Moving Water

Approach:	One to one	**Year:** 4 & 8
Focus:	Tides	
Resources:	Video recording on laptop computer	

NEMP Access Task
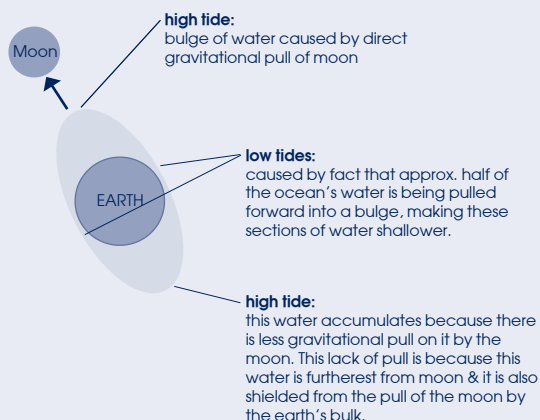
Questions / instructions:

This activity uses the computer.

In this activity we're going to look at a video showing low tide and high tide. The first part shows low tide. The second part shows the same place later in the day at high tide.

Click the *Moving Water* button and the video will start.

[No voiceover; sound of waves only]

Diagram that accompanied marking guide:

Tides are caused mainly by the moon. When the moon is overhead, its gravity pulls upwards on the sea, pulling it away from the shore, causing a bulge.

Tides rise and fall twice in 24 hours 50 minutes. This is because of the gravitational pull which creates two high tides and two low tides at any one time during the course of the 24 hours. The extra 50 minutes is due to time it takes the moon to move in its own orbit around Earth.

high tide:
bulge of water caused by direct gravitational pull of moon

Moon

EARTH

low tides:
caused by fact that approx. half of the ocean's water is being pulled forward into a bulge, making these sections of water shallower.

high tide:
this water accumulates because there is less gravitational pull on it by the moon. This lack of pull is because this water is furtherest from moon & it is also shielded from the pull of the moon by the earth's bulk.

*"tides operate on a 12+ hour cycle =
2 x low & high tides in 24 hours"
would be an example of an 'any other response'.*

	% responses 2003 ('99)	
	year 4	**year 8**
1. Every day the tide goes in and out. What do you think causes the tide to go in and out?		
full explanation	1 (0)	4 (0)
mentions moon and gravitational forces	3 (2)	20 (22)
mentions moon	9 (11)	19 (14)
2. If low tide is at 6 o'clock in the morning, about what time will it be low tide again? *[about 12 hours 25 minutes later]*		
6:30pm	1 (1)	0 (1)
6:00pm	33 (39)	48 (47)
3. Why do you think the tide is out twice most days?		
mentions idea of two bulges and two shallows *(see marking guide)*	0 (0)	2 (0)
Total score: 4–6	1 (0)	4 (1)
3	2 (2)	10 (14)
2	6 (6)	19 (13)
1	33 (38)	36 (33)
0	58 (54)	31 (39)

Commentary:

This was a very demanding task. It is difficult to understand why there are two tidal peaks and lows per 24 hours. Year 8 students scored a little better than year 4 students.