# 3.0 ALTERNATIVES

## 3.1 FACTORS USED IN SELECTION OF ALTERNATIVES

### 3.1.1 Alternatives Development and Screening Process

One of the most important aspects of the environmental review process is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a proposed project. In addition to mandating consideration of the No Project Alternative, the State CEQA Guidelines (Section 15126.6(d)) emphasize the selection of a reasonable range of feasible alternatives and adequate assessment of these alternatives to allow for a comparative analysis for consideration by decision-makers.

The CEQA requires consideration of a range of alternatives to the Proposed Project or the project location that: (1) could feasibly attain most of the basic project objectives, and (2) would avoid or substantially lessen any of the significant impacts of the Proposed Project. An alternative cannot be eliminated simply because it is more costly or because it could impede the attainment of all project objectives to some degree. However, the State CEQA Guidelines declare that an EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote or speculative. The CEQA requires that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project.

This screening analysis does not focus on relative economic factors of the alternatives (as long as they are feasible) since the State CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may “impede to some degree the attainment of project objectives or would be more costly.” Likewise, the question of market demand or project need is not considered in the analysis that follows.

### 3.1.2 Alternatives Screening Methodology

Alternatives to the Proposed Project were selected based on the following: the Conceptual Engineering Evaluation Report prepared in 2003 by Ben C. Gerwick, Inc. for the Applicant; other information from the Applicant; input from the EIR study team; and input from the public and local jurisdictions during the EIR scoping hearings. The alternatives screening process consisted of three steps:

**Step 1:** Define the alternatives to allow comparative evaluation.

**Step 2:** Evaluate each alternative in consideration of one of more of the following criteria:

- the extent to which the alternative would accomplish most of the basic goals and objectives of the Proposed Project;
- the extent to which the alternative would avoid or lessen one or more of the identified significant environmental effects of the Proposed Project;
- the potential feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure, General Plan consistency, and consistency with other applicable plans and regulatory limitations;
- the appropriateness of the alternative in contributing to a “reasonable range” of alternatives necessary to permit a reasoned choice; and
- the requirement of the State CEQA Guidelines to consider a “no project” alternative and to identify an “environmentally superior” alternative in addition to the “no project” alternative (State CEQA Guidelines, Section 15126.6(e)).

**Step 3:** Determine suitability of the proposed alternative for full analysis in the EIR. If the alternative is unsuitable, eliminate it, with appropriate justification, from further consideration.

Infeasible alternatives, as well as feasible alternatives that did not clearly offer the potential to reduce significant environmental impacts, were removed from further analysis. In the final phase of the screening analysis, the environmental advantages and disadvantages of the remaining alternatives were carefully weighed with respect to potential for overall environmental advantage, technical feasibility, and consistency with project and public objectives.

If an alternative clearly did not provide any environmental advantages as compared to the Proposed Project, it was eliminated from further consideration. At the screening stage, it is not possible to evaluate potential impacts of the alternatives or the Proposed Project with absolute certainty. However, it is possible to identify elements of the Proposed Project that are likely to be the sources of impact. A preliminary assessment of potential significant effects of the Proposed Project resulted in identification of the following impacts:

- marine biological resources;

- commercial fishing;
- marine water quality;
- recreation;
- air quality;
- noise;
- marine vessel traffic/transportation;
- geology; and
- environmental justice.

For the screening analysis, the technical and regulatory feasibility of various potential alternatives were assessed at a general level. Specific feasibility analyses are not needed for this purpose. The assessment of feasibility was directed toward reverse reason; that is, an attempt was made to identify anything about the alternative that would be infeasible on technical or regulatory grounds. The CEQA does not require elimination of a potential alternative based on cost of construction and operation/maintenance. For the Proposed Project, those issues relate to:

- engineering feasibility and safety of implementation;
- potential adverse effects on the seafloor and marine habitats; and
- reasonableness when compared to other alternatives under consideration.

### 3.1.3 Summary of Screening Results

Potential alternatives were reviewed against the criteria presented above. A number of alternatives were eliminated based on their inability to meet most of the basic project objectives. Those alternatives found to be technically feasible and consistent with the Agreement and the Applicant's objectives were reviewed to determine whether the alternative had the potential to reduce the environmental impacts of the Proposed Project.

Potential alternatives are listed in Table 3-1 according to the determination made for their analysis. Those listed in the first column have been eliminated from further consideration (see rationale in Section 3.2), and those in the second column are described in Section 3.3 of this EIR and are analyzed in detail in Section 4.

**Table 3-1. Summary of Alternative Screening Results**

| Alternatives Eliminated from Consideration | Alternatives Evaluated in this EIR |
|---|---|
| Removal of Terminal Structures, with Use of Inflatable Bags for Pipeline Removal<br><br>Hydraulic Sand Fill Alternative<br><br>Partial Removal of Terminal Structures, with Open Conduits<br><br>Crush Conduits, Terminal Structures Remain in Place<br><br>Removal of Nearshore Components, Crush Offshore Conduits, with Terminal Structures Remaining in Place | Complete Removal of Conduits Alternative<br><br>Removal of Nearshore Components Alternative<br><br>Crush Conduits and Remove Terminal Structures Alternative<br><br>Artificial Reef Alternative<br><br>No Project Alternative |

It should be noted that several alternatives were included in the EIR analysis even though they have the potential to result in greater environmental effects than the Proposed Project. These alternatives have been included for detailed analysis because they may comply more fully with the original Agreement between the CSLC and the Applicant than does the Proposed Project. During the review of the Application, the CSLC Commissioners may require the Applicant to remove offshore components in strict legal conformance with the Agreement. Therefore, the Complete Removal Alternative, a Nearshore Removal Alternative, and a Crush Conduits Alternative have been retained in the EIR to analyze the potential environmental effects of these actions.

## 3.2 ALTERNATIVES ELIMINATED FROM FULL EVALUATION

### 3.2.1 Removal of Terminal Structures Alternative, with Use of Inflatable Bags for Pipeline Removal

Under this alternative, the removal of the terminal structures would be similar to the Proposed Project. The dredge excavation by clamshell to expose the conduits would be similar to the Complete Removal Alternative described in Section 3.3. After the conduits are exposed on the seabed floor, each segment of the conduit would be freed by the crane from the adjacent pipe segment. A commercial diver would then insert inflatable air bags into the individual pipe segment, and each bag would be inflated. The use of inflatable air bags would be unusual for this type of disposition project, and any diving activity at the site would need to conform to stringent safety guidelines. This methodology is potentially dangerous because it is difficult for divers to control each floating pipe segment.

Once the pipe segment has reached the surface, the crane barge would lift the pipe segment to the work deck of the materials barge for transport to the Port of Long Beach. Backfilling of the conduit trenches would be identical to the process described under the Complete Removal Alternative.

Disposition of the nearshore sections of the conduits and the use of trestles would also be similar to that described for the Complete Removal Alternative. However, divers would use the inflatable bag technique to move the nearshore pipe sections to the crane barge where they would be prepared for disposal along with the offshore pipe sections. The public access road along the beach and seawall would be open at all times except for the short period of time needed to breach the roadway and install a temporary bridge across a sheetpile cofferdam. Where the access road traverses the State park area, truck traffic would transport equipment and material along the roadway.

Because of the increased risk to the divers, this alternative is considered infeasible from a safety and constructability perspective.

### 3.2.2 Hydraulic Sand Fill Alternative

Under this alternative, the conduit removal in the nearshore section to a water depth of 10 feet (3.1 m) would be similar to the Complete Removal Alternative, including the trestles and grout plugs between the seawall and tsunami gates. Similar to the Proposed Project, the terminal structures would be removed to the crown of the pipe. This alternative would then involve filling the pipe with dredged sand. A steel plate and concrete would be installed to act as a plug at the offshore terminus.

The offshore work would involve filling the two conduits hydraulically with sand dredged from alongside the pipeline alignment. At each manhole location, the crane barge would expose the manhole and manhole riser. The diver would access the open manhole and thread a small polyethylene pipe into the conduits. The diver would require assistance from the deck crew and a deck winch to force the plastic pipe into the larger diameter conduits.

Once the 6-inch (15-cm) polyethylene pipe was fully inserted at each manhole, the crane barge, using a clamshell bucket, would feed a hopper-mounted dredge slurry pump. The source of the fill material would be the sediments surrounding the individual manholes. The amount of fill required for the nine manholes would be approximately 25,000 CY (19,114 $m^3$) for both conduits.

The ability to hydraulically fill the existing conduits is expected to be only 75 percent, because air pockets are likely to develop where the pumped sand cannot displace the air. In principle, the concept of forcing the sand into the pipe is possible, but projects actually incorporating it into the scope of work are either unknown or very limited in number on the west coast of the United States.

Once the conduits have been filled, the natural littoral drift process would eventually level the ocean bottom. The debris from the terminal structures and the manhole risers would be barged to the Port of Long Beach for disposal.

The technique of filling an existing large-diameter pipeline with hydraulic dredge material is not known or is used on a very limited basis in this environment and is not a proven technology. Therefore, this alternative is not considered feasible due to the unproven method of infilling the existing concrete conduits.

### 3.2.3 Partial Removal of Terminal Structures, with Open Conduits

This alternative would remove the terminal structures and manhole risers, but without any effort to hydraulically fill the existing pipelines with dredged sand. Instead, the openings for the terminal structures and the manhole risers would be left open, allowing littoral currents to naturally and slowly accrete material inside the pipes with minimal disturbance to the benthic environment. Ultimately, the conduits would fill in within approximately 5 to 10 years, to approximately the 75 percent level.

Under this alternative, dredging would be kept to the minimum required to clear the manholes and remove the terminal structures down to the crown of the existing conduits.

While this alternative would be considered feasible, it may pose safety concerns in the future for recreational divers who could access the large openings left at the terminal structures and manhole risers. Further, this alternative would be similar to the Artificial Reef Alternative (Section 3.3) that is addressed in detail, but which also includes measures to eliminate diver access to the conduits. For these reasons, this alternative was eliminated from detailed study in the EIR.

### 3.2.4 Crush Conduits, with Terminal Structures Remaining in Place

Under this alternative, a crawler crane working from the nearshore trestle would excavate sand to expose the conduits and then employ a drop chisel-shaft to crush the conduits in place, reducing them to rubble. Backfill of seabed material into the excavated trench would occur naturally over several years, burying the concrete rubble and steel rebar in place over time.

For the offshore portion of this alternative, the crane would crush the conduits in place but leave the terminal structures in place.

Under this alternative, the terminal structures would remain, and the potential would remain for continued hazards to navigation. The Crush Conduits Alternative is described in detail in the EIR, and that alternative would also remove the navigational hazards associated with the terminal structures. For these reasons, this alternative was eliminated from detailed study.

#### 3.2.5 Removal of Nearshore Components, Crush Offshore Conduits, with Terminal Structures Remaining in Place

Although this alternative was studied in the Gerwick report, it does not include any components that are not analyzed in the other alternatives. The combination of project features in this alternative would not reduce project impacts beyond what is analyzed in the other alternatives, so this alternative was eliminated from detailed study in this EIR.

### 3.3 ALTERNATIVES EVALUATED IN THIS EIR

The Proposed Project, the No Project Alternative, and four build alternatives are evaluated in this EIR. Table 3-2 summarizes the major features of these alternatives.

**Table 3-2. Comparison of Alternatives**

| Proposed Project/Alternatives | Onshore Disposition Activities | Offshore Disposition Activities | Conduit Plug | Duration (months) |
|---|---|---|---|---|
| Proposed Project | X | X | X | 4 |
| Complete Removal of Conduits | X | X | X | 12 |
| Removal of Nearshore Portions of Conduits | X | X | X | 9 |
| Crush Conduits and Remove Terminal Structures | X | X | X | 9 |
| Artificial Reef | | X | | 1.5 |
| No Project | | | | 0 |

#### 3.3.1 Complete Removal of Conduits

**Description**

This alternative would excavate, remove, and dispose of all structures, foundations, and other materials associated with the SONGS Unit 1 intake and discharge conduits, consistent with Paragraph 14 of PRC 3193.1, as currently amended.[1] This alternative is included in the EIR analysis because it may comply more fully with the original Lease between the CSLC and the Applicant than would the Proposed Project. During review of the Application, the CSLC may require the Applicant to remove all offshore components in strict conformance with the Agreement.

This alternative would have the longest duration, up to 12 months for concurrent or onshore and offshore activities, of any of the alternatives considered in the EIR, and it would have the greatest footprint of direct and indirect impacts. Due to the shallow nearshore water depths, this alternative has been divided into two major activities, onshore work and offshore work.

***Onshore Work*** Access for all onshore work under this alternative would be provided from the north via the existing Surf Beach access road. All construction equipment, materials, and workers would travel through Surf Beach to reach the onshore disposition area. Up to 2 acres (0.8 ha) on the beach in front of SONGS Unit 1 would be required for construction staging and materials storage (Figure 3.3-1). A temporary access roadway and pedestrian walkway would be installed through the construction site, parallel to the SONGS Unit 1 seawall, to maintain public access from Surf Beach past the disposition area to the State Park beach to the south.

Onshore work would construct a 300-foot-long (91-m) trestle extending from the beach to approximately 10 feet (3 m) of water depth. Sheet-pile barriers would be extended 400 feet (122 m) from the beach along the north and south perimeters of the conduits to protect the trestle and work area from waves and currents, thereby reducing erosion. A crawler crane would be assembled onsite and would work from the top of the trestle to excavate and remove the conduits. A clamshell bucket would be used by the crane to excavate to the bottom of the conduits, and an estimated 15,000 CY (11,500 $m^3$) of excavated material would be sidecast to the immediate north side of the trestle. The exposed pipe sections would be cable-rigged and then lifted straight upward by the

[1] PRC 3193.1 Paragraph 14 states, “That the following specifically enumerated and described structures, buildings, pipe lines, machinery and facilities placed or erected by the Lessee or existing and located upon said demised property shall become and remain the property of the State upon expiration or earlier termination of this agreement. All other structures, buildings, pipe lines, machinery and facilities placed or erected by Lessee or existing and located on said demised premises shall be salvaged and removed by Lessee, at Lessee’s sole expense and risk, within ninety (90) days after the expiration of the period of this agreement or prior to any sooner termination of this agreement; and Lessee in so doing shall restore said demised premises as nearly as possible to the condition existing prior to the erection or placing of the structures, buildings, pipe lines, machinery and facilities so removed.”


ACCESS ROAD THROUGH SURF BEACH

Source: Gerwick 2002

**Figure 3.3-1**
**Aerial View of Onshore Components**
**Complete Removal of Conduits Alternative**

crane on the trestle. Approximately fifty 16-foot-long (5-m) pipe sections, each weighing about 50 tons (45 metric tons), would be removed. Each segment would be carried by the crane back along the trestle to the beach, loaded onto flatbed trucks, taken by truck via the Surf Beach access road and Old Highway 101 to the I-5/Basilone Road interchange, and transported for recycling at an approved facility. Sidecast seabed material and an additional 12,000 CY (9,175 $m^3$) of imported material would be used to backfill the excavated area to return the seabed to its original profile.

Onshore disposition activities would require approximately 12 months. Recreational parking at Surf Beach would not be restricted under this alternative, and Surf Beach would remain open during all onshore disposition activities. There would, however, be temporary disruption of beach activities when large, slow-moving equipment and trucks traveled through the parking areas en route to and from the disposition site.

As described for the Proposed Project, the abandoned conduits would be filled with concrete where they extend under the beach and into the power plant in order to preserve the integrity of the existing beach and seawall. A plug would be installed in the conduits by divers, and concrete grout would be installed between the MLLW boundary and the tsunami gates located inland from the seawall.

***Offshore Work*** Offshore work would use a crane barge working from the offshore area toward the beach. After the barge was properly anchored, the intake and discharge terminal structures would be removed as described for the Proposed Project. After removal of the terminal structures, the crane barge would alternately excavate during the night shift and lift out conduit sections during the day shift, moving progressively toward the shore. Excavated materials would be sidecast to the north. The total area of excavation and disturbance would include an area up to 150 feet (46 m) wide along the length of the conduits, or approximately 11 acres (4.4 ha) of disturbance for all onshore and offshore disposition activities. Removed conduit sections would be placed on the material barge and then transported to the Port of Long Beach for recycling and disposal. Approximately 120,000 CY (91,746 $m^3$) of seabed material would be excavated and 30,000 CY (22,937 $m^3$) of concrete conduits would be removed and transported to port. The sidecast material, and an additional 80,000 CY (61,164 $m^3$) of imported material, would be used to backfill the conduit trenches and restore the seabed to its original profile. The offshore operations would require 12 months.

Both the onshore and offshore disposition activities would be conducted concurrently.

**Required Agency Approvals**

This alternative would require the same agency approvals as described for the Proposed Project. In addition, a Biological Opinion (BO) from the USFWS may be required if the alternative would adversely affect a population of a federally listed threatened or endangered species.

### 3.3.2 Removal of Nearshore Portions of Conduits

**Description**

This alternative would involve essentially the same work scope as the onshore work described in Section 3.3.1 above. A trestle and crane would be used to remove the conduits from the seawall to a distance of approximately 300 feet (91 m) offshore. The offshore portions of the conduits would be left in place. One subalternative would remove all vertical structures consistent with the Proposed Project. Another subalternative would allow both terminal structures to remain in place. To preserve the integrity of the existing beach and seawall, plugs would be installed in the conduits beneath the beach, and concrete grout would be installed in the conduits between the MLLW boundary and the tsunami gates located inland from the seawall.

**Required Agency Approvals**

This alternative would require the same agency approvals as described for the Proposed Project. In addition, a BO from the USFWS may be required if the alternative would adversely affect a population of a federally listed threatened or endangered species.

### 3.3.3 Crush Conduits and Remove Terminal Structures

**Description**

The onshore portion of this alternative would be the same as the onshore work described in Section 3.3.1 above until the excavation around nearshore conduit sections was completed. Then, instead of removing the conduit sections, the crawler crane working from the trestle would employ a drop chisel-shaft to crush the conduits in place, reducing the conduits to rubble. Because the inherent reinforcing steel cannot be effectively removed from the concrete, it would remain exposed within the concrete rubble. Backfill of seabed material would naturally occur into the excavated trench, burying the concrete rubble and steel rebar over time.

The offshore work portion of this alternative would use a crane barge to excavate the seabed material and riprap around the intake and discharge terminal structures, and then remove them down to the tops of the conduits. After these structures were removed, the crane would crush the remaining conduits and manhole risers, working from the offshore end toward the beach.

The *Seafloor Debris Removal Plan* (Appendix E) would be implemented to assure removal of smaller-sized concrete debris in the nearshore zone that would have the potential to be washed

Concrete plugs would be installed in the conduits as described above.

**Required Agency Approvals**

This alternative would require the same agency approvals as described for the Proposed Project. In addition, a BO from the USFWS may be required if the alternative would adversely affect a population of a federally listed threatened or endangered species.

### 3.3.4 Artificial Reef

**Description**

This alternative was developed during preparation of the EIR, and it was not included in the Gerwick report. This alternative would implement many of the components of the Proposed Project, but it would not involve removal of the vertical structures down to the seafloor or the removal of the manhole risers. Instead, only the top two sections of the terminal structures would be dismantled, and a steel mammal grill would be placed over the opening to prevent access by recreational divers or marine mammals. The manhole risers would be left in place. Under this alternative, the terminal structures and manhole risers would extend above the seafloor by between 1 to 5 feet (0.3 to 1.6 m), and the need for any dredging would be eliminated.

Under the Artificial Reef Alternative, the dismantled sections of the terminal structures would not be removed and transported to the Port of Long Beach for recycling. Instead, the concrete sections would remain permanently on the seafloor around the existing rock riprap, creating a larger artificial reef at the western terminus of each conduit. As an option, the concrete sections could be removed and placed at another artificial reef in nearby coastal waters. The marker buoys and anchors would be removed. No concrete plug would be placed in the onshore portions of the conduits above MLLW on MCB Camp Pendleton. The conduits would remain in place, the Applicant would remain responsible for the structures, and the Applicant would enter into a Lease Termination/Abandonment Agreement with the CSLC. Even with removal of the terminal structures, the conduits could be reused for a future regional desalination facility, as discussed above.

**Required Agency Approvals**

This alternative would require the same agency approvals as described for the Proposed Project, except that no approval from MCB Camp Pendleton would be sought for installation of conduit plugs.

### 3.3.5 No Project

Under the No Project Alternative, the existing conduits and terminal structures would remain in their current state. The vertical risers of the terminal structures, which protrude approximately 16 and 11 feet (4.9 and 3.3 m) above the ocean floor, would remain indefinitely as potential navigation hazards. The buoys marking each terminal structure would remain indefinitely, and the terms of the Agreement requiring removal would not be met. The Applicant would retain responsibility for the structures under a Lease Termination/Abandonment Agreement with the CSLC.

As with the Proposed Project, a future reuse of the conduits in association with a regional desalination facility could be accomplished under the No Project Alternative. Further, MCB Camp Pendleton currently uses the existing Unit 1 discharge conduit for small discharges of wastewater under an existing National Pollutant Discharge Elimination System (NPDES) Permit from the RWQCB. Under the No Project Alternative, such permitted discharges could continue. It should be noted that MCB Camp Pendleton intends to divert these small wastewater flows to the Unit 2 and Unit 3 conduits, as allowed in the NPDES Permit.

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