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Sequence Number: 24350633

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For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208



Map Sheet: 1

Scale: 1: 1000



1

	Transmission Pressure Natural Gas		Sleeve		Sewer Manhole
	High Pressure Natural Gas		Valve		Power Pole
	Medium Pressure Natural Gas		Syphon		Telecom Pit
	Low Pressure Natural Gas		Endcap		Baghole
	LPG Reticalution		Regulator		Reducer
	Dormant Main		Pipe Connector		Purge Point
	Proposed Main		Insulated Connection		Warning Sign (Marker)
			Cathodic Test Point		

Line / Polygon Request

DCDB Easement

Pipeline Data Copyright APA Envestra Pty Ltd, Property Parcels Copyright QLD Government, UBD Imagery - Copyright Sensis, DBYD Dig Location provided by DBYD.

APA Group

APPENDIX D

BCC FLOODWISE PROPERTY REPORT



Brisbane City Council FloodWise Property Report

Report Reference

1844625

08/02/2012 11:16:39

Dedicated to a better Brisbane

The FloodWise Property Report is a free report to inform Brisbane residents and professionals about flood risks for a specified lot or property so they may better prepare for flooding and to plan and build in accordance with Council requirements. A flood level higher than those shown below can occur in any year, although such events are rare.

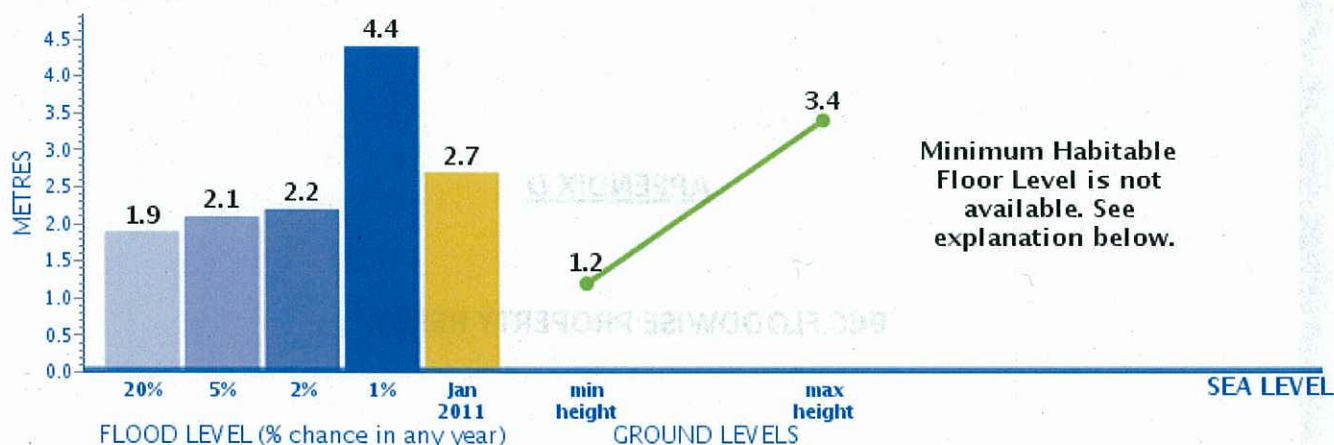
To find out more about how the contents of this report may affect your ability to build or renovate, as well as Council advice on how to protect your property and family by being FloodWise, visit www.brisbane.qld.gov.au, a Customer Service Centre or call (07) 3403 8888.

PROPERTY DETAILS:

Address: 153 CAMPBELL ST BOWEN HILLS QLD 4006

Lot Details: L.1/SP.193899

FLOOD LEVEL INFORMATION



Flood Levels

The blue bars in the graph above show the percentage chance of that level being reached or exceeded in any year. The orange bar shows the January 2011 flood level at this address or lot.

Ground Levels (Min - Max)

The line above shows this property's lowest and highest ground levels. Confirm with a surveyor.

Minimum Habitable Floor Level

If a property is in an overland flow path or a large allotment a minimum habitable floor level cannot be provided. See flood and property flag information over page.

For a detailed summary of anticipated flood levels and flags see technical summary over page.

HIGHEST SOURCE OF FLOODING

CREEK/WATERWAY The highest source of flooding affecting this property originates from a creek or waterway. For more information about flooding in your area you can view and download Council's Flood Flag Maps by visiting www.brisbane.qld.gov.au/floodmap

FLOOD AND PROPERTY DEVELOPMENT FLAGS

Current records indicate this property may be affected by one or more flood or property development flags. Please review the technical summary over page for more detail.

Technical Summary

Use this summary to supply information about this property to surveyors, builders, certifiers, architects and engineers who may request this FloodWise Property Report. This summary has been designed to be easily read if scanned or faxed.

Property Details

Address: 153 CAMPBELL ST BOWEN HILLS QLD 4006

Lot Details: L.1/SP.193899

Property Information

Minimum Ground Level (AHD)	1.2 m
Maximum Ground Level (AHD)	3.4 m
Defined Flood Level (DFL)	4.4 m
Defined Flood Level Source	CREEK/WATERWAY
Minimum Habitable Floor Level (AHD)	N/A

Estimated Peak Flooding Levels

ARI (Years)	% chance	Level (AHD)	Source
5	20%	1.9 m	STORM TIDE
20	5%	2.1 m	STORM TIDE
50	2%	2.2 m	STORM TIDE
100	1%	4.4 m	CREEK/WATERWAY
January 2011		2.7 m	RIVER

Flooding may also occur from:

STORM TIDE

Flood and Property Development Flags

Waterway Corridor

This property is located within a waterway corridor. A waterway corridor is a defined area along waterways (including rivers, creeks or creek tributaries), designed to protect water flow, water quality, biodiversity and recreation values. The potential to build or extend a home situated within a waterway corridor is restricted. For further information, contact the Development Assessment Customer Liaison Officer on (07) 3403 8888.

Large Allotment

This property is a Large Allotment of over 1000 square metres. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across this site. For more information or advice, it is recommended you engage a Registered Professional Engineer of Queensland.

Disclaimer

- 1 Defined Flood Levels and Interim Residential Flood Levels, and the Minimum Habitable Floor Levels based on them, are determined from the information available to Council at the date of issue. These flood levels, for a particular property, may change if more detailed information becomes available or changes are made in the method of calculating flood levels.
- 2 Council makes no warranty or representation regarding the accuracy or completeness of a FloodWise Property Report. Council disclaims any responsibility or liability in relation to the use or reliance by any person on a FloodWise Property Report.

Useful Definitions

Australian Height Datum (AHD) – The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.

Average Recurrence Interval (ARI) or % Chance – The probability of experiencing a flood of a particular magnitude. ARI can be interpreted in terms of years (frequency). ARI levels quoted in this report are measured in height above sea level (AHD). ARI can also be described as the percentage chance that a location will flood in any one year. For example, a 5 year ARI flood event corresponds to a 20% likelihood of a flood of this magnitude or greater occurring in any one year.

Defined Flood Level (DFL) – The DFL is the minimum flood planning level that development must adhere to in a given location to minimise the risk of potential flooding. The DFL is dependent on the type of development, the source of flooding and the severity of a flood event. Locating development at or above this level does not mean the property is immune to flooding.

Maximum and Minimum Ground Level – Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

Minimum Habitable Floor Level – The minimum level above sea level at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family and rumpus rooms) must be constructed.

City Plan 2000 – City Plan 2000 sets out what you can build and where new development should go. Council assesses proposed new development against the City Plan 2000.

Find Out More

Whether you are building, buying, renting or preparing your property for flooding, obtaining a FloodWise Property Report is the first step in determining your property's flood risk. Council's 'Be FloodWise' series of publications can assist you to plan ahead, respond to and recover from flooding. They are available online at: <http://www.brisbane.qld.gov.au/floodwise> or by phoning Brisbane City Council on (07) 3403 8888.

The 'Be FloodWise' publications include:

Preparing for Flooding

Assess your flood risk, prepare for and respond to, flood events.

Be FloodWise - A guide for residents

Buying / Renting

Assess the flood risk of a property before making a decision to rent or buy.

Buying and renting fact sheet

Building or Renovating

Renovations around your home or business can impact on your flooding exposure.

Ensure your house meets City Plan 2000 flood immunity standards.

Building and renovating fact sheet

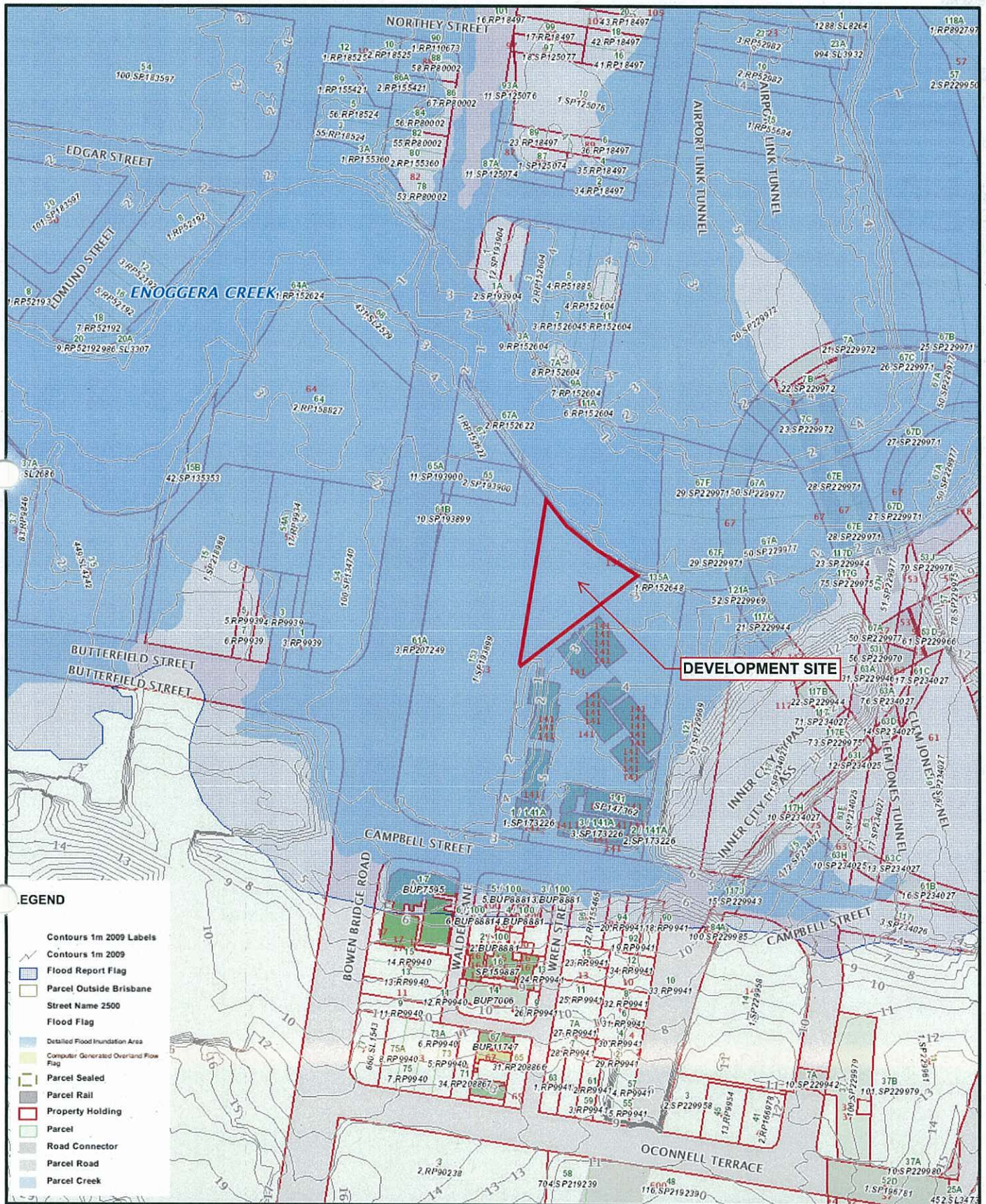
If you are planning to renovate or build, Council recommends you engage a Registered Professional Engineer of Queensland to undertake a thorough assessment of all flood risks specific to the property.



Get a Free Flood Flag Map

Find out more about predicted flooding in your suburb or area by downloading a free Flood Flag Map. The map shows overland flow paths and where flooding may occur from creeks, rivers and storm tides on a suburb scale.

For more information visit www.brisbane.qld.gov.au/floodmap or visit a Council Customer Service Centre



Parcel Cree

APPENDIX E**HYDRALULIC CALCULATIONS**

INITIAL PEAK FLOW CALCULATIONS

Based on QUDM 4.00 'Catchment Hydrology'

Written by BB 31/10/08

Edited by TM 16/06/11

12033

153 Campbell Street, Bowen Hills

IFD : Brisbane

Job Number:

Job Name:

Designed: TM

Checked: XX

BORNHORST + WARD

CONSULTING ENGINEERS

CIVIL AND STRUCTURAL

Please note: User Data to be placed
over blue text only. Input required for
Green Cells only

CATCHMENT SIZE			TOTAL RUNOFF CO-EFFICIENT			
	Sub Catchment Area (ha)		Fraction Impervious (fi)		Runoff Co-efficients (C _{ra})	
No.	Existing	Proposed	Existing	Proposed	Existing	Proposed
Open Space	0.2430	0.2430	85%	90%	0.87	0.88
Roof						
Road						
Footpath						
Other						
Total	0.243	0.243	85%	90%	0.87	0.88

C Values' Tab contains QUDM extracts - Table 4.05.1 & Table 4.05.3(a),(b) for estimating fraction impervious and converting to C_{ra}

EXISTING TIME OF CONCENTRATION		5	
CHANNEL/PIPE FLOW	Std Inlet Time		
	Site Slope (%)		
	Flow Length (m)		
	Horton's "n"		
	Travel Time (min)		
	Travel Length (m)		
SHEET FLOW	Fall (m)		
	Travel Time (min)		
	Multiplier		
	Travel Time (min)		
Total Time (tc)		5	

DEVELOPED TIME OF CONCENTRATION		5	
CHANNEL/PIPE FLOW	Std Inlet Time		
	Site Slope (%)		
	Flow Length (m)		
	Horton's "n"		
	Travel Time (min)		
	Travel Length (m)		
SHEET FLOW	Fall (m)		
	Travel Time (min)		
	Multiplier		
	Travel Time (min)		
Total Time (tc)		5	

PEAK RUNOFF CALCULATIONS							
ARI Event Yr	Rainfall Intensity (mm/hr)		Coefficient of Runoff		Peak Runoff Rates (m ³ /s)		
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Proposed
1	116	116	0.70	0.70	0.054	0.055	
2	149	149	0.74	0.75	0.074	0.075	
5	190	190	0.83	0.84	0.106	0.107	
10	215	215	0.87	0.88	0.126	0.128	
20	248	248	0.91	0.92	0.153	0.155	
50	292	292	1.00	1.00	0.197	0.197	
100	327	327	1.00	1.00	0.220	0.220	

PEAK FLOWS FOR FREQUENT EVENTS				
ARI Event	year	% of Q _i event	Peak discharge (m ³ /s)	
			Existing	Proposed
1mth	25%	0.014	0.014	0.014
2mth	40%	0.022	0.022	0.022
3mth	50%	0.027	0.027	0.027
4mth	60%	0.033	0.033	0.033
6mth	75%	0.041	0.041	0.041
9mth	90%	0.049	0.049	0.049
12mth	100%	0.054	0.054	0.055

APPENDIX F

**STATE PLANNING POLICY 4/10
HEALTHY WATERS CODE**

TABLE – RESPONSE TO PART A - URBAN STORMWATER MANAGEMENT

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	RESPONSE
Protecting Water Quality Performance outcome PO1 The development is compatible with the land use constraints of the site for achieving stormwater design objectives.	Acceptable outcome AO1.1 The nature, design and stormwater management of the development is in accordance with design objectives stated in Chapter 4 (section 4.9) of the State Planning Policy Guideline for Healthy Waters (the guideline) and Prepare a site stormwater quality management plan (SQMP) that: - Is consistent with any local area stormwater water management planning; and - Provides for achievable stormwater quality treatment measures reflecting land use constraints, such as soil type, landscape features (including landform), nutrient hazardous areas, acid sulfate soil and rainfall erosivity.	A Site Based Stormwater Management Plan (SBSMP) has been prepared for the development in accordance with QUDM, Brisbane City Councils Subdivision and Development Guidelines, Best Management Practices and the Healthy Waters Policy. The preliminary proposed treatment train has been included in the SBSMP.
Performance outcome PO2 The entry of contaminants into, and transport of contaminants, in stormwater is avoided or minimised.	Acceptable outcome AO2.1 Any development application incorporates: - stormwater management measures to achieve relevant design objectives outlined in Chapter 4 of the guideline - management of nutrients of concern and acid sulfate soils. and Prepare a site stormwater quality management plan	The development application includes a SBSMP which covers: - Target pollutants for the construction and developed phases of the project based on the proposal and site conditions. - Proposed stormwater management measures and a treatment train to achieve acceptable pollutant outputs.

TABLE – RESPONSE TO PART A - URBAN STORMWATER MANAGEMENT

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	RESPONSE
	(SQMP) that: a. accounts for development type, construction phase, local landscape, climatic conditions and design objectives in accordance with the guideline; and b. is consistent with the Queensland Acid Sulfate Soil Technical Manual.	The site is not subject to acid sulfate soils.
Performance outcome PO3 Construction activities for the development avoid or minimise adverse impacts on stormwater quality.	Acceptable outcome AO3.1 Any development application for the development is accompanied by an erosion and sediment control plan (ESCP) prepared in accordance with the guideline that demonstrates release of sediment laden stormwater is avoided for the nominated design storm, and minimised when the nominated design storm is exceeded by addressing design objectives in the guideline, Chapter 4, for: - drainage control; - erosion control; - sediment control; and - water quality outcomes. Addressing the design objectives may include enhancing the achievement of some objectives if achievement of other objectives is impractical. and Acceptable outcome AO3.2 Erosion and sediment control practices including any	A detailed Erosion and Sediment Control Plan (ESCP) is to be provided during the detailed design phase of the project once earthworks designs have been completed. The plan will include: - Any drainage redirection around exposed soils, - Erosion prevention measures, - Sediment capture and removal, - Maintain water quality objectives throughout the construction process.

TABLE – RESPONSE TO PART A - URBAN STORMWATER MANAGEMENT

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	RESPONSE
	proprietary erosion and sediment control products³⁰ are designed, installed, constructed, operated, monitored and maintained, and any other erosion and sediment control practices are carried out, in accordance with local conditions and appropriate recommendations from a suitably qualified person³¹. or The ESCP demonstrates how stormwater quality will be managed in accordance with an acceptable regional or local guideline so that target contaminants are treated to a design objective at least equivalent to Acceptable Outcome AO3.1.	
Protection of Natural Flows Performance outcome PO4 Construction and operation activities for the development avoid or minimise changes to waterway hydrology from adverse impacts of altered stormwater quality and flow.	Acceptable outcome AO4.1 Development incorporates stormwater flow control measures to achieve at least the design objectives set out in Chapter 4 of the guideline. Both the construction and operational phases for the development comply with advice and the design objectives in Chapter 4 of the guideline including management of frequent flows, peak flows, and construction phase hydrological impacts.	The development will not impact on the hydrology of the local area as the site is not located in an overland flow path and site runoff will not significantly increase as a result of the proposal. All piped drainage through the site is to be maintained or redirected with equivalent capacity to existing discharge points.

APPENDIX G

WATER QUALITY TREATMENT DEVICE MAINTENANCE PLANS

MAINTENANCE PLAN FOR THE HUMECEPTOR GROSS POLLUTANT TRAP

The following is an extract from the Humes Water Solutions: Humeceptor Technical Manual which outlines the required maintenance procedures.

13. MAINTENANCE PROCEDURES

Maintenance of the **Humeceptor** is performed using vacuum trucks. Normally no entry into the unit is required for maintenance. Costs to clean the **Humeceptor** vary based on the size of unit and transportation distances.

13.1 STC2 Units

The smaller STC2 units must be maintained through the inlet opening into the treatment chamber. This is achieved by removing the orifice plate and the drop tee using the PVC handle affixed to the drop tee. The eduction hose can then be inserted into the base of the treatment chamber to educt the captured sediment and hydrocarbons. Where sediment has accumulated and consolidated in the base due to infrequent maintenance, a water hose can be inserted into the decant pipe opening and used to jet the sediment towards the eduction hose.

13.2 STC3 to STC60 Units

The STC3 to STC60 units are maintained through the larger decant pipe openings. The eduction hose can be inserted into the base of the treatment chamber to educt the captured sediment and hydrocarbons. Where sediment has accumulated and consolidated in the base due to infrequent maintenance, a water hose can be inserted into the drop tee opening or the oil inspection pipe and used to jet the sediment towards the eduction hose.

13.3 Maintenance Costs

A typical cleaning cost (equipment and personnel) will vary based on unit location and size. Disposal costs will vary depending on land use and local government requirements. Economies of scale are expected where there are multiple units for a given location. The time taken to clean the **Humeceptor** is approximately 15 – 60 minutes, depending on the size of the unit, excluding transportation.

13.4 Maintenance Frequency

If the **Humeceptor** is sized based on the guidelines discussed in Section 10.2, annual maintenance is recommended, however, the frequency of maintenance may need to be increased or reduced based on local conditions (i.e. if the unit is filling up with sediment more quickly than projected, maintenance may be required biannually; conversely once the site has stabilised, maintenance may only be required once every two or three years).

13.5 Spills

Humeceptor is often implemented in areas where the potential for spills is great. **Humeceptor** should be cleaned immediately after a spill occurs by a licensed liquid waste management company. The Regulatory Authority should also be notified in the event of a spill.

13.6 Disposal

Waste products collected in the **Humeceptor** should be removed by a licensed waste management company, similar to any other stormwater treatment device.

13.7 Inspection

Humeceptor can be easily inspected from the surface by removing the maintenance cover. The presence of oil in the interceptor can be determined by inserting a dipstick in the 150 mm oil sample port. Similarly, the depth of sediment can be measured from the surface without entry into the **Humeceptor** via a sediment depth measurement device (Sludge Judge™). Maintenance should be performed once the sediment depth exceeds the guideline values provided in Table 4.

Any potential obstructions at the inlet can be observed from the surface. The insert has been designed as a platform for maintenance personnel in the event that obstructions need to be removed, stormwater flushing needs to be performed, or camera surveys are required.

Table 6: Sediment Depths Indicating Required Maintenance

Model	Sediment Depth (mm)
STC2	200
STC3	200
STC5	225
STC7	300
STC9	300
STC14	375
STC18	300
STC23	450
STC27	375
STC40	300
STC50	450
STC60	375

