

Island light, which revolves every half-minute; probably either Rugged or Centre Island will be found the most suitable position.

As the whole of the English and Australian vessels that trade to Wellington and Nelson, and sometimes those from Newcastle, N.S.W., bound to Canterbury, pass through Cook Strait and make the land about Cape Farewell, it follows that this Cape is an important site for a light. We therefore propose that a First-order light, revolving every two minutes, be erected hereabouts. This period of revolution will distinguish it from the light proposed for Cape Foulwind, and also from the one already placed on Cape Farewell Spit, where a less powerful light would be sufficient guide.

English and Australian ships bound to Auckland first make the land about Cape Maria Van Dieman; and as an extensive traffic exists and strong currents are experienced in the vicinity of this Cape, we have no hesitation in recommending that a First-order light, flashing every ten seconds, be placed in this important position.

Vessels from North America and the South Seas bound to Auckland make the land about the Great Barrier, and as there is an increasing trade between Auckland, Fiji, and other South Sea Islands, we propose that a First-order light, revolving once every minute, showing alternately red and white, be placed on the Moko Hinou Islands. This light will also be of great value to the coasting trade, as it commands the whole entrance of the Hauraki Gulf from the northward.

The land about Cape Egmont being low, vessels from off sea voyages seldom first make it; but as the position is valuable as a guide to the coasting-trade of the Colony, we consider that a Second-order light will be sufficient.

Careful consideration of the various descriptions of illuminating apparatus shows that the Holophotal Revolving Lights have greater optical range than Fixed Lights. A revolving light of that description and of the Second order has an optical range of twenty-five miles, and costs about £2,200; whilst a fixed light of the First order has a range of twenty miles, and costs about £2,960. By adopting the revolving light a large saving will be effected in first cost; and as the consumption of oil in Second-order lights is about 490 gallons annually, whilst that of First-order lights (fixed) is 736, a considerable saving will be obtained in the cost of annual maintenance. Besides these advantages, revolving lights are less liable to be mistaken for either bush fires or a vessel's light; and for these reasons we do not hesitate in recommending the adoption of the Holophotal Revolving Light as the coastal light of the Colony.

With the exception of places already mentioned as being the first land made by vessels from long sea voyages, the erection of the expensive First-order light will not be required; while for marking the prominent points on the coast the Second or Third-order lights will be found amply sufficient.

At entrances to harbours and roadsteads we propose, with few exceptions, the erection of Fixed Lights, as by their uniform character they enable the steamer to take bearings at any moment; whilst in narrow waters, which is a matter of great importance, these lights may be the more readily adopted in these positions, as the range of light in such situations is generally less than that of open-sea lights.

From the great loss of power attendant upon the use of coloured lights, they should only be used in positions where distinction would be otherwise difficult.

Part I. of the accompanying list shows the localities at which we have proposed the erection of First-order lights; and we propose that Second or Third-order lights be placed at the several prominent coastal positions shown in Part II. Examination of this list will show that the total number of coastal lights proposed in this scheme is twenty-seven, including those already erected.

The Three Kings Islands have been frequently mentioned as a good position for a light, but we have given the preference to Cape Maria Van Dieman, on account of its being the point most in the direct course of English and Colonial vessels bound round the north end of the Island.

The southern end of Stewart's Island would also appear to be a good position, but a light placed there would cause vessels to pass within dangerous proximity to the Trap Rocks; we have therefore decided to recommend the Snares Islands, as a light placed on them will have the effect of drawing vessels away from the above-mentioned dangers, and, as already stated, will be of great use to home-bound vessels from Australia.

In the annexed list will be found the positions at which we recommend the erection of Harbour and Coast Lights, *i.e.* those that show seaward as well as denote the entrances to ports and roadsteads, and are thus of considerable, though but secondary, assistance to the general navigation of the coast. Additional lights may be added from time to time, due attention being paid to character, colour, and power.

The lights proposed for Hokianga, Kaipara, and Manukau are of power sufficient to illuminate that part of the coast, without the erection of special coastal lights of higher order.

With reference to the transposition of lights, mentioned in the Memorandum of the Hon. the Commissioner of Customs, we are of opinion that, after the erection of the proposed First-order light on Cape Farewell, the illuminating apparatus of the light now on the Sandspit end, which would suit better at a higher elevation, could be removed elsewhere, and one of the Fourth order, that would be visible the same distance of seventeen miles, and cost less in maintenance, could be placed in its stead.

As we believe that Mana Island Light is, from its great elevation, frequently obscured, and as the optical range of this light is only eighteen miles in a mean state of the atmosphere, although, from its elevated situation, it can now be seen twenty-nine miles in clear weather, we consider that, if a suitable position can be found, the light might be shifted lower down with advantage.

After the erection of the proposed First-order light at the western entrance to Foveaux Strait, the light on Dog Island will become a subsidiary light, as already remarked in the case of Farewell Spit; with this difference, that a Third-order light, with an optical range of twenty-one miles, will be found sufficient, instead of the powerful apparatus now in use, which, though it has a great optical range, yet, from its low elevation, can only be seen eighteen miles, and thus would be evidently of greater efficiency in a more prominent position.

When the proposed light for Cape Saunders is erected, a Sixth-order white light will be sufficient to mark the entrance of Otago Harbour; and the present illuminating apparatus of the Third-order