

of funds to carry out the works to *Y Y*?—Yes. If I recollect rightly, he estimates the cost at about £3 per yard, including everything; and, if that will be the cost, we have not enough funds to go on to *Y Y*.

525. Failing in the necessary funds to carry the works to *Y Y*, how do the Board contemplate raising further funds?—That question has never been entertained by the Board. The Board think they have sufficient funds for the work.

526. Then they are going on the principle of doing all they can with the money in hand?—Yes, and the work is being done as cheaply as possible.

527. But without having any clear knowledge of how far the money would carry the work?—The cost of the work has, of course, to be ascertained. The Board were advised by their engineer, whom they pay, that the work could be done for the money.

528. In using the words “their engineer” do you refer to Sir John Coode, or Mr. Rees?—I refer to Mr. Rees in respect to the cost of concrete.

529. *Mr. Pitt.*] I understand you to say that the Board lost confidence in Mr. Rees because they could not trust his estimates?—Yes, some of his estimates, and for other reasons.

530. *The Chairman.*] You are aware that there is a very wide difference in the estimates of Sir John Coode and Mr. Rees?—Yes.

531. Which of those estimates are you proceeding on?—We are proceeding on our own knowledge of the cost of work already done. About 100 feet of the breakwater is being constructed; and when that is done we will be able to judge as to what the cost will be, and check past cost of work.

532. Is there an engineer in charge of the works at present?—No; but we have a foreman, who has been accustomed to that kind of work in Aberdeen, as foreman in charge.

533. And you would found your estimate of the ultimate cost of the work on the 100 feet which he is now constructing?—Yes. I may say that the root of the work already down cost 22s. a yard, and both will enable the Board to estimate the cost of future work.

534. This 100 feet you are now constructing, and the root already constructed, are built up with concrete placed at once *in situ* in the moles?—Yes.

535. How is it proposed to construct the breakwater itself?—The base will be a semi-fluid concrete in bagging up to low water, and on that there will be 30-ton blocks.

536. Do you think the cost of concrete, made and placed *in situ*, would bear a fair proportion to the cost of concrete made in blocks, and afterwards carried out and deposited?—It would cost more to place it in blocks; but I would inform the Committee that all the work has hitherto been done by hand, and not by machinery. When machinery is used, as it shortly will be, the cost will be less as compared with that done by hand labour.

537. The machinery will be used for the purpose of breaking up rock for the purpose of making concrete?—Yes.

538. That would be an additional item, as compared with the cost of concrete at those places where they have shingle to deal with?—Yes, to a certain extent; but it depends on the suitability of the material to make concrete. Some takes more cement than others.

539. It would cost less than stone that has to be quarried and broken for the purpose?—Yes, everything else being equal.

540. Have you any idea what the works at Oamaru and Timaru have absolutely cost per lineal foot?—I believe 33s., at both places, per cubic yard.

541. But what has been the cost of the breakwater at those places?—When I was there it was costing 33s. a cubic yard in deep water; but at the commencement of the work they could do it much cheaper.

542. But the bulk of your breakwater will, I presume, be in deep water?—About half of it will. The water does not deepen so rapidly as at Oamaru or Timaru.

543. *Mr. Pitt.*] You say you are constructing these works under the charge of a foreman?—Yes.

544. Are you aware that these large blocks which are deposited *in situ* are liable to slip?—I do not see how that is possible.

545. Are they rectangular blocks that he is constructing?—No, not yet. It is at present built up on the spot; but that is the plan to be carried out when low-water mark is reached.

546. Are you aware that at Oamaru a different system is pursued, and the blocks are not rectangular?—No, I am not aware of that.

547. Then that is a matter which you have not considered—I mean the liability of the blocks to slip?—No, I have not. The blocks being laid horizontally, cannot well do so.

548. Are you a civil engineer?—No; but I have had some experience in engineering matters. I have studied the subject.

549. Do you think the Board is justified in doing without a properly-qualified engineer?—No; and I have no doubt the Board will procure a consulting engineer as soon as it can. There is great difficulty in getting a competent man. It is not a question of payment, but of competency.

550. *Mr. Moss.*] I think you said you have carried out the breakwater 100 feet?—It is more than that. It has been carried out about half-way between high- and low-water mark; and the 100 feet I have referred to is now being added to that.

551. How far will it have to be carried before it can be made useful?—It will be useful when it reaches 6 feet at low water.

552. How far will it have to be carried out before small vessels can go alongside?—It must be carried out some distance further before a vessel as large as the “Hawea” could lie alongside.

553. The Board, I understand, is acting on the principle that, if they cannot go as far as *Y Y*, they will be able to make the mole useful for vessels of the size of the “Hawea”?—Yes.

554. *Mr. Fulton.*] Has the Board ever considered the expediency of letting any of the work by contract?—No; we are advised by both Sir John Coode and Mr. Carruthers that the Board could do the work far cheaper itself. The difficulty that might be experienced with regard to contractors is the risk of having to compensate them for alterations of design, and for delay, &c.