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Published on 12 November 2007

Statement No. 755

**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED  
(PURSUANT TO THE PROVISIONS OF THE  
ENVIRONMENTAL PROTECTION ACT 1986)**

**ALKIMOS WASTEWATER TREATMENT PLANT – SITE B  
CITY OF WANNEROO**

**Proposal:** The construction and operation of a wastewater treatment plant, and associated ocean outfall, on the Alkimos-Eglinton Dunal System with an ultimate processing capacity of 160 megalitres per day, as documented in schedule 1 of this statement.

**Proponent:** Water Corporation

**Proponent Address:** 629 Newcastle Street, LEEDERVILLE WA 60072

**Assessment Number:** 1529

**Report of the Environmental Protection Authority:** Bulletin 1239

The proposal referred to in the above report of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures (See note 1 at foot of this statement):

**1 Proposal Implementation**

1-1 The proponent shall implement the proposal as documented and described in schedules 1, 2 and 3 of this statement subject to the conditions and procedures of this statement.

**2 Proponent Nomination and Contact Details**

2-1 The proponent for the time being nominated by the Minister for the Environment under sections 38(6) or 38(7) of the Environmental Protection Act 1986 is responsible for the implementation of the proposal.

2-2 The proponent shall notify the Chief Executive Officer of the Department of Environment and Conservation (CEO) of any change of the name and address of the proponent for the serving of a notice or other correspondence within 30 days of such change.

### **3 Time Limit of Authorisation**

- 3-1 The authorisation to implement the proposal provided for in this statement shall lapse and be void within five years after the date of this statement if the proposal to which this statement relates is not substantially commenced.
- 3-2 The proponent shall provide the CEO with written evidence which demonstrates that the proposal has substantially commenced on or before the expiration of five years from the date of this statement.

### **4 Compliance Reporting**

- 4-1 The proponent shall submit to the CEO environmental compliance reports annually reporting on the previous twelve-month period, unless required by the CEO to report more frequently.
- 4-2 The environmental compliance reports shall address each element of an audit program approved by the CEO and shall be prepared and submitted in a format acceptable to the CEO.
- 4-3 The environmental compliance reports shall:
1. be endorsed by signature of the proponent's Chief Executive Officer or a person, approved in writing by the CEO, delegated to sign on behalf of the proponent's Chief Executive Officer;
  2. state whether the proponent has complied with each condition and procedure contained in this statement;
  3. provide verifiable evidence of compliance with each condition and procedure contained in this statement;
  4. state whether the proponent has complied with each key action contained in any environmental management plan or program required by this statement;
  5. provide verifiable evidence of conformance with each key action contained in any environmental management plan or program required by this statement;
  6. identify all non-compliances and non-conformances and describe the corrective and preventative actions taken in relation to each non-compliance or non-conformance;
  7. provide an assessment of the effectiveness of all corrective and preventative actions taken; and
  8. describe the state of implementation of the proposal.
- 4-4 The proponent shall make the environmental compliance reports required by condition 4-1 publicly available in a manner approved by the CEO.

### **5 Performance Review**

- 5-1 The proponent shall submit a Performance Review report every five years after the start of construction to the Environmental Protection Authority, which addresses:
1. the major environmental issues associated with implementing the project; the environmental objectives for those issues; the methodologies used to achieve

- these; and the key indicators of environmental performance measured against those objectives;
2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;
  3. investigations undertaken in relation to developing alternative options to ocean disposal of treated wastewater, including wastewater re-use;
  4. significant improvements gained in environmental management, including the use of external peer reviews;
  5. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
  6. the proposed environmental objectives over the next five years, including improvements in technology and management processes.

## **6 Terrestrial Construction Management Plan**

6.1 Up to three launch/recovery chambers may be used for tunneling of the overland pipeline. These chambers are to be located within the footprint of the WWTP and the footprint of the launch site. Any intermediate chamber is to be located outside a Bush Forever site or Conservation Area as identified by the Water Corporation, to be rehabilitated upon completion of the tunneling.

6-2 Prior to commencement of clearing for the installation of the pipeline, the proponent shall prepare and submit, a Terrestrial Construction Management Plan (the Plan) that meets the objective of Condition 6-3 and the requirements of Condition 6-4 as determined by the Minister for the Environment.

In preparing the Plan the Proponent shall consult with Department of Environment and Conservation.

6-3 The objective of the Plan is to protect native vegetation and landforms on the site outside the area of disturbance as defined in Figure 3 in Schedule 2 and Figure 4 in Schedule 3.

6-4 The Plan shall address the following:

1. modification and configuration (dimension, shape and gradient) of the launch site as far as practicable to minimise the impact of the on terrestrial vegetation and formations launch site dimensions;
2. access roads;
3. sheds, amenities, and other facilities to be installed;
4. management of activities in areas outside the area of disturbance as defined in Figure 3 in Schedule 2 and Figure 4 in Schedule 3;
5. depth of burial of pipe sufficient to withstand a one-in-one hundred year storm;
6. impacts on the beach profile;
7. Bush Forever site, including *Frankenia pauciflora*;
8. Threatened Ecological Communities; and

9. rehabilitation of the launch site/s.

6-5 The proponent shall implement the Plan.

6-6 The proponent shall make the Plan available in a manner approved by the CEO.

6-7 Prior to ground-disturbing activities and in consultation with the Department of Environment and Conservation, the proponent shall put in place measures (which may include fencing and/or signposting) to delineate and protect the locations of plants, vegetation, or other areas of particular conservation significance.

In carrying out rehabilitation activities, the proponent shall only use native plant species of local provenance, defined as plant material or seeds collected within ten kilometres of the project site, except with permission in writing from the CEO.

## **7. Stability of dunes**

7-1 The proponent shall construct the WWTP and associated works to ensure the ongoing stability of the dunal system outside the area of disturbance as defined in Figure 3 in Schedule 2 and Figure 4 in Schedule 3.

## **8. Ocean Outlet Pipeline Construction Management Plan (Marine)**

8-1 Prior to commencement of installation of the pipeline, the proponent shall prepare and submit an Ocean Outlet Pipeline Construction Management Plan (the Plan) that meets the objectives set out in Condition 8.2 that meets the requirements of 8.3 as determined by the Minister for the Environment.

In preparing the Plan the Proponent shall consult with the Environmental Protection Authority.

8-2 The objectives of the Plan is to

(a) ensure the maintenance of the ecological integrity of the marine waters surrounding the Alkimos site; and

(b) ensure the final area of disturbance from Ocean Outlet Pipeline (and diffuser) taking into account rehabilitation works and the ongoing impacts from the presence of the pipeline will be within the area defined in Figure 5 and Table 4 in Schedule 4

8-3 The Plan shall address the following:

1 route design;

2. define the spatial definition of the extent of the disturbance footprint

(a) direct loss of habitat due to construction,

(b) indirect loss of habitat due to construction (sediment plume impacts – loss of light and burial) ;

3. prediction and spatially definition of the long-term stable' state of the marine environment following construction and taking into account indirect effects of construction and on-going impacts from the presence of infrastructure – i.e. predicted impacts (the extent and severity) on the marine environment of indirect

- impacts (construction and ongoing impact (see Note 9).
- 4 amount and type of material to be excavated;
  - 5 rehabilitation of excavated trenches;
  - 6 blasting techniques and areas where blasting occurs;
  - 7 identify where drilling and open-cut techniques (minimising open-cut technique) are to be used for the entire pipe installation;
  - 8 positioning of pipe-laying vessels, mooring pattern design and dredge support vessels;
  - 9 management of benthic community in construction areas;
  - 10 monitoring and establishment of impact from anchoring, wire and chain sweep techniques, marine dredging and supra-tidal excavation techniques used;
  - 11 identification of areas to be dredged, excavated and the timing and duration of dredging/excavation;
  - 12 water quality targets for criteria that will trigger management of sedimentation and protection of benthic community;
  - 13 monitoring reporting, and mitigating impacts on natural littoral drift processes from construction activities and beach profiles during construction; and
  - 14 the management actions and contingencies that will be implemented in the event that criteria for water quality targets required by point 12 above are not being met.
- 8-4 To ensure that the diffuser is located in a position to reduce the likelihood of plume impacts on high relief algal reefs immediately to the east of the outlet, the proponent shall extend the pipe length by 200 metres from the end of the pipe shown in Figure 4.17 of the proponent's Public Environmental Review document, Version 3, 8 November 2005. This will give a total pipe length of 3.7 kilometres from the high water mark.
- 8-5 The proponent is to ensure that the extent of the disturbance footprint (direct and indirect loss of habitat) is no greater than that defined in Condition 8-3 (2).
- 8-6 The proponent is to ensure that the extent of the disturbance footprint (direct impacts) shall be within the area defined in Figure 5 and Table 4 in Schedule 4.
- 8-7 The proponent is required to minimise indirect impacts as far as practicable within this boundary during construction.
- 8-8 The pipeline will be laid within the area defined in Figure 5 and Table 4 in Schedule 4, and the 'line' of direct disturbance footprint will also be within the area. (see note 9).
- 8-9 The proponent shall implement the Plan.
- 8-10 The proponent shall make Plan publicly available in a manner approved by the CEO.

## **9 Seabed and Benthic Habitat Monitoring and Management Plan**

- 9-1 Prior to commencement of construction of the Alkimos ocean outlet in the marine environment, the proponent shall prepare and submit a Seabed and Benthic Habitat Monitoring and Management Plan (the Plan) that meets the objectives of condition 9-

2 and the requirements of 9-3 as determined by the Minister for the Environment.

In preparing the Plan the Proponent shall consult with Department of Environment and Conservation.

9-2 The objective of this Plan is to ensure that seabed and benthic habitat loss outside the area of direct loss defined in the Plan required by Condition 8-3 (2) is avoided during construction and re-instated following construction.

9-3 This Plan shall address:

1. Procedures for obtaining and providing to the CEO, within six months following the completion of pipeline installation, an accurate total area and geographically referenced location map of areas of seabed (subtidal, intertidal and beaches) modification and benthic primary producer habitats lost or damaged during pipeline construction, including specific identification of any areas of loss or damage that are in excess or outside of those areas defined and predicted in the Plan required by Condition 8
2. Prediction and spatial definition of long-term stable' state of the marine environment following construction and taking into account on-going impacts from the presence of infrastructure – i.e. predicted impacts (the extent and severity) on the marine environment of indirect impacts (construction and ongoing impacts) (see also Condition 8-3 (3));
3. The establishment of a quantitative annual monitoring program of the seabed and benthic habitat condition in, and adjacent to, areas of seabed and benthic primary producer habitats damaged during pipeline installation and the ongoing presence of the infrastructure; and
4. The indicator(s) and criteria to be used to trigger cessation or reduction in the frequency of monitoring after three years following construction or, in the event of the trigger level referred to in item 3 above being exceeded, after the proponent has demonstrated the success of contingency actions in reducing the rate of annual seagrass loss or damage to less than the contingency trigger level referred to in item 3 above, for three successive years; and
5. Reporting procedures.

9-4 If within six months of completion of construction the marine habitat outside the area of direct impact has not returned to the state predicted in Condition 9-3 (3) the proponent is to commence contingency actions to ensure that the rate of post-construction seabed and/or benthic primary producer habitat loss or damage, is restricted and reduced.

9-5 The proponent shall implement the Plan.

9-6 The proponent shall make Plan publicly available in a manner approved by the CEO.

## **10 Fauna Management**

10-1 Prior to ground-disturbing activity, the proponent shall prepare and submit a Fauna Management Plan (the Plan) that meets the requirements of Condition 10-2 as determined by the Minister for the Environment.

In preparing the Plan the Proponent shall consult with the Environmental Protection Authority.

10-2 The Plan shall address:

- 1 clearing of the construction area in a step-wise fashion as the plant expands, to reduce impacts on fauna;
- 2 avoidance of clearing land when Carnaby Cockatoos are actively breeding or foraging in the area; and
- 3 presence of terrestrial fauna and their translocation.

10-3 The proponent shall implement Plan.

10-4 The proponent shall make Plan publicly available in a manner approved by the CEO.

## **11 Marine Treated Wastewater Discharge Monitoring and Management Plan**

11-1 Prior to commissioning of the wastewater treatment plant, the proponent shall prepare and submit a Marine Treated Wastewater Discharge Management Plan (the Plan) that meets the objective and Environmental Quality Objectives described in 11-2 and the requirements set out in 11-3 as determined by of the Minister for the Environment

In preparing the Plan the Proponent shall consult with the Environmental Protection Authority and the Department of Environment and Conservation

11-2 The objective of the Plan is to ensure that the discharge of Alkimos treated wastewater is managed to achieve simultaneously the following Environmental Quality Objectives as described in the document, Perth's Coastal Waters: Environmental Values and Objectives (Environmental Protection Authority, February 2000).

- Environmental Quality Objective 1 (Maintenance of ecosystem integrity), with spatially-assigned levels of protection as shown in figure 2 of schedule 1;
- Environmental Quality Objective 2 (Maintenance of aquatic life for human consumption) assigned to all parts of the marine environment surrounding the Alkimos ocean outlet with the exception of zones shown in figure 2 of schedule 1; and
- Environmental Quality Objectives 3 and 4 (Maintenance of primary contact recreation values, and Maintenance of secondary contact recreation values) assigned to all parts of the marine environment surrounding the Alkimos ocean outlet with the exception of zones shown in figure 2 of schedule 1.

11-3 The Plan shall address:

1. within the Zone of Low Ecological Protection (i.e. within a 100 metres from the diffuser as shown in figure 1, schedule 2), the proponent shall seek to achieve the ANZECC & ARM CANZ1 80% species protection guideline "trigger" levels (as published from time to time) for bio-accumulating toxicants;
2. within the Zone of High Ecological Protection (i.e. beyond a 100 metres from the diffuser as shown in figure 1, schedule 2), the proponent shall seek to achieve the ANZECC & ARM CANZ 99% species protection guideline "trigger" levels (as published from time to time) for toxicants (with the exception of cobalt, where the 95% guideline shall apply),

3. the establishment of indicators and associated “trigger” levels for further investigations (environmental quality guidelines) for nutrients and social quality objectives;
4. the establishment of “trigger” levels for the implementation of remedial and/or preventative actions to protect the water quality and the environment off Alkimos (environmental quality standards) for toxicants, nutrients and social quality objectives;
5. the monitoring and evaluation, including remodelling, of the social and environmental effects of discharging treated wastewater into the marine environment off Alkimos to assess performance in the protection and maintenance of environmental values and objectives;
6. the specific management actions that will be implemented in the event that environmental quality standards levels are not met, including the option of modifying the diffuser to increase dilution;
7. a program to undertake whole-of-effluent toxicity testing of treated wastewater;
8. the monitoring and reporting of diffuser performance in terms of achieving required number of initial dilutions within the area of low level of ecosystem protection compared to the initial dilutions in schedule 1 under low energy/calm meteorological and sea-state conditions; and
9. the protocols and schedules for reporting performance against the Environmental Quality Objectives.

11-4 The proponent shall implement the Plan.

11-5 The proponent shall make the Plan publicly available in a manner approved by the CEO.

11-6 In the event that a guideline “trigger” level referred to in condition 11-3 is exceeded, the proponent shall report the matter to the Department of Environment and Conservation within one working day of determining that this has occurred, and shall initiate an investigation against the environmental quality standards and into the cause of the exceedance in accordance with the framework developed in the Revised Environmental Quality Criteria Reference Document (Cockburn Sound)<sup>2</sup>, to the requirements of the Minister for the Environment on advice of the Department of Environment and Conservation.

11-7 In the event that an environmental quality standard referred to in condition 11-3 is exceeded, the proponent shall initiate a management response to determine the source and remedy the exceedance in accordance with the implementation framework for the National Water Quality Management Strategy, to the requirements of the Minister for the Environment on advice of the Department of Environment and Conservation

Note:

1 ANZECC & ARMCANZ guidelines are published in Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

2 Revised Environmental Quality Criteria Reference Document (Cockburn Sound), A supporting document to the draft Environmental Protection (Cockburn Sound) Policy 2002, Environmental Protection Authority Report 20, November 2002.

- 3 Implementation framework for Western Australia for the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Guidelines Nos 4 & 7: National Water Quality Management Strategy), Report of the Environmental Protection Authority, Bulletin 1078, November 2002.
- 11-8 Prior to submitting a Works Approval application for the plant, the proponent shall:
- 1 estimate the expected typical physico-chemical composition and flow rates of all wastewater streams discharging into the environment from the site;
  - 2 estimate, for all non-negligible contaminants and nutrients, the total annual loads of contaminants and nutrients in the wastewater discharge exiting the site;
  - 3 estimate, for normal and worst-case conditions, the concentrations of contaminants and nutrients (for agreed averaging periods) in the wastewater discharge exiting the site; and
  4. Establish a reporting process that is an inventory of toxicants that enter and leave the plant.
- 11-9 Prior to submitting a Works Approval application for the plant, the proponent shall provide information to show how “best practicable technology” and waste minimisation principles for contaminants and nutrients have been adopted for the wastewater discharge.
- 11-10 Within three months following commissioning and stabilizing of plant operations, the proponent shall conduct an analysis demonstrating that effluent properties are substantially consistent with predictions. Similar analyses shall also be conducted within three months following every major increase in the volume of treated wastewater discharged from the plant or any significant change in effluent characteristics.
- 11-11 The proponent shall develop a Contingency Wastewater Management Plan which will consider alternate options for wastewater treatment and/or disposal in the event that the Water Quality Objectives are not met.
- 11-12 In the event that effluent properties are not substantially consistent with predictions (refer to condition 11-9), the proponent shall conduct toxicological studies on the actual effluent, or provide acceptable alternative information such as risk assessment, to the timing and other requirements of the Minister for the Environment.
- These studies and/or information shall be consistent with ANZECC requirements
- 11-13 In the event that the findings resulting from condition 11-12 indicate that the effluent poses a significant risk to the diversity of the species and biological communities and abundance/biomass of marine life, the proponent shall implement the Contingency Wastewater Management Plan required by condition 11-11.
- 11-14 The proponent shall review and revise the Contingency Wastewater Management Plan required by condition 11-11.
- 11-15 The proponent shall make any revisions of the Contingency Wastewater Management Plan, as required by condition 11-11, publicly available in a manner approved by the CEO

## **12 Odour Management Plan**

12-1 Prior to commencement of operation, the proponent shall prepare and submit an Odour Management Plan (the Plan) to meet the objective set out in Condition 12-2 and the requirement in Condition 12-3 as determined by the Minister for the Environment.

In preparing the Plan the Proponent shall consult with the Environmental Protection Authority.

12-2 The Objective of the Plan is to manage the impacts of odour on health and amenity.

12-3 The Plan shall address

1. an initial dynamic olfactometry determination;
2. the biofilter acclimation period;
3. procedures for the replacement of the biofilter media;
4. regular checks of biofilter loading to ensure that the biofilter is balanced and to identify any short circuits (e.g. surface flow rate measurements and smoke tests);
5. the size of the stack;
6. compliance with the odour criteria, and trigger mechanisms for remedial actions when appropriate;
7. regular qualitative determination of odour from the facility;
8. odour surveys every five years;
9. contingency plans during upset or maintenance conditions;
10. contingency plans in the event of exceedances; and
11. complaint registration, investigation and response.

12-4 The proponent shall implement the Plan.

12-5 The proponent shall make the Plan publicly available in a manner approved by the CEO

12-6 The proponent shall operate the plant at all times to ensure that odour at all adjacent odour sensitive premises meets criterion for odours set out in condition 12-7 .

12-7 The odour criterion referred to in Condition 12-6 shall be 5 odour units (OU) (based on the 99.9 percentile 1 hour averaging Australia Standard OU) or as specified by the CEO from time to time through amendment of the operating licence issued under Part V of the *Environment Protection Act 1986*.

## **13 Decommissioning and Closure Plan**

13-1 At least two years prior to the anticipated date of decommissioning and closure, or at a time agreed by the Environmental Protection Authority, the proponent shall prepare and submit a Decommissioning and Closure Plan (the Plan) that meets the requirements of Condition 13-2 as determined by the Minister for the Environment

In preparing the Plan the Proponent shall consult with the Environmental Protection Authority.

13-2 The Plan shall address:

1. removal or, if appropriate, retention of plant and infrastructure in consultation with relevant stakeholders;
2. rehabilitation to a standard suitable for the agreed new land use(s); and
3. identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities.

13-3 The proponent shall implement the Plan until such time as the Minister for the Environment determines, on advice of the Environmental Protection Authority, that the proponent's decommissioning and closure responsibilities have been fulfilled.

13-4 The proponent shall make the Plan publicly available in a manner approved by the CEO.

## Notes

1. In the event that implementation of this proposal at Site B (Assessment No. 1529) is approved, implementation of the similar proposal at Site A (Assessment No. 1582), will not be approved.
2. The CEO may seek the advice of the Environmental Protection Authority, government agencies and relevant parties, as necessary, for the preparation of written notice to the proponent
3. The proponent should consult with relevant stakeholders, including but not necessarily limited to, the Department of Fisheries (regarding potential impacts on a rock lobster puerulis monitoring site) and the City of Wanneroo in the preparation of the management plans required by these conditions as and where appropriate.
4. The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986*.
5. The CEO will review the licence when the wastewater flow reaches 40 Megalitres per day, and periodically thereafter.
6. The proponent has committed to undertake best engineering design and construction practices to ensure the stability of the dune systems affected by the excavation for the WWTP and associated works.
7. It is expected that the proponent would address the use of additional odour Reduction Technology as required through the licensing process under Part V of the *Environment Protection Act 1986*.
8. These conditions do not in any way remove the proponent's obligation to comply with all relevant conditions contained in the Ministerial Statement 722, particularly in respect of the proponent's responsibility to develop and implement management plans for the installation of minor infrastructure on the land known as Areas 9a, 10a and 10b.

9. It is expected that the final area of disturbance from Ocean Outlet Pipeline (and diffuser) taking into account rehabilitation works and the ongoing impacts from the presence of the pipeline will be within the area defined in Figure 5 and Table 4 in Schedule 4.

David Templeman MLA  
MINISTER FOR THE ENVIRONMENT; CLIMATE CHANGE; PEEL

## Schedule 1

### Alkimos Wastewater Treatment Plant – Site B, City of Wanneroo (Assessment No. 1529)

#### General Description

The construction and operation of a wastewater treatment plant, and associated ocean outfall, on the Alkimos-Eglinton Dunal System with an ultimate processing capacity of 160 megalitres per day.

The main characteristics of the proposal are summarised in Table 1 below.

**Table 1: Summary of Key Proposal Characteristics**

Characteristic	Site B														
<b>Indicative life of project</b>	<p>Staged capacity to be implemented as follows:</p> <table style="margin-left: 40px; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Indicative Timing</th> <th style="text-align: left;">Installed Capacity (ML/d) of inflow</th> </tr> </thead> <tbody> <tr> <td>2009/10</td> <td>10</td> </tr> <tr> <td>2020</td> <td>40</td> </tr> <tr> <td>2030</td> <td>60</td> </tr> <tr> <td>2040</td> <td>80</td> </tr> <tr> <td>2050</td> <td>120</td> </tr> <tr> <td>Beyond 2050</td> <td>160</td> </tr> </tbody> </table>	Indicative Timing	Installed Capacity (ML/d) of inflow	2009/10	10	2020	40	2030	60	2040	80	2050	120	Beyond 2050	160
Indicative Timing	Installed Capacity (ML/d) of inflow														
2009/10	10														
2020	40														
2030	60														
2040	80														
2050	120														
Beyond 2050	160														
<b>Treatment process</b>	<p>Wastewater will be treated to an advanced secondary standard based upon the activated sludge process similar to that recently constructed at Woodman Point wastewater treatment plant. Additional treatment processes will be utilised to make the treated wastewater “fit for purpose” for disposal and re-use opportunities as and when they become available/viable. Odours will be vented via an approximately 50 metre tall stack.</p>														
<b>Toxicant concentrations</b>	<p>Projected loads and flows will result in toxicant concentrations meeting the ANZECC &amp; ARMCANZ 80% species protection guideline values for bio-accumulating toxicants within 100 metres of the ocean outlet diffuser, and meeting the ANZECC &amp; ARMCANZ 99% species protection guideline values for bio-accumulating toxicants beyond 100 metres from the ocean outlet diffuser.</p>														
<b>Connecting Pipeline</b> Length Diameter Construction method	<p>750 metres approximately 1000 to 1200mm inner diameter and 1400 to 1500mm outer diameter Drilling/boring method of pipe installation</p>														
<b>Outlet pipeline</b> Description  Length Diameter Construction method	<p>Discharge up to 40ML/d advanced secondary treated wastewater beyond 2009. Duplication of the outlet may be required in the future, dependent upon availability of other disposal/reuse options at that time.</p> <p>3.7 kilometres 1000 to 1200mm inner diameter and 1400 to 1500mm outer diameter Open-cut pipe installation</p>														

<b>Characteristic</b>	<b>Site B</b>
<b>Outlet diffuser</b> Length Diameter Number of ports Port spacing Port diameter Dilution	300 metres 1200mm inner diameter and 1400 to 1500mm outer diameter 100 3 metres 100mm The average dilution of the wastewater stream in the ocean will be at least 1:300 with the dilution being above 1:200 99% of the time within 100 metres of the ocean outlet diffuser.
<b>Marine habitat loss arising from the construction of the pipeline</b>	Not more than 7ha of seagrass (cumulative benthic primary producer habitat losses less than 1%)
<b>Power requirements</b>	3 Megawatts (ultimate)
<b>Power source</b>	Western Power grid
<b>Volume of excavation</b>	Not more than 3,000,000 cubic metres
<b>Clearing of vegetation required</b> Treatment plant site (including batters) Ocean outlet launch Site 1B Access roads within buffer Haul roads within buffer Quinns sewer route-within buffer to treatment plant <b>Total</b>	19ha 6.6ha 0.7ha 1.3ha 0.6ha <b>Not more than 29 ha</b>
<b>Odour buffer</b>	A 600 metre Public Purpose Reserve Buffer as gazetted (Western Australian Planning Commission, 2006) on 7 July 2006.

#### **Abbreviations**

ha = hectares

ML/d = Megalitres per day

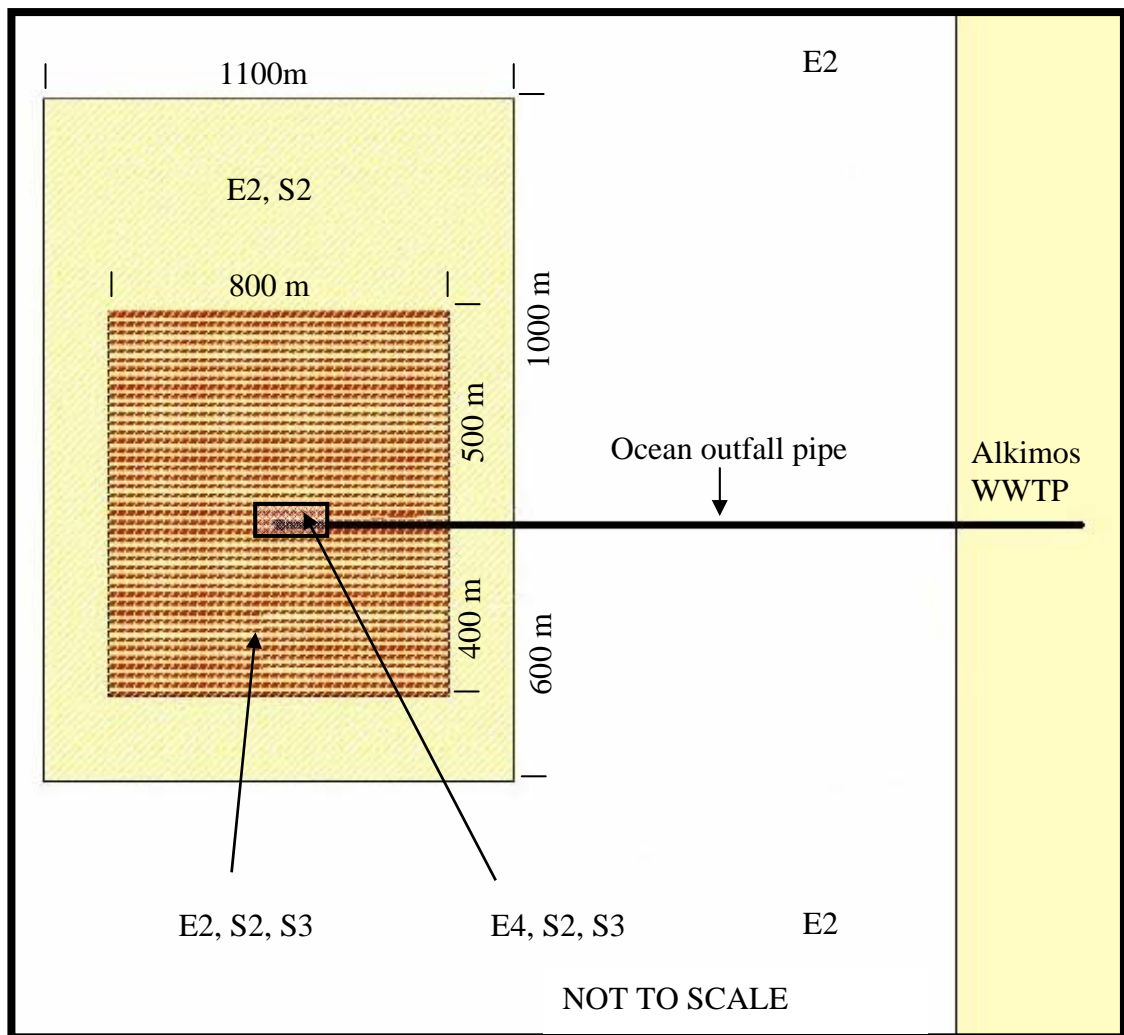
mg/L = milligrams per litre

#### **Figures (attached)**

Figure 1: Alkimos Location Map

Figure 2: Areas where Environmental Quality Objectives are to apply





**Figure 2:** Areas where Environmental Quality Objectives are to apply

**Key**

E2: High level of ecosystem protection (everywhere more than 100 metres from the diffuser)

E4: Low level of ecosystem protection (within 100 metres of the diffuser)

S2: Not safe to harvest seafood

S3: Not safe for primary contact recreation

**Note**

Outlet diffuser length not exceeding 300 metres.

## **Schedule 2**

### **Disturbance footprint for the wastewater treatment plant**

The construction and operation of the wastewater treatment plant shall not extend beyond the limits defined in Figure 3 and Table 2 below.

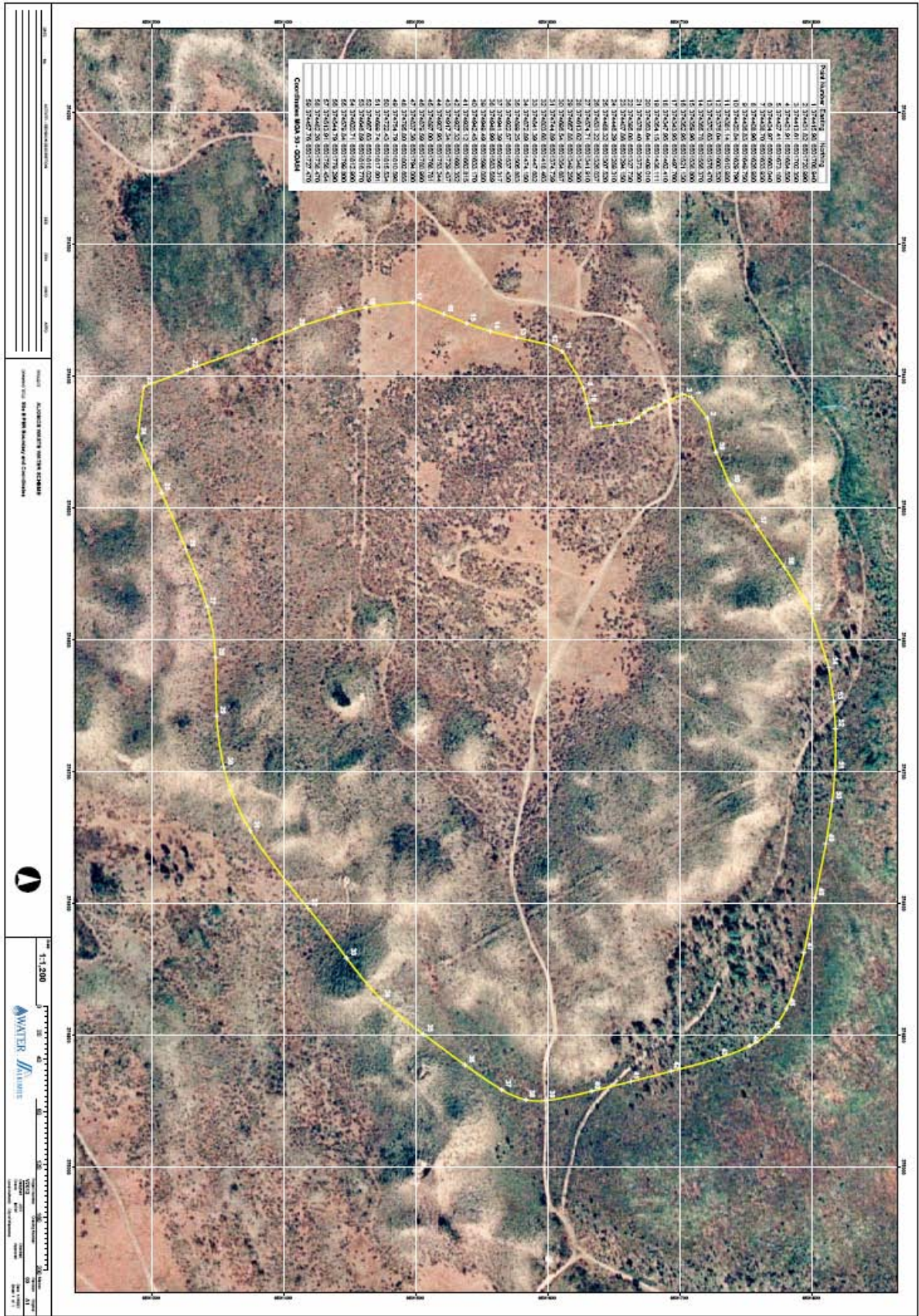


Figure 3: Disturbance footprint for the wastewater treatment plant

**Table 2: Coordinates of disturbance footprint for wastewater treatment plant**

<b>Point Number</b>	<b>Easting</b>	<b>Northing</b>
1	374415.98	6501708.940
2	374431.82	6501720.990
3	374413.61	6501702.350
4	374421.91	6501684.550
5	374427.41	6501673.180
6	374434.97	6501663.040
7	374438.70	6501633.930
8	374408.96	6501626.980
9	374436.83	6501649.750
10	374420.84	6501629.790
11	374381.14	6501610.980
12	374376.04	6501600.520
13	374370.63	6501576.470
14	374365.78	6501556.370
15	374359.96	6501538.800
16	374352.95	6501521.130
17	374343.95	6501497.760
18	374347.95	6501462.410
19	374354.15	6501438.111
20	374363.64	6501409.010
21	374378.40	6501373.360
22	374395.08	6501327.730
23	374407.86	6501294.150
24	374446.29	6501289.310
25	374488.32	6501307.520
26	374531.22	6501326.037
27	374574.71	6501341.910
28	374613.62	6501348.360
29	374657.88	6501349.250
30	374696.54	6501354.687
31	374744.89	6501374.739
32	374803.68	6501418.463
33	374841.39	6501447.682
34	374872.89	6501474.150
35	374899.25	6501505.883
36	374922.57	6501537.430
37	374941.39	6501565.317
38	374948.99	6501583.589
39	374949.49	6501599.080
40	374942.45	6501633.170
41	374935.12	6501662.815
42	374927.32	6501693.352

43	374917.34	6501729.437
44	374907.95	6501753.244
45	374897.00	6501768.781
46	374879.59	6501780.960
47	374837.36	6501794.000
48	374795.80	6501802.655
49	374754.79	6501810.598
50	374722.43	6501815.534
51	374699.74	6501817.601
52	374667.63	6501818.029
53	374646.89	6501816.770
54	374620.71	6501812.900
55	374579.84	6501799.800
56	374544.79	6501779.290
57	374513.91	6501758.454
58	374482.26	6501738.470
59	374457.76	6501727.470

## **Schedule 3**

### **Disturbance footprint for the launching site**

The construction and operation of the launching site shall not extend beyond the limits defined in Figure 4 and Table 3 below.

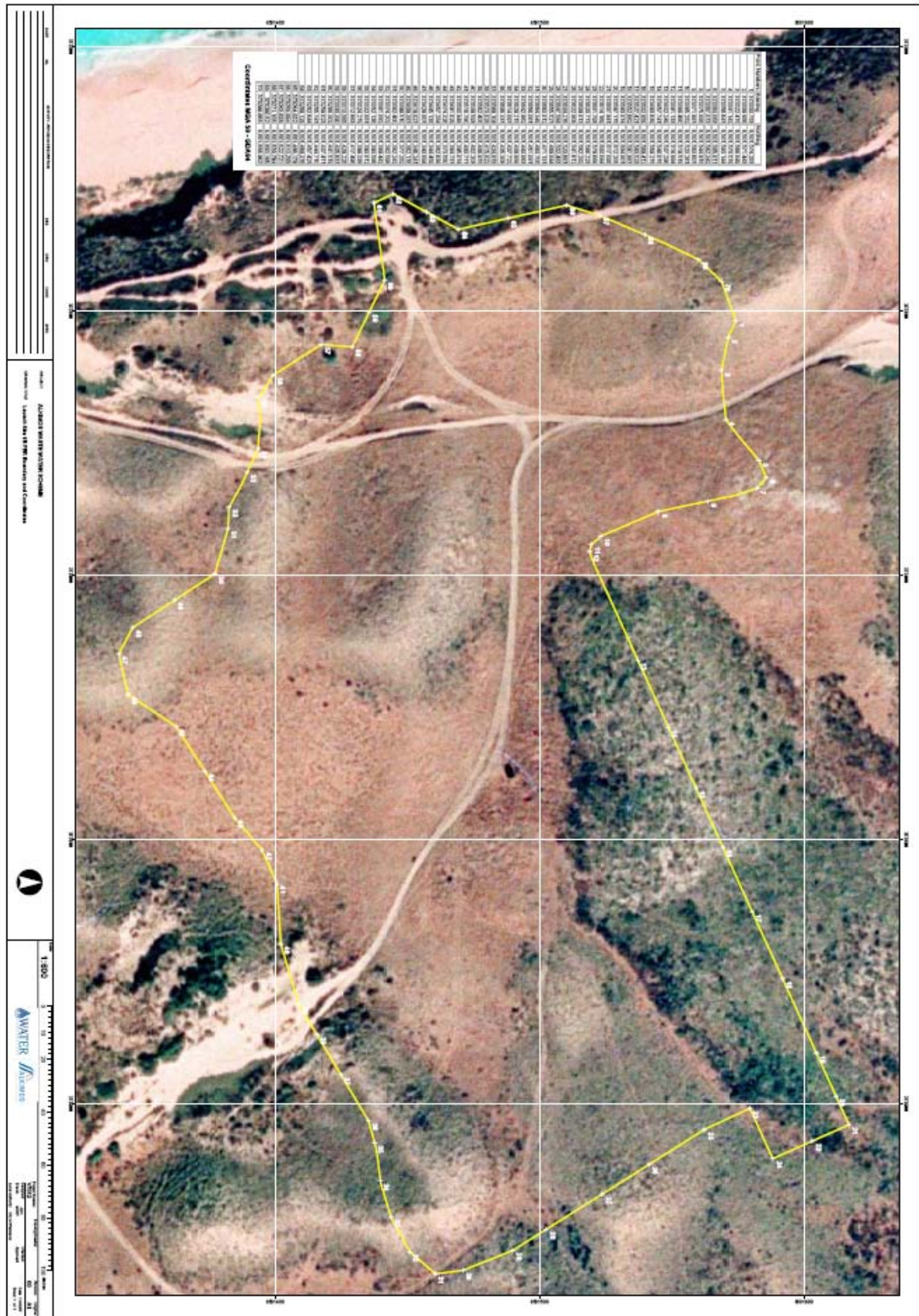


Figure 4: Disturbance footprint for the launching site

**Table 3: Coordinates of disturbance footprint for launching site**

Point Numbers	Easting mE	Northing mE
1	373303.753	6501574.263
2	373309.956	6501571.443
3	373322.475	6501568.849
4	373341.142	6501570.579
5	373356.647	6501583.144
6	373363.063	6501585.817
7	373367.073	6501582.342
8	373375.895	6501544.915
9	373371.987	6501563.607
10	373385.252	6501523.261
11	373388.460	6501519.518
12	373391.133	6501518.984
13	373432.249	6501537.296
14	373457.741	6501548.875
15	373480.639	6501559.275
16	373502.959	6501569.412
17	373527.421	6501580.523
18	373552.662	6501591.987
19	373580.874	6501604.801
20	373597.175	6501612.205
21	373607.941	6501617.095
22	373614.169	6501603.084
23	373601.793	6501579.668
24	373620.773	6501588.223
25	373609.813	6501562.292
26	373622.908	6501541.612
27	373634.276	6501523.661
28	373647.584	6501502.483
29	373655.527	6501489.844
30	373663.012	6501471.131
31	373664.349	6501460.705
32	373656.061	6501451.081
33	373642.962	6501443.863
34	373629.215	6501439.958
35	373614.897	6501437.722
36	373606.337	6501435.308
37	373589.104	6501424.978
38	373573.828	6501415.822
39	373562.405	6501408.975
40	373539.593	6501402.203
41	373516.780	6501400.777
42	373503.948	6501395.074
43	373491.829	6501384.737
44	373474.326	6501373.550
45	373457.254	6501362.638
46	373445.135	6501344.459
47	373429.807	6501340.894
48	373419.827	6501346.241
49	373409.387	6501362.176

50	373399.510	6501377.252
51	373382.400	6501382.242
52	373374.202	6501382.598
53	373361.082	6501389.442
54	373352.136	6501393.586
55	373332.851	6501393.812
56	373324.279	6501399.338
57	373312.663	6501417.496
58	373313.565	6501429.225
59	373300.390	6501435.637
60	373288.302	6501441.519
61	373259.023	6501437.411
62	373255.747	6501444.710
63	373262.644	6501457.423
64	373269.129	6501469.376
65	373264.922	6501488.179
66	373259.994	6501510.203
67	373263.828	6501522.721
68	373271.106	6501539.784
69	373280.520	6501560.165
70	373288.866	6501568.962

## **Schedule 4**

**Ocean Outlet Pipeline (and diffuser) ‘containment’ zone**

**Figure 5: Ocean Outlet Pipeline (and diffuser) ‘containment’ zone**

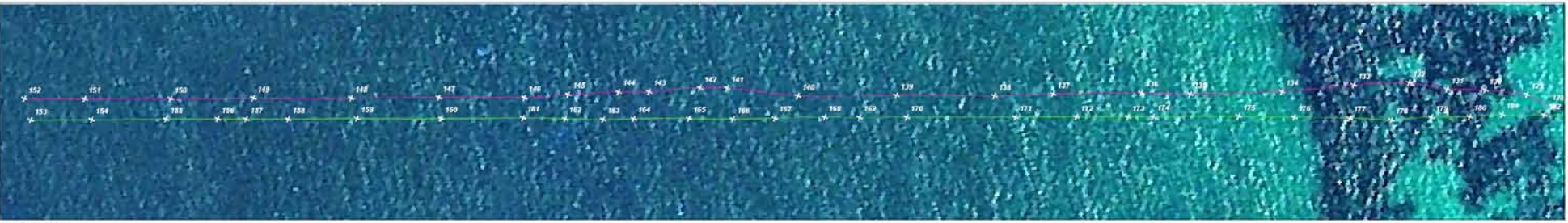
Area of Disturbance Boundary Coordinates

POINT ID	Easting (m)	Northing (m)
1	372111.021	6001131.313
2	372027.12	6001130.820
3	372011.304	6001131.446
4	372094.569	6001130.590
5	372020.030	6001131.90
6	372024.744	6001130.56
7	372001.430	6001133.440
8	372085.541	6001132.370
9	372011.669	6001133.000
10	372086.597	6001132.710
11	372022.017	6001130.840
12	372022.144	6001130.840
13	372022.144	6001130.840
14	372022.144	6001130.840
15	372022.144	6001130.840
16	372022.144	6001130.840
17	372022.144	6001130.840
18	372022.144	6001130.840
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23	372022.144	6001130.840
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28	372022.144	6001130.840
29	372022.144	6001130.840
30	372022.144	6001130.840
31	372022.144	6001130.840
32	372022.144	6001130.840
33	372022.144	6001130.840
34	372022.144	6001130.840
35	372022.144	6001130.840
36	372022.144	6001130.840
37	372022.144	6001130.840
38	372022.144	6001130.840
39	372022.144	6001130.840
40	372022.144	6001130.840
41	372022.144	6001130.840
42	372022.144	6001130.840
43	372022.144	6001130.840
44	372022.144	6001130.840
45	372022.144	6001130.840
46	372022.144	6001130.840
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82	372022.144	6001130.840
83	372022.144	6001130.840
84	372022.144	6001130.840
85	372022.144	6001130.840
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87	372022.144	6001130.840
88	372022.144	6001130.840
89	372022.144	6001130.840
90	372022.144	6001130.840
91	372022.144	6001130.840
92	372022.144	6001130.840
93	372022.144	6001130.840
94	372022.144	6001130.840
95	372022.144	6001130.840
96	372022.144	6001130.840
97	372022.144	6001130.840
98	372022.144	6001130.840
99	372022.144	6001130.840
100	372022.144	6001130.840

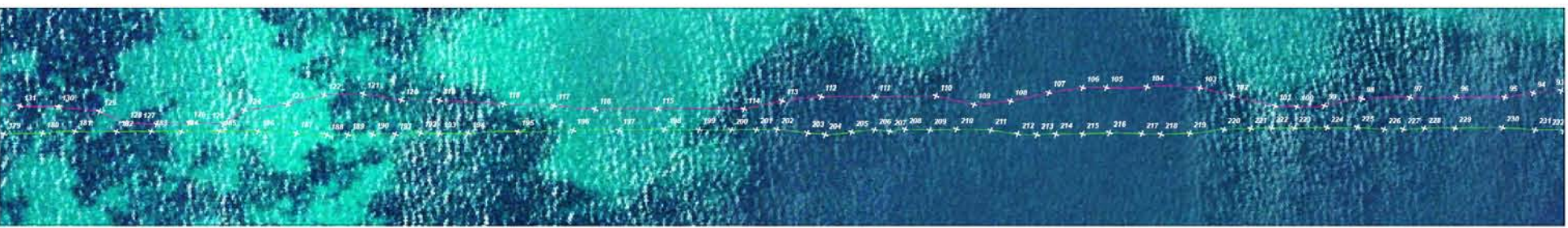
141	372022.144	6001130.840
142	372022.144	6001130.840
143	372022.144	6001130.840
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171	372022.144	6001130.840
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196	372022.144	6001130.840
197	372022.144	6001130.840
198	372022.144	6001130.840
199	372022.144	6001130.840
200	372022.144	6001130.840

POINT ID	Easting (m)	Northing (m)
201	372022.144	6001130.840
202	372022.144	6001130.840
203	372022.144	6001130.840
204	372022.144	6001130.840
205	372022.144	6001130.840
206	372022.144	6001130.840
207	372022.144	6001130.840
208	372022.144	6001130.840
209	372022.144	6001130.840
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211	372022.144	6001130.840
212	372022.144	6001130.840
213	372022.144	6001130.840
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222	372022.144	6001130.840
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233	372022.144	6001130.840
234	372022.144	6001130.840
235	372022.144	6001130.840
236	372022.144	6001130.840
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238	372022.144	6001130.840
239	372022.144	6001130.840
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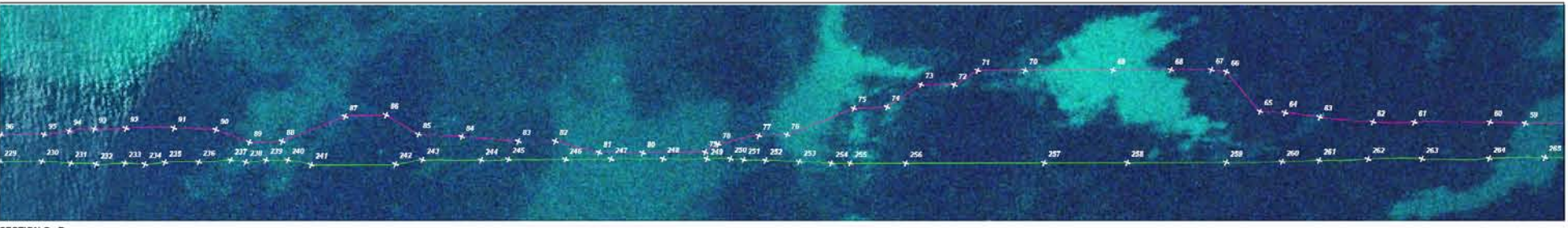
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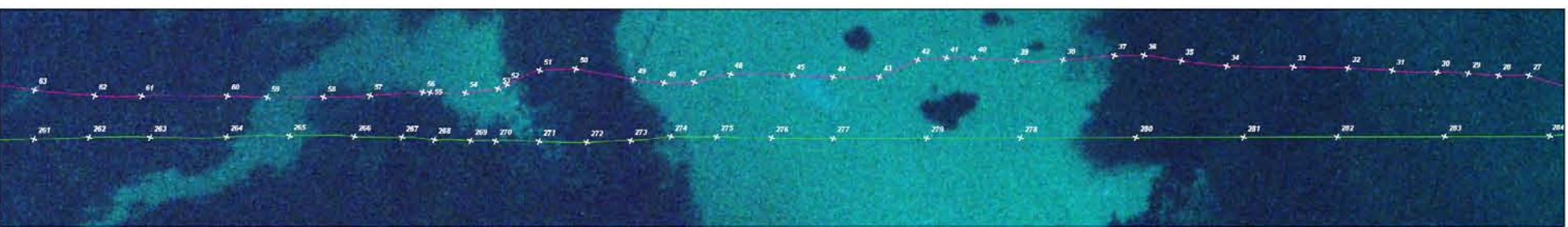
SECTION A - B



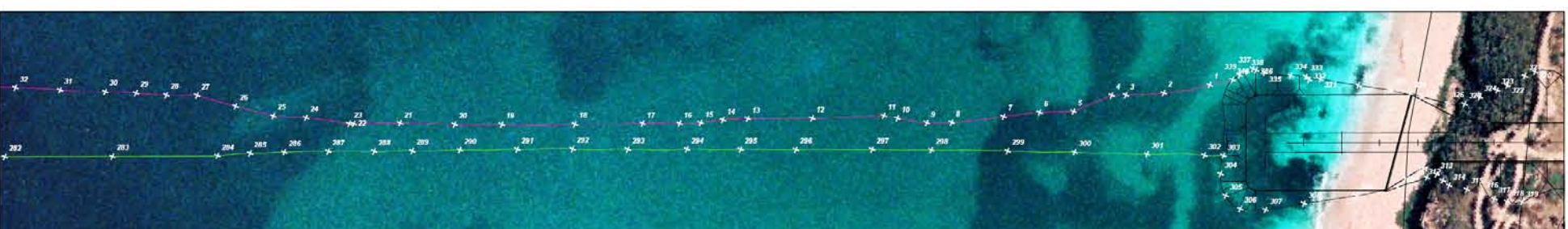
SECTION B - C



SECTION C - D



SECTION D - E



SECTION E - F

**Table 4: Coordinates of the Ocean Outlet Pipeline (and diffuser) ‘containment’ zone**

Point Number	Easting mE	Northing mN	Point Number	Easting mE	Northing mN	Point Number	Easting mE	Northing mN	Point Number	Easting mE	Northing mN	Point Number	Easting mE	Northing mN
1	373116.063	6501411.317	47	372234.770	6501009.350	93	371257.979	6500562.156	139	370261.039	6500105.993	185	370624.436	6500256.744
2	373095.786	6501397.697	48	372220.458	6501002.620	94	371244.778	6500555.084	140	370213.995	6500084.650	186	370642.673	6500264.954
3	373078.120	6501388.638	49	372205.318	6500997.874	95	371232.132	6500547.012	141	370178.390	6500073.435	187	370661.366	6500272.150
4	373071.365	6501385.482	50	372175.115	6500990.389	96	371208.910	6500536.606	142	370165.338	6500067.684	188	370676.344	6500277.853
5	373056.569	6501369.599	51	372158.296	6500982.003	97	371186.770	6500526.686	143	370141.920	6500055.061	189	370686.340	6500282.444
6	373040.458	6501361.980	52	372145.559	6500968.264	98	371164.071	6500515.918	144	370127.212	6500048.430	190	370698.092	6500288.008
7	373024.214	6501352.260	53	372142.185	6500964.335	99	371147.517	6500504.560	145	370103.796	6500036.566	191	370709.097	6500292.795
8	373000.458	6501338.448	54	372127.439	6500955.323	100	371134.712	6500498.066	146	370083.334	6500025.669	192	370720.646	6500298.810
9	372988.624	6501332.975	55	372110.458	6500948.048	101	371123.888	6500493.907	147	370042.338	6500007.438	193	370729.926	6500302.558
10	372973.669	6501328.909	56	372106.906	6500946.615	102	371101.151	6500489.519	148	370000.536	6499988.498	194	370743.593	6500308.739
11	372966.597	6501327.218	57	372082.353	6500933.731	103	371084.250	6500486.608	149	369953.639	6499967.653	195	370766.968	6500320.153
12	372932.851	6501310.635	58	372060.458	6500923.036	104	371058.693	6500475.665	150	369914.175	6499949.761	196	370793.217	6500332.493
13	372902.144	6501296.737	59	372033.540	6500911.077	105	371039.260	6500466.758	151	369873.116	6499931.323	197	370815.119	6500342.306
14	372890.458	6501290.821	60	372013.971	6500903.169	106	371028.035	6500461.692	152	369844.256	6499918.671	198	370836.860	6500352.479
15	372880.458	6501284.831	61	371972.920	6500884.842	107	371012.877	6500451.994	153	369851.820	6499909.651	199	370853.337	6500359.726
16	372870.458	6501279.939	62	371950.458	6500875.067	108	370996.425	6500439.912	154	369880.932	6499922.936	200	370868.923	6500366.516
17	372852.791	6501272.153	63	371920.458	6500864.890	109	370979.601	6500430.392	155	369916.467	6499939.008	201	370880.754	6500371.905
18	372820.458	6501257.283	64	371900.458	6500858.761	110	370959.575	6500426.363	156	369941.078	6499950.113	202	370890.736	6500376.528
19	372785.649	6501241.645	65	371886.749	6500853.440	111	370930.471	6500413.083	157	369954.785	6499956.204	203	370906.122	6500381.322
20	372762.968	6501231.573	66	371858.929	6500866.899	112	370904.597	6500401.564	158	369974.929	6499965.050	204	370914.708	6500384.172
21	372736.648	6501220.489	67	371850.214	6500864.310	113	370887.010	6500391.383	159	370007.662	6499980.037	205	370926.953	6500391.080
22	372714.660	6501210.367	68	371828.271	6500854.456	114	370870.439	6500379.210	160	370047.890	6499997.864	206	370937.427	6500397.048
23	372712.578	6501209.393	69	371796.847	6500840.345	115	370829.313	6500360.754	161	370086.997	6500015.744	207	370945.080	6500399.536
24	372690.458	6501203.156	70	371749.109	6500818.907	116	370799.335	6500347.214	162	370107.292	6500024.254	208	370951.905	6500403.865
25	372674.485	6501196.970	71	371723.410	6500807.367	117	370778.860	6500340.367	163	370125.700	6500032.084	209	370963.944	6500408.792
26	372654.345	6501193.539	72	371714.380	6500793.839	118	370754.438	6500330.450	164	370140.196	6500038.861	210	370976.547	6500414.900
27	372633.487	6501190.597	73	371696.060	6500786.072	119	370722.777	6500318.603	165	370166.616	6500050.818	211	370993.238	6500421.672
28	372618.805	6501184.221	74	371683.161	6500765.840	120	370704.638	6500310.458	166	370187.743	6500059.917	212	371006.798	6500425.651
29	372603.784	6501178.650	75	371665.415	6500757.016	121	370684.978	6500305.350	167	370207.640	6500069.312	213	371016.122	6500429.298
30	372588.858	6501172.707	76	371635.386	6500726.381	122	370666.586	6500296.463	168	370231.195	6500080.327	214	371025.153	6500433.598
31	372566.810	6501163.903	77	371620.458	6500719.184	123	370650.925	6500284.034	169	370247.928	6500087.590	215	371037.906	6500439.374
32	372545.073	6501155.577	78	371600.458	6500704.739	124	370631.585	6500272.223	170	370270.506	6500097.753	216	371050.436	6500445.647
33	372518.678	6501144.634	79	371595.186	6500697.218	125	370624.624	6500261.206	171	370322.536	6500121.032	217	371066.175	6500452.098
34	372486.605	6501130.736	80	371561.549	6500681.801	126	370607.918	6500254.469	172	370351.751	6500134.090	218	371075.389	6500455.990
35	372463.627	6501123.487	81	371537.760	6500671.308	127	370592.733	6500246.784	173	370376.407	6500145.093	219	371088.942	6500462.425
36	372444.595	6501118.193	82	371511.214	6500666.955	128	370577.500	6500240.700	174	370388.260	6500150.432	220	371104.500	6500471.721
37	372430.458	6501111.852	83	371491.219	6500657.995	129	370562.572	6500240.734	175	370429.261	6500168.978	221	371117.131	6500477.767
38	372406.792	6501098.601	84	371459.435	6500646.871	130	370541.578	6500234.082	176	370455.918	6500180.409	222	371126.997	6500482.648
39	372384.436	6501088.439	85	371435.329	6500637.508	131	370523.331	6500226.214	177	370482.612	6500191.757	223	371137.965	6500487.519
40	372363.842	6501080.565	86	371413.056	6500640.295	132	370503.465	6500221.381	178	370503.140	6500199.747	224	371153.452	6500494.529
41	372350.458	6501074.799	87	371391.203	6500629.594	133	370477.717	6500208.375	179	370521.717	6500209.642	225	371167.995	6500501.201
42	372337.102	6501067.523	88	371362.866	6500600.917	134	370444.576	6500190.023	180	370539.892	6500217.990	226	371181.202	6500505.967
43	372322.544	6501051.273	89	371345.478	6500592.563	135	370401.202	6500169.195	181	370554.971	6500225.909	227	371190.332	6500510.045
44	372300.458	6501041.385	90	371324.272	6500591.143	136	370377.652	6500159.488	182	370575.162	6500234.651	228	371200.199	6500514.926
45	372280.458	6501033.589	91	371300.837	6500581.947	137	370335.740	6500140.122	183	370591.550	6500242.096	229	371214.751	6500521.577
46	372250.458	6501020.962	92	371275.035	6500570.162	138	370307.914	6500126.650	184	370606.204	6500248.522	230	371237.469	6500532.016

Point Number	Easting mE	Northing mN	Point Number	Easting mE	Northing mN	Point Number	Easting mE	Northing mN
231	371253.471	6500537.879	278	372403.146	6501052.277	325	373242.126	6501456.491
232	371267.447	6500543.373	279	372358.363	6501032.166	326	373233.816	6501453.297
233	371282.679	6500550.952	280	372458.421	6501077.099	327	373219.613	6501451.004
234	371293.913	6500555.228	281	372509.920	6501100.225	328	373213.811	6501449.859
235	371304.413	6500561.138	282	372554.660	6501120.316	329	373203.641	6501447.425
236	371322.569	6500569.529	283	372606.044	6501143.390	330	373187.162	6501442.817
237	371339.497	6500578.214	284	372656.243	6501166.052	331	373167.851	6501437.471
238	371348.170	6500580.871	285	372671.197	6501174.252	332	373162.576	6501435.013
239	371358.655	6500586.816	286	372687.450	6501181.998	333	373160.326	6501435.778
240	371370.513	6500592.144	287	372708.271	6501191.778	334	373152.720	6501433.094
241	371384.477	6500595.223	288	372730.208	6501201.512	335	373139.717	6501429.133
242	371430.015	6500615.870	289	372748.388	6501209.849	336	373135.146	6501428.374
243	371443.543	6500624.804	290	372771.007	6501220.507	337	373133.289	6501428.347
244	371475.638	6500638.769	291	372798.287	6501232.992	338	373130.901	6501425.703
245	371490.036	6500645.765	292	372824.716	6501244.930	339	373128.197	6501422.377
246	371521.158	6500659.456	293	372851.251	6501256.631	340	373125.852	6501418.594
247	371545.703	6500670.709	294	372879.554	6501269.278			
248	371573.945	6500683.490	295	372905.180	6501280.563			
249	371597.680	6500694.104	296	372931.740	6501292.208			
250	371610.473	6500699.793	297	372968.231	6501308.592			
251	371618.037	6500702.477	298	372996.690	6501320.891			
252	371630.053	6500707.453	299	373033.412	6501336.761			
253	371648.681	6500714.792	300	373065.667	6501350.372			
254	371666.422	6500721.665	301	373100.803	6501364.890			
255	371676.845	6500726.247	302	373128.438	6501376.583			
256	371706.873	6500739.723	303	373137.644	6501380.494			
257	371781.862	6500773.378	304	373140.136	6501371.157			
258	371826.878	6500793.581	305	373147.282	6501361.799			
259	371880.541	6500817.665	306	373156.996	6501358.611			
260	371910.848	6500831.574	307	373169.384	6501363.487			
261	371930.628	6500841.231	308	373186.386	6501374.716			
262	371956.793	6500853.758	309	373209.968	6501389.578			
263	371986.000	6500866.832	310	373227.847	6501402.327			
264	372022.424	6500883.365	311	373239.697	6501413.317			
265	372052.343	6500897.295	312	373247.788	6501415.289			
266	372083.547	6500910.804	313	373243.560	6501416.901			
267	372106.576	6500920.551	314	373251.998	6501414.234			
268	372122.624	6500926.312	315	373261.323	6501416.150			
269	372140.232	6500933.481	316	373269.418	6501417.296			
270	372152.113	6500938.758	317	373276.423	6501417.499			
271	372173.210	6500947.924	318	373283.361	6501418.843			
272	372196.282	6500957.573	319	373290.473	6501421.860			
273	372216.932	6500967.734	320	373268.857	6501486.965			
274	372235.201	6500978.313	321	373264.885	6501482.828			
275	372257.203	6500987.903	322	373258.539	6501474.608			
276	372283.948	6500999.139	323	373254.717	6501470.122			
277	372313.430	6501011.989	324	373247.834	6501463.198			

