the piles, will advise on recommendations shortly."*[24]

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[21] Email from DPW to Penguin News, 24/09/13
[22] Interview with Martech Falklands 27/5/21
[23] Piling hammer cost comparison calculation sheet by PWD Design Engineer 28/1/13
[24] Email from Arch Henderson to Galliford Try, 22/3/12

3.35 It is not clear why, given that the issue had been raised before the budget estimates were submitted to FIG, the cost for a piling hammer was not included in those estimates. As can be seen in section 3.5, the total cost for the piling hammer and its dolly ended up being £132,360.

3.36 As work progressed on refurbishing the wooden part of the jetty that was to be kept, it became clear that the original designs for this section would have to be changed. Correspondence between MFL and Arch Henderson shows that the original plan to remove and replace wooden piles without removing cross beams was not possible, as the cross beams were notched into the piles.[25]

3.37 A meeting was held with DPW on the matter. At the meeting, DPW stated that "[MFL] need to retain appearance of what is there, as stated before"[26] According to the meeting notes, several options were discussed. Some involved complete replacement with steel piles, others using new wooden piles. In any event, all the options discussed required comprehensive removal and re-build of the wooden part. Only some of the materials in place would be able to be re-used.

3.38 DPW requested an updated budget estimate from MFL taking in this change. The new budget estimate was £1,490,556. It included the new pile hammer but not, as it later transpired, the dolly to go with it.

3.39 By May 2013 work on the piles had commenced and problems were encountered. A site record for the week commencing 29 April 2013 shows that the first two piles went in further than expected and had skewed out of plumb as they were driven in. Longer piles meant for the deeper sections had to be used instead.[27]

3.40 Responding to enquiries from the press, DPW said:

> *"The depth the first pile has gone to is greater than expected but that does not mean that the piles will need to be replaced as this can be accommodated by using the piles in a different sequence and if necessary obtaining more pile tube to extend others if the cumulative length is greater than is currently held as piles can the* [sic] *lengthened and shorted* [sic] *as necessary.*
>
> *"I do not anticipate this causing a delay to the project at this stage and if additional tubing is needed it should be possible to obtain within the allocated £1.3m budget.*

[25] Email from MFL Regional Manager to Arch Henderson Structural Engineer 11/1/13
[26] Meeting notes between DPW, MFL Regional Manager, Design Engineer and another attendee whose name is unreadable in handwritten notes
[27] MFL site record, SR Ref No 1, MFL Regional Manager, 9/05/13

> *"In determining what pile lengths to order, reference was made to earlier surveys on which the original jetty construction had been based and some additional work was down but without access to [a barge from which to position a coring rig] judgements have to be made and the pile lengths ordered were greater than the information available suggested should be needed.*
>
> *"When the first pile was being driven it kicked out of plumb and that is being reviewed to determine the reason and take corrective action before any further piles are driven"*[28]

3.41 In a follow up email, DPW further clarified:

> *"The piles were ordered with was expected to be spare length in case the bedrock was lower than the survey info suggested, it being better to have spare length – but obviously trying to strike a balance between than and having a lot of cut-offs left at the end of the job"*[29]

3.42 Around the same time, discussions were ongoing between PWD, MFL, Galliford Try, and Arch Henderson regarding how to resolve the piling issue. One of the emails, from the Galliford Try Engineering Director to the MFL regional manager and the Galliford Try Operations Director, read:

> *"I think the main cause of these problems is a lack of detailed, if any, information about the nature of the bedrock we are trying to drive the piles into."*[30]

3.43 On 13 May 2013 Galliford Try chaired a meeting with PWD, MFL and Arch Henderson to discuss the piling issues. The meeting record notes the following points, among others:

> *"[Galliford Try] commented that pile depths recorded on site records for GL1 [the first row of piles] suggest bedrock is substantially lower than is shown on [Arch Henderson] drawings & that this does give concern for actual depth & profile of bedrock and therefore the potential for matters to*

[28] Email from DPW to Penguin News, 8/05/13
[29] Email from DPW to Penguin News 09/05/13
[30] Email from Galliford Try Engineering Director to MFL Regional Manager and Galliford Try Operations Director 08/05/13

become progressively work [sic, likely meant to be 'worse'] towards GL7."

"[Galliford Try] confirmed that to progress matters a SI [site investigation] to establish the actual bedrock depth/profile was required as well as core sampling to assess rock strength in order to determine if the driving shoe/process was feasible"

"[MFL] raised the issue of whether piles driven on GL1 could have encountered obstructions/boulders, it was also raised that there is the possibility that the SI carried out may have similarly encountered obstructions & therefore the "proven" SI depths may be incorrect."

"[Galliford Try] emphasised that whilst there are considerable options/methods available to allow the works to proceed the requirement for an adequate SI was essential."[31]

3.44 At the meeting it was noted that a suitable coring rig owned by Holequest was present in the islands and carrying out site investigations in Port William. However, it was noted that a temporary stone platform would be required for the rig to sit on to carry out boreholes and recover core samples. It was also noted that Martech Falklands was using sub-bottom profile technology[32] at Navy Point, and that this could be used to correlate the rock profile of core samples with layer information.

3.45 Another conclusion from the meeting was that, pending site investigations, the design of the piles and possibly the entire jetty would have to be revisited. The maximum pile length for the design to remain valid would also have to be determined.

3.46 On 22 May 2013 Holequest provided a quote for drilling three boreholes at a cost of £17,632. This did not include standing time caused by delays outwith Holequest's control. In the cover letter sent with this estimate, the rate for this item was listed at £535 per hour. However, the full estimate table had this rate down as £975 per hour. This difference was noted by DPW in an email to MFL Regional Manager[33]. A year later, in June 2014, it was the subject of a letter from MacRoberts, a legal firm representing Holequest, and which sought to recover some £50,700 from MFL.[34] MacRoberts noted that the sum had been disputed by MFL on account of the above discrepancy and a disagreement over hours. With

[31] Record of Conference call to discuss public Jetty piling issues, Galliford Try, MFL, PWD, and Arch Henderson, 13/5/13
[32] A type of survey that uses acoustic signals to determine changes in density across a stratigraphic sequence below ground, thus illustrating different layers but not their geological make-up
[33] Email from DPW to MFL Regional Manager 22/5/13
[34] Letter from MacRoberts to MFL, MacRoberts ref: SMF/AXM/HOL/67/5 6487155v1 3/6/2014

regards to the discrepancy in the original estimate and covering letter, MacRoberts described it as "an obvious typing error" and argued that the agreement to undertake the work was based on the estimate table, not the cover letter. The file does not reflect if or how the matter was settled.

3.47 On 24 May 2013, DPW wrote to the MFL Regional Manager and approved that Holequest to be engaged to drill three boreholes based on the above estimate.[35] He further approved the construction of a temporary stone platform at an approximate cost of £21,000, with the majority (some 80%) of the fill expected to be recovered and reused on the road base at Sappers Hill housing project (but only billed to the latter). Total final rock recovery was 70%, Standing Finance Committee were told in March 2016.[36] Further approval was given for Martech Falklands to carry out a sub-bottom profile to correlate any core samples to layer levels across the area.

3.48 The same day, DPW wrote to the Chief Executive to update him on progress and informed him that the expected cost of the drill survey was to be £37,000 to £40,000.

3.49 By August 2013, the review of the design was underway. According to a SFC paper from 2016, the re-design resulted in "the average length of the piles being increased from 7 metres to 14 metres"[37]. In a meeting between MFL, Arch Henderson, Galliford Try, and the then Deputy Director of Public Works (DDPW), Arch Henderson said that the new, longer piles would "require the top of the pile, approximately 4.5m, to be concrete filled with reinforcement into the pile cap. The piles will also be driven as open ended with additional strengthening at the open end of the pile tube."[38]

3.48 At that meeting, MFL Regional Manager confirmed that one of the aborted piles would have to be cut off at the seabed. Martech Falklands told the PAC that this required the construction of a temporary cofferdam as the cutting level below the waterline. [39]

3.49 On 25 September 2013, a paper was submitted to Standing Finance Committee requesting additional funding of £491,060.[40]

3.50 The figure was the sum of £193.447 (the difference between the originally allocated £1,297,110 and the revised budget estimate submitted by MFL in April 2013 of £1,499,557) and additional funding of £297,613.

3.51 The £297,613 of additional funding was broken down as follows:

[35] Email from DPW to MFL Regional Manager, 24/5/13
[36] Standing Finance Committee paper 15/16
[37] Standing Finance Committee paper 15/16
[38] Conference call record, MFL, DDPW, Arch Henderson, Galliford Try, 9/8/13
[39] Interview with Martech Falklands 27/5/21
[40] Standing Finance Committee paper 34/13 25/09/13

	Description	Cost	Estimated/Cost
1	Increased cost of piling hammer[41]	£34,360	Actual
2	Site Investigation works[42]	£134,307	Estimated
3	Site Demobilisation[43]	£9,160	Actual
4	Site Re-mobilisation	£9,457	Estimage
5	Pile modification works following Site Investigations	£99,822	Estimated
6	Timber pile modifications following site investigations	£10,500	Estimate
	Total	**£297,606[44]**	

3.52 The paper notes that the £491,060 of additional funding being sought includes contingencies of £88,469. Of this amount, £45,055.64 relates to a figure being disputed by MFL (see 3.46), leaving £43,414 as a general contingency. This figure is the same as the 3% contingency included by MFL in the revised budget estimate in April 2013. The general contingency of the project going forwards was therefore 4.8% of the remaining budget (remaining balance of £403,126 plus additional funds of £491,060). The additional funding was approved, bringing the total project budget to £1,724,269.

3.53 The paper put down the cost increases to "a combination of underestimation and consequences of the seabed conditions being markedly different from that which had been expected." It further pointed out that:

> *"[the Holequest drilling rig] had not been present when the previous survey work was done and had been considered of too great a cost to contemplate as a stand alone item particularly as the more recent surveys done for PWD and MFL appeared to support the historic survey information available."*

3.54 The paper also went on to conclude:

> *The method selected is still viewed as being appropriate, in that the steel piled design is replicable and suited to extension into the deeper*

[41] As noted in 3.33 and 3.5, the £98,000 cost of the piling hammer was not included in the original 2011 budget estimate that underpinned ExCo paper 261/11. This was later added in the revised budget estimate submitted to PWD by MFL in April 2013. The £34,360.03 being sought here was needed because that £98,000 estimate "was for the piling hammer only and did not include the larger dolly required." Additionally shipping costs were £7,543.54 when compared to the £2,500 originally estimated.
[42] £45,055.64 of this was at the time being disputed by MFL, and was therefore considered a contingency
[43] Site de-mob and re-mob to allow for cruise season to take place
[44] This figure presents a £7 discrepancy with those in x-ref, but it is not considered material for the purposes of this report

water which will need to be reached if a small cruise ship terminal is developed.

It also allows for a wave control wall to be installed along the line between the existing and new sections, in a way which would not either result in spray breaking over the top of the jetty, or result in long term silt build up, which would be the case with a solid construction such as sheet piling. Solid construction is also more likely to result in wave energy being reflected or concentrated when the wind is coming from the east.

3.55 While it is not in the remit of this report to evaluate the engineering merits of one solution versus another, it is important to point out that these concerns with a sheet piled design had at no point been previously noted in the documents examined by the PAC (including and specially ExCo paper 261/11, which asked members to consider and approve a sheet-piled design).

3.56 The paper also included a diagram of the revised site investigation data, and showed the levels where the rock line was previously thought to have been. (see appendix 4). The diagram shows a complex column of geological layers across the site, including gravel, firm gravelly clays, and sandstones of differing strengths.

3.57 The paper further recommended that, if a similar drilling rig were ever to be in the Falklands, opportunistic use should be made of it to take core samples of the area north of the proposed rig, in the event that a cruise ship terminal was ever built. Upon publication of the paper, the then manager of the Falkland Islands Company (FIC) wrote to the FIG to offer the services of a jack-up barge and drilling rig being brought to the islands for the construction of the Noble Energy Temporary Dock Facility (TDF). In an email to the DPW, the DDPW said that a request had been put in to the Treasury for a dispensation to use the rig without seeking tenders. It is possible, though not clear, that a further £150,000 was approved for this purpose (see section 3.62).

3.58 The file shows at that at some point a jack-up barge was employed to drive the piles from. In an update to Standing Finance Committee in January 2015, the DPW informed the Head of Finance that, of the £1,724,269 total project budget, a balance of £705,177 remained. The email also gave an update on works:

"The next stage of work is that of driving the tubular steep piles, which is to be done using the jackleg barge which has been working on the TDF. Availability has been dependant upon other work being complete, and although several work windows

have been indicated, the most recent of which had been this week, for various reasons (most latterly that the crane on the barge has suffered a breakdown and work cannot be done until that is repaired) it is still planned for the piling work to be done using that barge. Some preparatory work has been done cutting part of the timber tee head back to provide space for the piling rig to work."

"Other remaining works are planned to recommence in late April 2015, post cruise ship season, so there is still a reasonable time period for the piling works (which are only scheduled to take about a week, weather permitting) to be completed."

"Using the jackleg barge will result in greater accuracy with the pile driving, which should make other works more straightforward and reduce potential risk for downtime, and the rate for piling is a fixed fee for the work."

"It is considered at this stage that the project can be delivered within the remaining budget amount. This will be reviewed again once the placement of the main structure onto the piles has been completed. As the latter is one of the most significant sections of work remaining and the remainder should be less weather dependant."

3.59 Little over a year later, in March 2016 DPW wrote to SFC to request additional funding of £187,000[45]. In discussing the delays to the project so far, the paper addressed the above issues and further described the following delays:

Wave Guides *- The installations of guides to the East of the Concrete Jetty to protect and stabilise the pontoons, delay due to shipping and weather.*

Construction of Bank Seat and Causeway *- The design verification required to finalise the overall design of the Bank Seat and Causeway. The initial Causeway was built to support the piling operations during the SI stage. Clean primary stone was used in the construction of the Causeway to limit the amount of fines during construction. Once the SI was completed, 70% of the stone was removed and reused on the Sapper Hill Housing development.*

[45] Standing Finance Committee Paper 15/16

> ***Rock Armouring*** *- Reengineering of the North West and North face after the construction of the Bank Seat is required. This will ensure the Causeway is protected against wave action.*
>
> ***Pontoons*** *– Addition to scope - The installation of new Dolphin piles and guides to support the Pontoons. The original installation had been manufactured locally and was in need of repair. To better support the Pontoon for tourists and Yachts, six new piles were driven in and new guides were purchased installed to better stabilise the Pontoons. Additional supports were required between the new Dolphin piles and Timber Jetty to strengthen the piles to allow yachts to moor up alongside the Pontoons.*

3.60 The brunt of the additional funding required, the paper said, would be for the final construction of the bank seat and causeway (£129,100) and final snagging, welding, and protective painting (£35,100):

> ***Final Construction of Bank Set*** [sic, seat] ***& Causeway*** *– The original designs issued have been reviewed by FML and PWD. The final construction of the Causeway and Banks Set will be taken forward as per the original design. One of the concerns was that there was a potential risk of fines washing out, however on review it was confirmed that due to the martial* [sic, material] *used during construction and with the final construction of the Rock Armour this would not be an issue.*
>
> ***Snagging and Welding*** *– Final Snagging of the Concert* [sic, concrete] *and Timber Jetty, welding of the piles and bracing along the Timber Jetty, welding and final protective painting welded metal work.*

3.61 The additional funding would bring the total budget of the project to £2,023,614. The increase in scope to allow yachts to moor to the pontoons, the paper points out, added a further £48,610.

3.62 This total includes "an additional £150,000 […] for the drill rig", which according to the SFC paper, was approved in financial year 13/14. The PAC could not find any record of how this sum was approved, nor any more detail on what it was intended for beyond "for the drill rig". Two possibilities are likely:

a) The paper is referring to the £134,307 approved as part of SFC paper 34/13 and assigned to site investigation works (the

boreholes that went on to inform the pile redesign). However, SFC paper 15/16 states that the £150,000 was additional to the £1,724,269 approved up to and including SFC paper 34/13. In other words, the £134,307 had already been accounted for in the running total, so if the £150,000 was indeed referring to this amount, there was double counting.

Or,

b) The £150,000 refers to the cost of drilling additional boreholes for future developments as per section 3.57. If this is the case, the PAC could find no record of if or when this sum was approved by Standing Finance Committee, or whether it was met from an existing budget line. The available documentation only showed an estimate from Trant for carrying out additional boreholes for £93,386 but there was no invoice nor any evidence of the work having been carried out.

3.63 In July 2016 MFL submitted an additional budget for the completion of the public jetty for £149,325. The covering letter to the budget outlined that

> *"MFL would cover the cost for realignment of the revetment and piling support works for the bank seat. This will bring the project to a stage where the remainder of the works (as per original scope) can ben completed under the Partnership agreement."*

3.64 The budget was accepted by the then new DPW (excluding the £5,971.39 contingency, which would be subject to further requests).

3.65 The project was officially completed in October 2017, when a certificate of practical completion was signed off by the PWD contracts engineer.

How the review was carried out

4.1 The review was mainly carried out by reviewing correspondence and documentation contained within PWD file 3107. Further documentation was sought from FIG, namely: relevant ExCo minutes, Standing Finance Papers, and clarification on legal advice requested in an ExCo minute. Further information and clarification was also sought from the present Director of Public Works, who was in place at the time the project was completed.

4.2 The Waterfront Development Masterplan was also reviewed insofar as its outputs had a bearing on the chosen jetty design.

4.2 An interview was carried out with Martech Falklands in May 2021, with follow up questions in May 2022.

4.3 The Director of Public Works at the time of the initial project approval, and in place throughout the majority of the project, was not able to be contacted to be interviewed by the PAC in relation to this project.

Key Findings

5.1 The total cost for the refurbishment of the public Jetty was £2,023,614 compared to the original budget allocation of £1,297,200. An additional cost of £48,610 was incurred by virtue of the increased scope to allow yachts to moor at the pontoons. Construction began in September 2012 and a certificate of completion was signed in October 2017.

5.2 The PAC has found that the main immediate cause of the overspend and delays was the unexpected geological makeup of the layers underneath the seabed. The tubular piled design chosen for the jetty depended on strong sandstone for the piles to be driven into. This strong sandstone was much deeper than anticipated, consequently requiring new piles that were longer, re-engineered, and had to be driven from a jack-up barge, all of which drove up costs.

5.3 In analysing the root causes behind this, the PAC has considered whether it should have been a known risk. As far back as 2001 the PWD Design Engineer had written to a potential supplier of pontoons and said:

> *"…we know nothing about how the piles are anchored in the sea bed, or indeed if they are anchored at all. The inference from what we do know is that they penetrate about 1 metre of boulderous silt and stop short in* [sic] *the top of the weathered quartzite below…"*[46]

5.4 In 2012, when Galliford Try discussed three different jetty options with PWD, the lack of site investigation data was outlined. However, an option was costed, submitted to ExCo and consequently approved without any further site investigation. As far as the PAC can see, the only site data used to back up the decision to opt for a tubular piled design was historic data gathered during the jetty's original construction in the late 19th century. Only after the tubular piled design was approved by ExCo were test piles driven in. These were used to feed into the final pile length for the final design, but the test piling method used was limited. These limitations were known at the time and made clear to MFL by the test-pile sub-contractor, Martech Falklands. These limitations do not appear to have been heeded, and the assumptions made had a major impact on the final cost. Given the age of the original construction data, and the patent limitations of the test pile method, the PAC does not have the confidence that there was enough information to reasonably conclude that the test piles had reached rock. Furthermore, there is a marked contrast between the optimism in basing the pile design upon the test piles, and the stark view later expressed by the Galliford Try engineering team when the initial piling works encountered problems:

[46] Email communication, Design Engineer to Intermarine Ltd, 04/12/01

"I think the main cause of these problems is a lack of detailed, if any, information about the nature of the bedrock we are trying to drive the piles into."[47]

5.5 The PAC further concludes that the lack of site investigation and geotechnical data posed a known and huge risk to the project. This risk was not made clear in ExCo papers 261/11 or 150/12. It does not appear to have been catered for in the 5% contingency included in the MFL budget cost estimates, nor, as the above makes clear, does it appear to have been taken into account when considering the results of the test piles. The point made by DPW in Standing Finance Committee paper 34/13 that a coring rig was not available in the Falklands at the time, and that the cost was too prohibitive to consider as a stand-alone item, seems, on the face of it, a reasonable one. However, this decision is not documented prior to that paper, nor is it included in the above ExCo papers.

5.6 The PAC has found that the cost figure for the chosen jetty option included in ExCo paper 150/12 was not accurate by virtue of not including the cost for a pile hammer and dolly. This cost added £132,360 to the project, and it is not clear why it was not included in the budget cost estimate even though there is evidence that both MFL and PWD knew that a new hammer would be required. Had this been included in the cost estimate, and consequently in ExCo paper 150/12, the total initial budget allocation requested for the project would have been £1,429,560, 10% higher. To an extent this is academic, as the cost was always going to be associated with this design. However, the fact that an item so crucial to the project was left out of budget estimates not once but twice, raises questions as to the diligence with which the budgets were prepared and reviewed.

5.7 To evaluate the project's effectiveness and the extent to which it delivered value for money, the PAC has considered the project's aims and requirements. In reviewing the available documentation, the PAC has concluded that the Public Jetty refurbishment project was required to satisfy the following requirements:

- To provide a platform to which pontoons could be affixed for the disembarkation of cruise ship tenders
- To allow for a possible extension that would allow small cruise vessels to dock to be built at a later stage, as per the Waterfront Development Plan and Tourism Development Strategy.
- To be carried out without disrupting passenger disembarkation operations during the cruise season (26 weeks)

[47] Email from Galliford Try Engineering Director to MFL Regional Manager and Galliford Try Operations Director 08/05/13

- To minimise the amount of material trucked to site through Stanley
- Later, after the tubular piled design was approved, to retain part of the historic jetty.
- Also after the tubular piled design was approved, to provide greater width that would serve a potential cruise terminal

5.8 It is not clear from the examined evidence to what extent any compromise was sought on any of these requirements[48]. As they fall within the sphere of policy, they are not within the remit of the PAC to examine. However, it is a logical observation to make that the more the requirements a project seeks to satisfy, the greater its complexity, cost, and risk; all of which can (and did) have an impact on value for money.

5.9 Perhaps noted for its absence from the above list is any form of berthing facility other than the pontoons for cruise ship tenders. However, the structure in its current form was never intended to offer a berthing capacity. This is backed up by a request for information submitted to the PWD Contracts Engineer by MFL, which confirmed that no bollards would be required and that the only berthing to the jetty would be on the pontoons.[49]

5.10 With regards to the choice of a tubular piled design over the sheet-piled design, there are some considerations that merit highlighting from the point of view of efficiency and value for money. The first is that of locally-available experience. A sheet-piled jetty had recently been built in Port Howard, and when Galliford Try wrote to PWD in 2012 to discuss three separate jetty options, they said of the sheet piled option:

> *"The skills and equipment are available on the island."*[50]

Whereas for the tubular-piled option:

> *"It is likely that most of the equipment and skills needed are available on the island, although there may be a need to import some specialist skills or equipment depending on final design."*[51]

Specialist equipment, such as a new piling hammer and a jack-up barge, was indeed required. However, this was not included in the budget estimates, much less communicated to Executive Council. Furthermore, from evidence heard by the PAC, it appears that MFL relied heavily on

[48] A compromise of sorts was forced by the need to build a temporary fill platform from which to use the Holequest drill rig. This required large amounts of material to be trucked into the site, one of the main reasons why the sheet piled design had been rejected.
[49] Request for information from MFL to PWD Contract Engineer, 24/2/12
[50] Notes for consideration when considering design options, MFL to DPW 17/2/12
[51] Notes for consideration when considering design options, MFL to DPW 17/2/12

Martech Falklands as a subcontractor to build the jetty[52]. The choice of a tubular-design over a locally-proven design increased the risk associated with the project, a risk which materialised into cost and time overruns.

5.11 It is also highly likely that a sheet-piled design would have been less risky in the absence of solid site investigation data During their interview with Martech Falklands, the PAC asked their opinion on this matter:

> *"If the decision to build out of sheet piles had been taken, we would not have had any major issues as sheet piling is very forgiving during driving- a sheet pile wall relies on many single sheets driven as far as possible, all holding each other in place-not a single round pile which has to be driven as straight as possible. Sheet pile walls are rarely driven straight right along its length as there is a certain amount of flex in its vertical orientation, and relies on a steel frame bolted in after driving to pull everything together to make it straight and solid."[53]*

5.12 In a paper to Standing Finance Committee in 2013, DPW said:

> *"It also allows for a wave control wall to be installed along the line between the existing and new sections, in a way which would not either result in spray breaking over the top of the jetty, or result in long term silt build up, which would be the case with a solid construction such as sheet piling. Solid construction is also more likely to result in wave energy being reflected or concentrated when the wind is coming from the east."[54]*

The PAC found no previous reference to this in the examined documentation, and it does not appear to have been documented when the sheet-piled design was dropped in favour of a tubular-piled design. It is not clear to the PAC why this drawback of the sheet-piled design was not voiced until such a late stage, and not earlier when a sheet-piled design was still being progressed.

5.13 The PAC found that the requirement to not disrupt cruise disembarkation operations during the construction period was a key driver behind the change in design. None of the designs proposed would be completed in the 26 weeks in which there are no cruise ship visits, and so the final design was favoured because the timber section to which the pontoons are attached would be retained throughout the construction period. This appears a reasonable requirement, but it

[52] This is not without its irony: when DPW justified not putting the project out to tender to the Chief Executive, he questioned whether any local companies had the skills to carry out tubular piling.
[53] Interview with Martech Falklands 27/5/21
[54] Standing Finance Committee paper 34/13 25/09/13

nevertheless had a clear impact on the project and caused it to grow in size, complexity, risk and cost. It is not known to what extent, if any, other options were explored (or indeed available) to temporarily relocate the tender mooring facilities.

5.14 The PAC found inferred evidence that there was an element of aesthetics behind the change to a tubular piled design, or at least in the desire to retain part of the wooden jetty, although it is not explicitly referred to in ExCo paper 150/12. In an email to the press in September 2012, DPW said that "the new section of the jetty fits in with the model envisaged in the Waterfront Development master plan and should not look markedly dissimilar in style to the existing structure."[55] Design generators in the Waterfront Development Report included "indigenous materials", "natural appearance", "sympathetic to existing", and "timber".[56] The report was published in September, four months after ExCo paper 150/12 was considered, and was based on consultations carried out in February and August. It is not known to what extent these considerations fed into the decision to change the design. However, there is strong evidence that by the time works started on the refurbishment of the timber section, the need to retain the existing character had become an important consideration. Handwritten meeting notes by DPW from a meeting with MFL regarding the refurbishment of the timber section state that "MFL need to retain appearance of what is there, as stated before."[57] This seems to be supported by a paper put to Standing Finance Committee in September 2013, which states that steel beams supporting the refurbished wooden part of the jetty "would be hidden from view so as to retain much the same appearance as the existing historic structure."[58]

5.15 The most urgent reason to replace the public jetty had been to retain the pontoon facility. In the opinion of the PAC, the business case for this was solid and, undoubtedly, the refurbished public jetty achieved that goal. Viewed in those terms alone, the jetty is effective, but it is excessively overengineered for the task.

5.16 At present, the jetty is used by waiting tour drivers in the summer and as a promenade of sorts throughout the year. These uses can be said to be convenient, but it is not the view of the PAC that they offer any value for money compared to the time and cost poured into the project.

5.17 The public jetty in its current status offers no berthing facility, nor was it intended to. In both the original design and the final design, the public jetty sought to retain the future option to build a berthing face. This was the rationale behind building a larger, engineered structure, rather than

[55] Email from DPW to Penguin News, 12/09/12
[56] Stanley Waterfront Development Masterplan Final report v5, Marina Projects, September 2012
[57] Handwritten meeting notes, DPW, Contracts Engineer, MFL Regional Manager, and fourth unreadable attendee, 22/1/13
[58] Standing Finance Committee paper 34/13 25/09/13

one which just provided shelter and walkways for the pontoons, as had been suggested by Executive Council in 2009.[59] There was a clear economy of scale in this, and the original design approved in November 2011 struck a careful balance between developing a facility that met the urgent needs while leaving the door open to future development. Over the course of the following six months, it became clear that the chosen option could not be completed within 26 weeks. At the same time, the Tourism Development Strategy and plans for the Waterfront Development, both of which favoured a small cruise ship berthing facility, began to take shape. These two factors together acted as multipliers on the project; the construction of a wider, stronger jetty not only satisfied the need to retain the pontoons throughout the year, but it would also facilitate a more ambitious future development:

> *"The proposed parallel construction option better meets the objectives of [the Waterfront Masterplans and the Tourism Development Strategy] in providing more space and will facilitate, if this is needed, further extension northwards to take small cruise vessels including deck loadings for those works and such traffic as can be expected to use the jetty if were to become a small ship terminal."*

5.18 Thus, the PAC has found that any expectation of the project achieving value for money rests on further development of the jetty, and the business case underpinning that development. That business case is crucial: while the Public Jetty is unlikely to offer any value for money in its current form, neither will further development unless it is based on a solid business case. However, the current DPW confirmed to the PAC that there are no current plans to develop the jetty and that cruise ship berthing has been included within the scope for the new port. This makes it unlikely that a business case based on the cruise ship industry will ever exist for the Public Jetty beyond the pontoons. In other words, it is highly likely that that Public Jetty project has delivered as much value for money as it is ever going to deliver

5.19 In its function as a structure for pontoons to be affixed to, it is a vital piece of infrastructure to the tourism industry and should be maintained accordingly to ensure that what little value for money it has provided so far isn't further eroded unnecessarily. The current DPW confirmed that inspection of the steel structure will be added to the dive survey cycle currently being set up for jetties and ramps, and it will therefore be carried out every five years. In addition, the handrail and supports will be visually inspected and task orders raised as required.

5.20 The PAC might want to consider recommending that ExCo and SFC papers seeking funding for capital projects explicitly address what site

[59] Executive Council Minute ref SHIP 13/1 26 November 2009

investigation and geotechnical data has been collected, what data gaps there are, the consequent risk on the project, and how those risks have been mitigated in planning and costing the project.

5.21 The PAC might also want to consider recommending that risks associated with projects and respective designs be fully explored and reflected in realistic contingency budgets, particularly when new or complex projects are being undertaken.

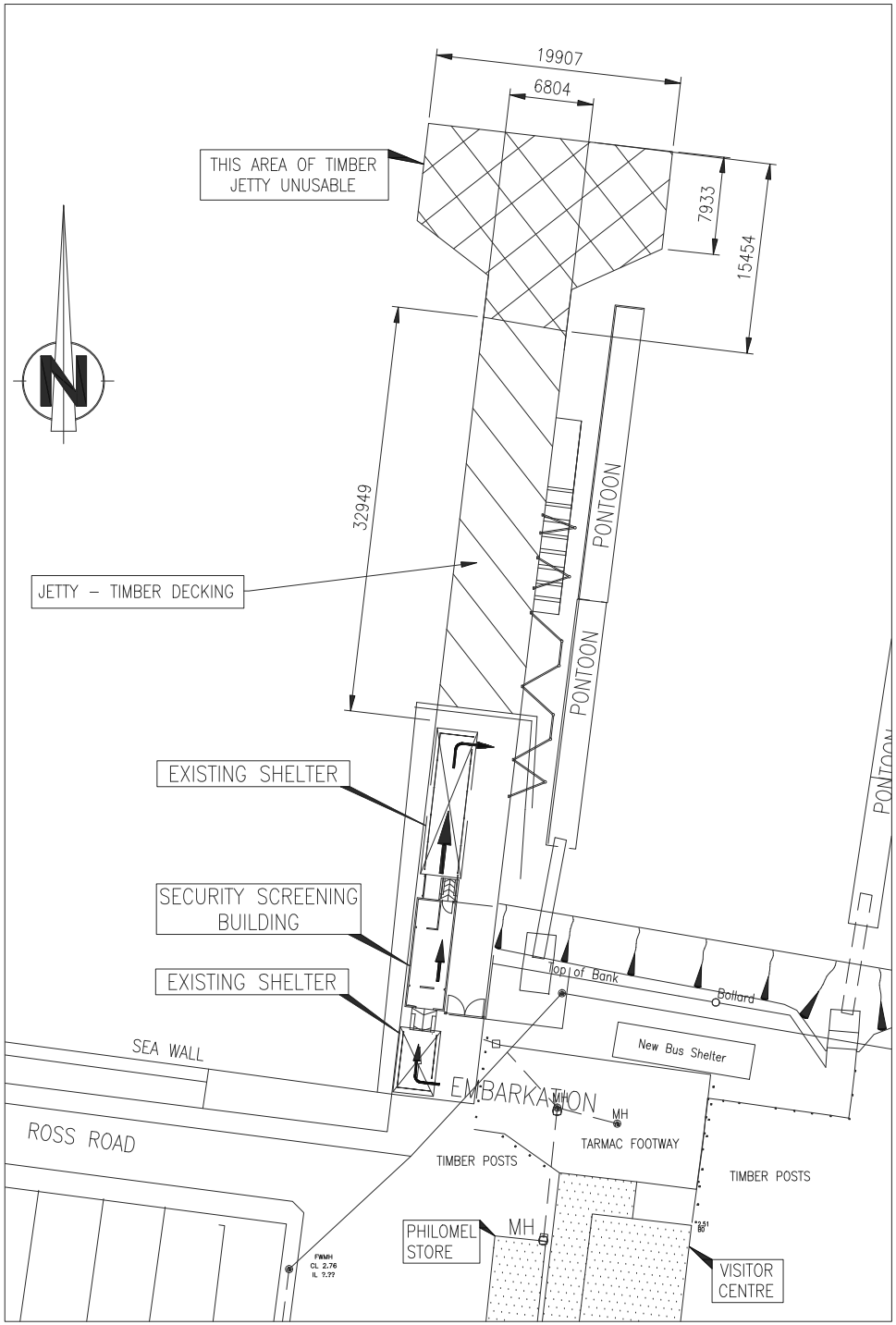
5.22 The PAC might also consider recommending that the intended scope and aims of capital projects is made clear in ExCo papers, and that these goals be used to underpin the design of the projects. The PAC might want to further recommend that, where capital projects increase in size from the originally approved design, that this increase is weighed up against the original goals, and an evaluation made as to whether the larger design is realistically likely to deliver value for money against the original scope of the project.

Appendices

Appendix 1

List of Evidence (copies available on request)

Executive Council Minute ref SHIP 13/1 26 November 2009
Executive Council paper 261/11
Notes for consideration when considering design options, MFL to DPW 17/2/12
Email from Operations Director, Galliford Try, to DPW, 17 February 2012
Email from DPW to Galliford Try Operations Director, 22 February 2012
Record of Conference call to discuss public Jetty piling issues, Galliford Try, MFL, PWD, and Arch Henderson, 13/5/13
Report from Martech Falklands to MFL 7/8/12
Email from DPW to Penguin News, 24/09/13
Interview with Martech Falklands 27/5/21
Piling hammer cost comparison calculation sheet by PWD Design Engineer 28/1/13
Email from Arch Henderson to Galliford Try, 22/3/12
Email from MFL Regional Manager to Arch Henderson Structural Engineer 11/1/13
Meeting notes between DPW, MFL Regional Manager, Design Engineer and another attendee whose name is unreadable in handwritten notes
MFL site record, SR Ref No 1, MFL Regional Manager, 9/05/13
Email from DPW to Penguin News, 8/05/13
Email from DPW to Penguin News 09/05/13
Email from Galliford Try Engineering Director to MFL Regional Manager and Galliford Try Operations Director 08/05/13
Email from DPW to MFL Regional Manager 22/5/13
Letter from MacRoberts to MFL, MacRoberts ref: SMF/AXM/HOL/67/5 6487155v1 3/6/2014
Email from DPW to MFL Regional Manager, 24/5/13
Standing Finance Committee paper 15/16
Conference call record, MFL, DDPW, Arch Henderson, Galliford Try, 9/8/13
Standing Finance Committee paper 34/13 25/09/13
Email communication, Design Engineer to Intermarine Ltd, 04/12/01
Email from Galliford Try Engineering Director to MFL Regional Manager and Galliford Try Operations Director 08/05/13
Request for information from MFL to PWD Contract Engineer, 24/2/12
Email from DPW to Penguin News, 12/09/12
Stanley Waterfront Development Masterplan Final report v5, Marina Projects, September 2012



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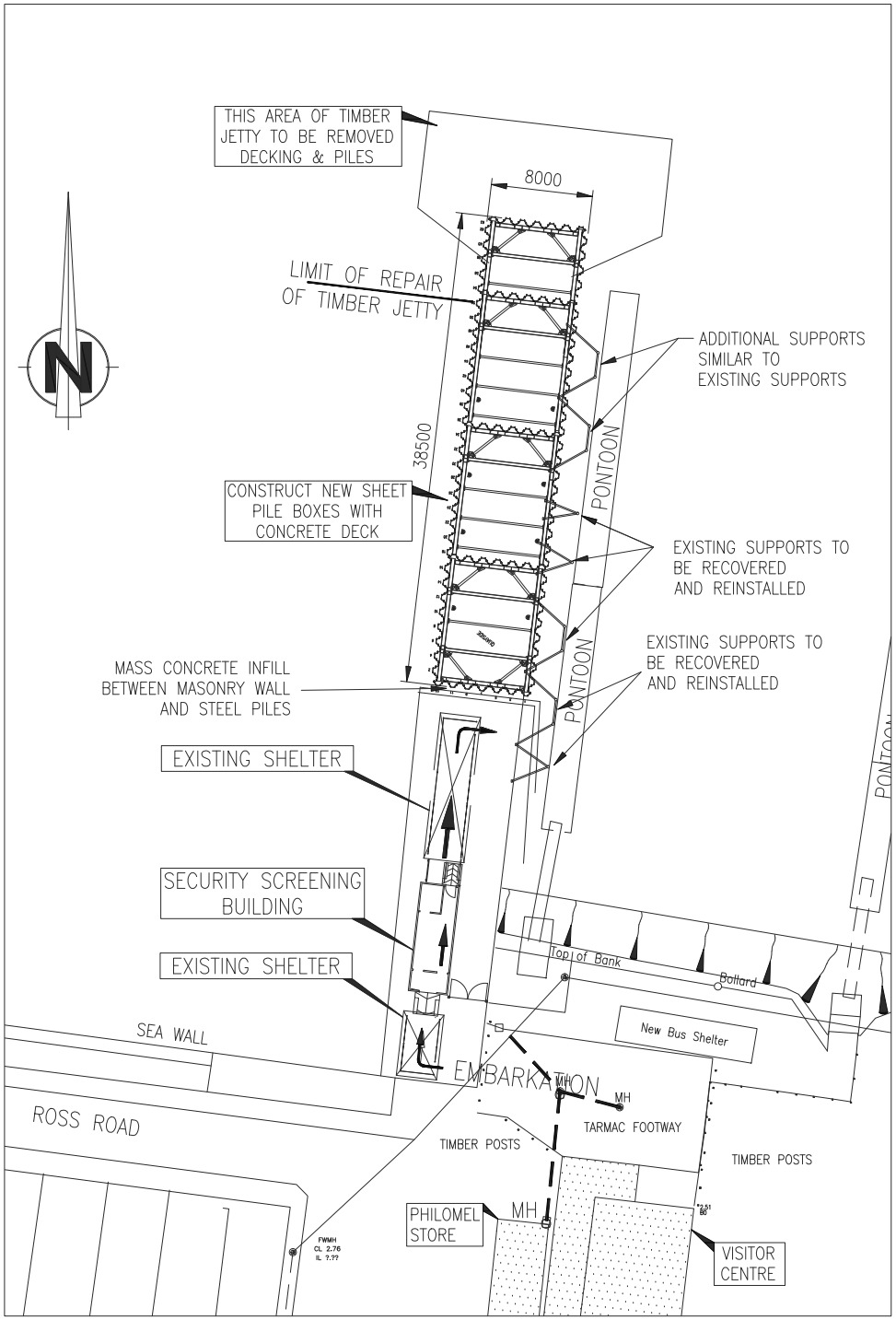

PROPOSED JETTY IMPROVEMENTS
RENEWING EXISTING JETTY CURRENTLY IN USE

1:200

NOTES

1. THIS DRAWING SHOULD ONLY BE USED FOR THE PURPOSE INTENDED. ONLY WRITTEN OR CALCULATED DIMENSIONS SHOULD BE USED. DRAWING MUST NOT BE SCALED.
2. ALL DIMENSIONS ARE METRES UNLESS OTHERWISE STATED.
3. THIS DRAWING TO READ IN CONJUNCTION WITH DRG NOS. PWD/???/02 & 03.

Rev	Amendment	Date

FALKLAND ISLANDS GOVERNMENT
PUBLIC SERVICES DEPARTMENT
DESIGN SECTION
ROSS ROAD
STANLEY Tel: 27188

PROJECT

PUBLIC JETTY REDEVELOPMENT

TITLE PLAN ON EXISTING & PROPOSED RENEWING JETTY DECKING CURRENTLY IN USE

SCALE	DATE		
As shown	23 OCT 2009		
FILE	DESIGN	DRAWN	CHECKED
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DRAWING NUMBER

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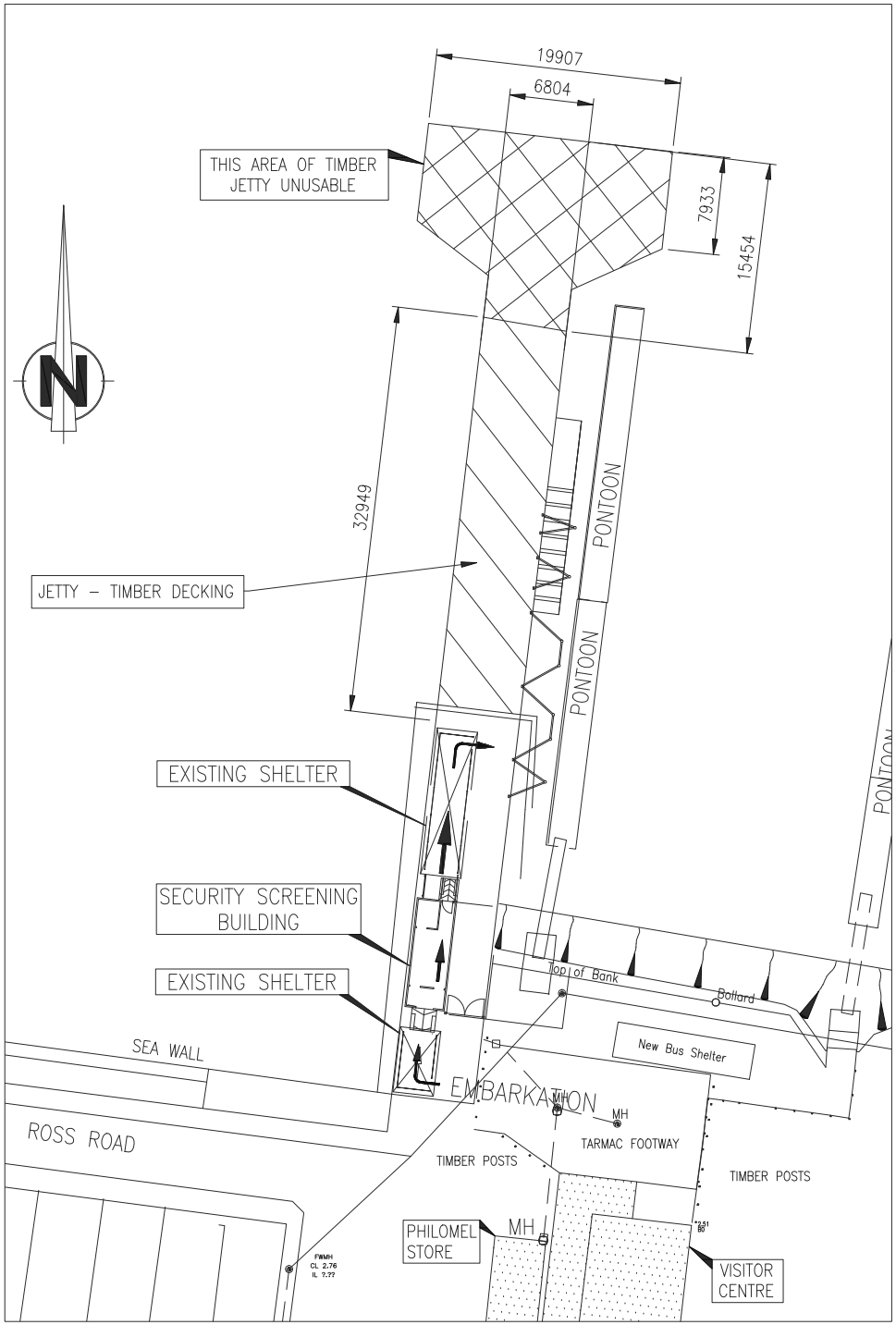
	PROJECT	DRAWING	REVISION



EXISTING JETTY LAYOUT

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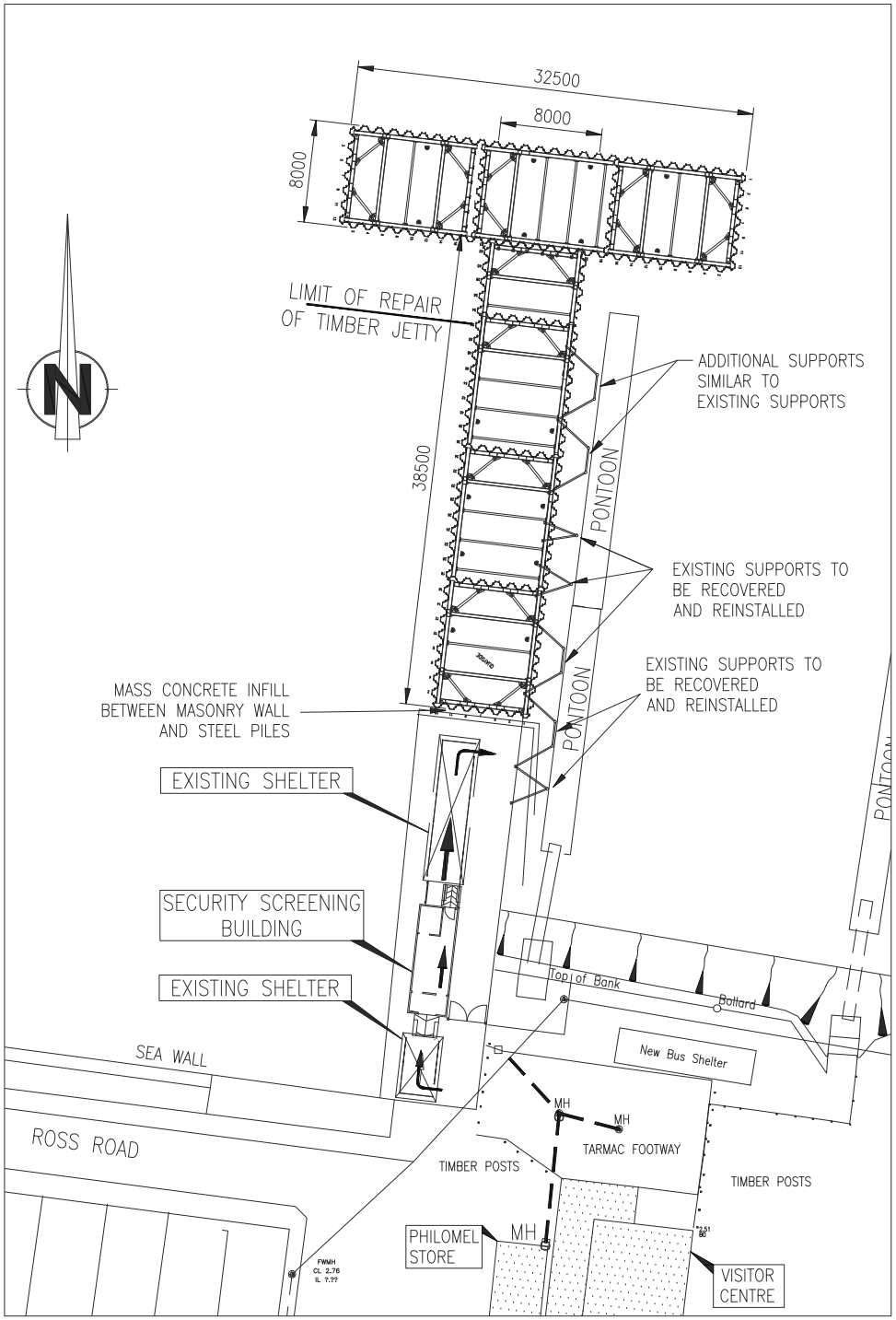

PROPOSED JETTY IMPROVEMENTS – OPTION WITH JETTY TEE

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NOTES

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Rev	Amendment	Date

FALKLAND ISLANDS GOVERNMENT
PUBLIC SERVICES DEPARTMENT
DESIGN SECTION
ROSS ROAD
STANLEY Tel: 27188

PROJECT

PUBLIC JETTY REDEVELOPMENT

TITLE

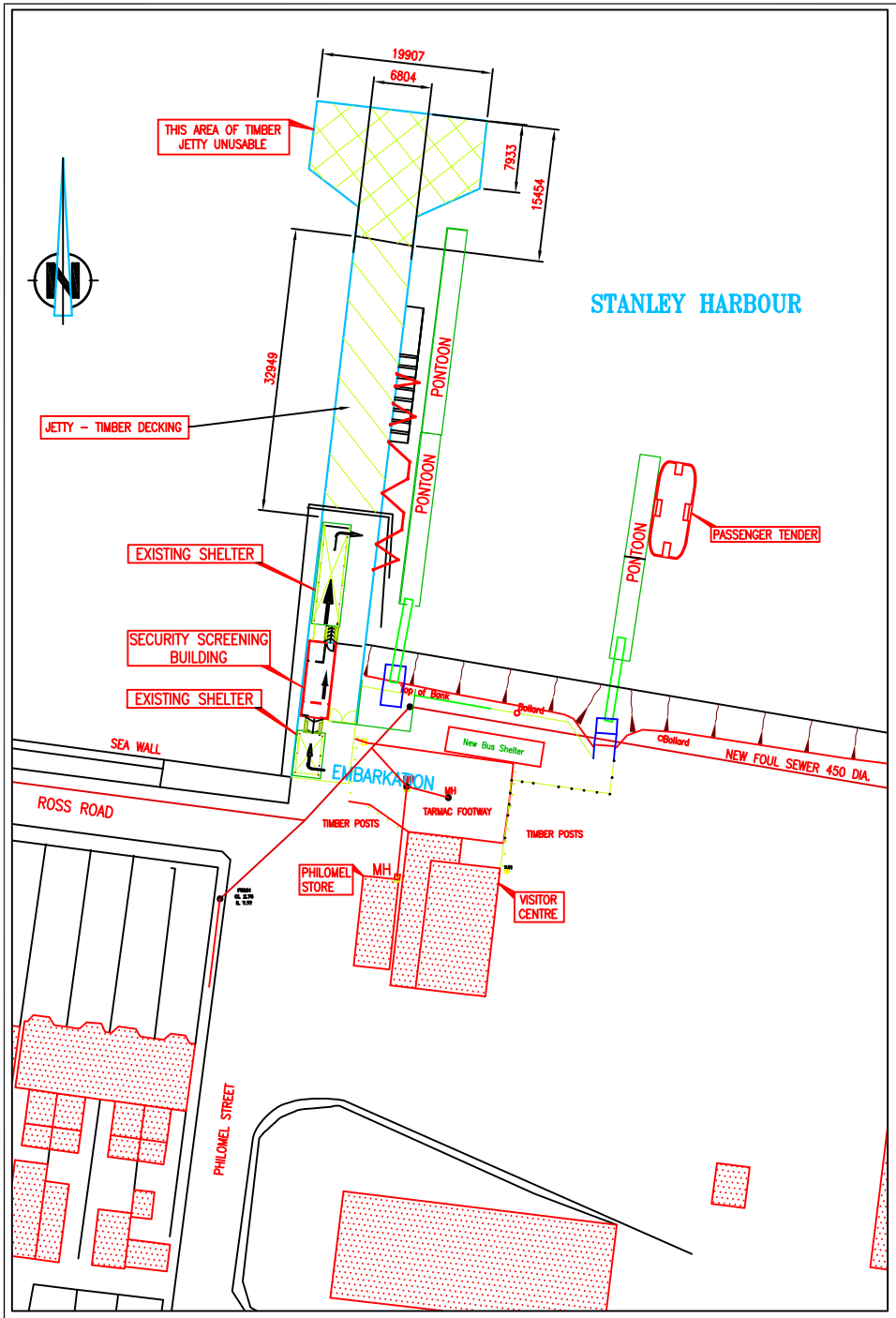
PLAN ON EXISTING & PROPOSED WITH NEW TEE HEAD

SCALE	DATE
As shown	23 OCT 2009

FILE	DESIGN	DRAWN	CHECKED
????	–	CMC	

DRAWING NUMBER

PWD	527	02	–
	PROJECT	DRAWING	REVISION



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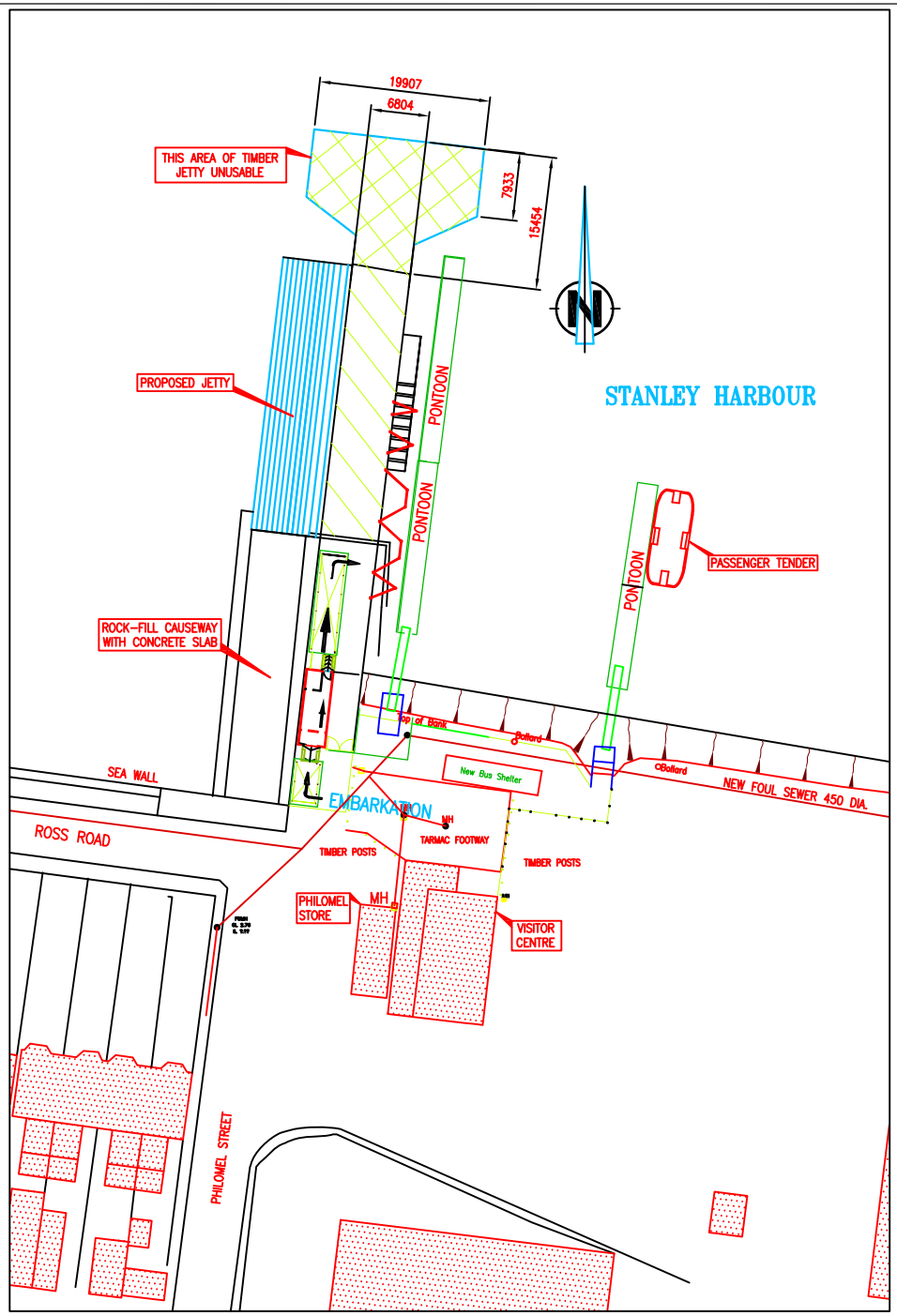

PROPOSED JETTY IMPROVEMENTS
CONSTRUCT NEW ROCK CAUSEWAY AND JETTY WEST OF EXISTING

NOTES

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Rev	Amendment	Date

FALKLAND ISLANDS GOVERNMENT
PUBLIC SERVICES DEPARTMENT
DESIGN SECTION
ROSS ROAD
STANLEY Tel: 27188

PROJECT
PUBLIC JETTY REDEVELOPMENT

TITLE
PLAN ON EXISTING & PROPOSED ROCK CAUSEWAY AND JETTY ON WEST SIDE

SCALE	DATE
As shown	23 OCT 2009

FILE	DESIGN	DRAWN	CHECKED
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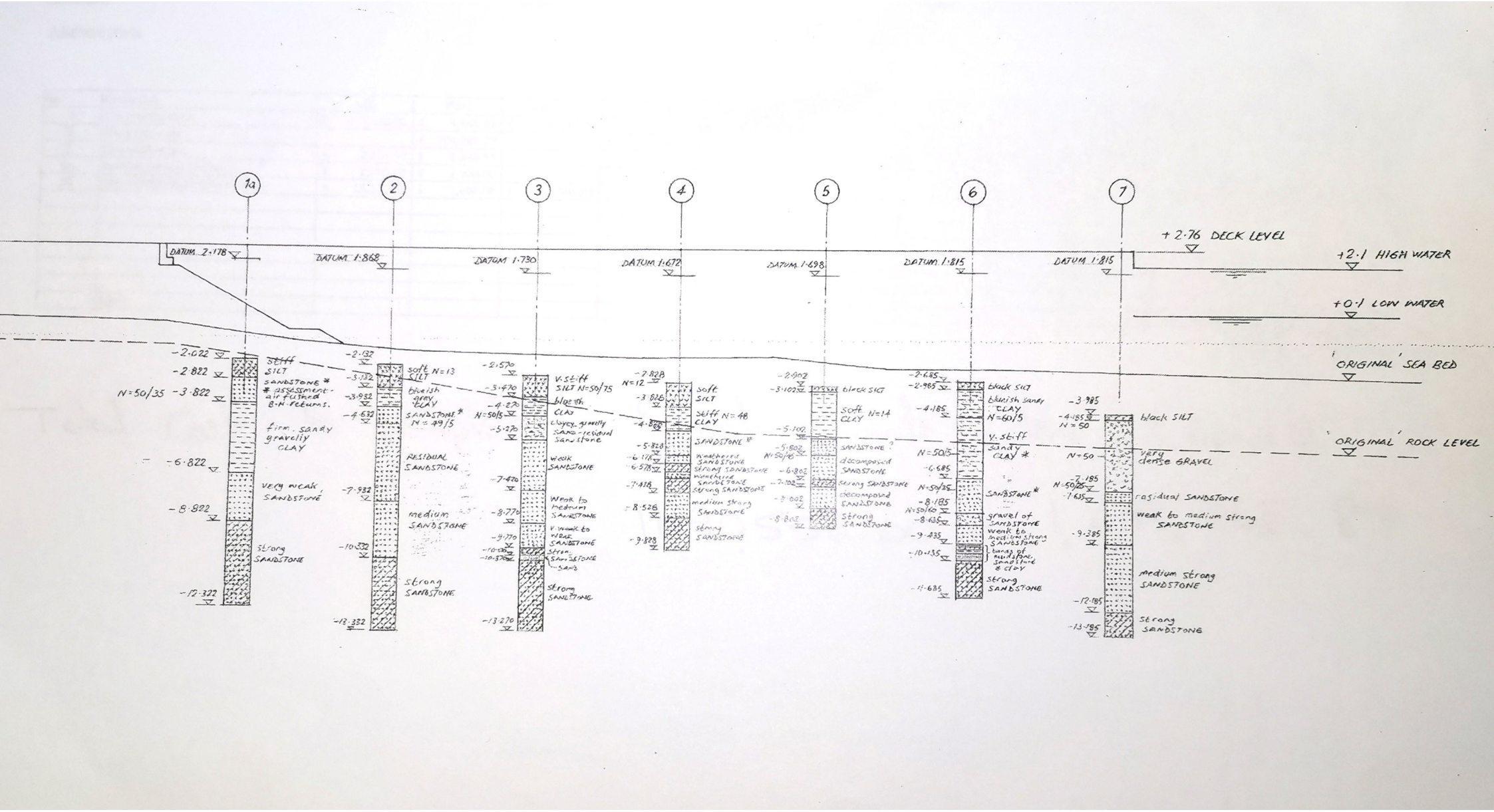
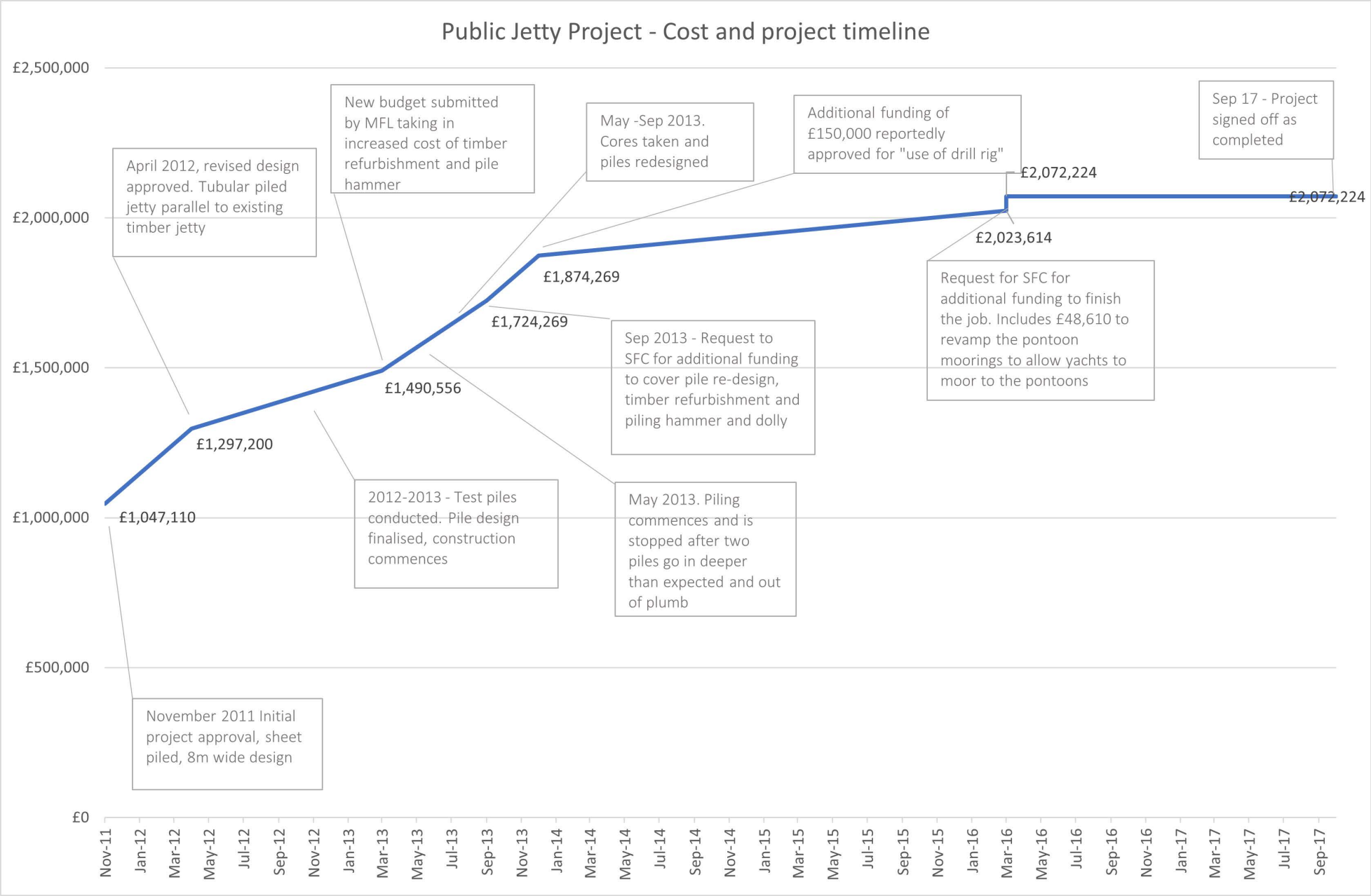
DRAWING NUMBER
PWD | 527 (PROJECT) | 04 (DRAWING) | – (REVISION)


1a
2
3
4
5
6
7
+2·76 DECK LEVEL
+2·1 HIGH WATER
+0·1 LOW WATER
'ORIGINAL' SEA BED
'ORIGINAL' ROCK LEVEL
DATUM 2·178
DATUM 1·868
DATUM 1·730
DATUM 1·672
DATUM 1·698
DATUM 1·815
DATUM 1·815
-2·022
-2·822
N=50/35 -3·822
-6·822
-8·822
-12·322
Stiff SILT
SANDSTONE * * assessment - air flushed B.H. returns.
firm sandy gravelly CLAY
VERY WEAK SANDSTONE
Strong SANDSTONE
-2·132
-3·132
-3·982
-4·632
-7·982
-10·332
-13·332
soft N=13 SILT
blueish grey CLAY
SANDSTONE * N = 49/5
RESIDUAL SANDSTONE
medium SANDSTONE
Strong SANDSTONE
-2·570
-3·470
-4·270
N=50/5
-5·270
-7·470
-8·770
-9·770
-10·030
-10·570
-13·270
V. Stiff SILT N=50/75
blue ish CLAY
clayey gravelly sand - residual sandstone
Weak SANDSTONE
Wear to medium SANDSTONE
V. weak to weak SANDSTONE
Strong SANDSTONE
-7·828
N=12
-3·828
-4·828
-5·828
-6·178
-6·578
-7·478
-8·528
-9·828
Soft SILT
Stiff N=48 CLAY
SANDSTONE *
Weathered SANDSTONE
Strong SANDSTONE
Weathered SANDSTONE
Strong SANDSTONE
medium Strong SANDSTONE
strong SANDSTONE
-2·902
-3·102
-5·102
N=50/6
-6·802
-7·102
-8·002
-8·802
black SILT
Soft CLAY N=14
SANDSTONE *
decomposed SANDSTONE
Strong SANDSTONE
decomposed SANDSTONE
Strong SANDSTONE
-2·685
-2·985
-4·185
N=50/5
-6·685
N=50/25
-8·185
N=50/10
-8·635
-9·435
-10·135
-11·685
black SILT
blueish sandy CLAY N=60/5
V. Stiff sandy CLAY *
SANDSTONE *
gravel of SANDSTONE
Weak to medium strong SANDSTONE
Lumps of mixture sandstone & clay
Strong SANDSTONE
-3·985
-4·185
N=50
-7·185
N=50/25
-7·635
-9·385
-12·185
-13·185
black SILT
VERY dense GRAVEL
residual SANDSTONE
Weak to medium Strong SANDSTONE
medium Strong SANDSTONE
Strong SANDSTONE


Public Jetty Project - Cost and project timeline
£2,500,000
£2,000,000
£1,500,000
£1,000,000
£500,000
£0
Nov-11
Jan-12
Mar-12
May-12
Jul-12
Sep-12
Nov-12
Jan-13
Mar-13
May-13
Jul-13
Sep-13
Nov-13
Jan-14
Mar-14
May-14
Jul-14
Sep-14
Nov-14
Jan-15
Mar-15
May-15
Jul-15
Sep-15
Nov-15
Jan-16
Mar-16
May-16
Jul-16
Sep-16
Nov-16
Jan-17
Mar-17
May-17
Jul-17
Sep-17
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£1,297,200
£1,490,556
£1,724,269
£1,874,269
£2,023,614
£2,072,224
£2,072,224
November 2011 Initial project approval, sheet piled, 8m wide design
April 2012, revised design approved. Tubular piled jetty parallel to existing timber jetty
2012-2013 - Test piles conducted. Pile design finalised, construction commences
New budget submitted by MFL taking in increased cost of timber refurbishment and pile hammer
May 2013. Piling commences and is stopped after two piles go in deeper than expected and out of plumb
May -Sep 2013. Cores taken and piles redesigned
Sep 2013 - Request to SFC for additional funding to cover pile re-design, timber refurbishment and piling hammer and dolly
Additional funding of £150,000 reportedly approved for "use of drill rig"
Request for SFC for additional funding to finish the job. Includes £48,610 to revamp the pontoon moorings to allow yachts to moor to the pontoons
Sep 17 - Project signed off as completed