

# SECONDARY SCHOOL STORMWATER NCEA RESOURCES

INTERNAL ASSESSMENT RESOURCE:  
EFS 2.1 (2015)

## Education for Sustainability (EfS) Level 2

Supports internal assessment for Achievement Standard: 90810

Credits: 6

### **Storming the Waters! Stormwater Action**

Undertake a personal action, with reflection, that contributes to a sustainable future.

This resource has been generated by Auckland Council with Auckland schools. Assessment resources are still to be moderated. It is provided for educational purposes only for the aligned Education for Sustainability Achievement Standards. It is based on the learning objectives from [seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability](http://seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability)

Teachers must manage authenticity for any assessment from a public source, because students may have access to assessment schedule or student exemplar material. Using this assessment resource without modification may mean that students' work is not authentic.

# TEACHER GUIDELINES

The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.

## Context/setting

Students will need the opportunity to learn about:

- sustainability issues with regards to stormwater
- action planning
- taking action and documentation
- evaluation and reflective process.

The action project the students choose should be manageable within the time frame set. They can work in a group and with an outside organisation or individuals in order to develop insight and gather evidence into their chosen issue for action as well as working cooperatively to carry out the action. This could be within the school or local community. Each student must **present an individual plan and evaluation** as well as evidence of their part in the implementation of the action.

The aspects of sustainability and their interdependence will have been addressed in the learning program. Maori concepts and values relating to the environment included wherever possible.

**Issues of sustainability with regards to stormwater**, e.g. contamination to waterways, impermeable surfaces, sedimentation, heavy metals, road runoff, polluted waterways, community health, outlets into harbour and estuaries, loss of biodiversity, cultural significance of waterways, flooding and growth of urban areas.



Students need to be familiar with the action-oriented process of the *Guidelines for Environmental Education in New Zealand Schools* (pg 74), Learning Media, Ministry of Education, 1999, and the relevant concepts and terms relating to a range of Level 7 Achievement Objectives as outlined in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and supporting curriculum documents. See:



[seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability/Learning-objectives](http://seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability/Learning-objectives)



[efs.tki.org.nz](http://efs.tki.org.nz)

The learning programme will incorporate learning experiences where students will have the opportunity for experiential learning **in** the environment, (e.g. stream or stormwater remediation or stream testing), **about** the environment, (issues and strategies relating to stormwater), and **for** the environment, (action for improving stormwater e.g. riparian planting, community awareness-raising, or the adoption of public transport).

Students are encouraged to carry out their action in their school or local community to enable the setting of realistic objectives and timeframes. It is important that students choose their own action around reducing stormwater impacts so there is a sense of meaning and purpose.

Cleaning up litter from streams is not considered an action for sustainability unless the cause of the issue is also addressed or there is another purpose like community engagement. For example, students could investigate sources of the litter and choose to target that in the action. However, a stream clean-up may be used as an introductory learning experience to provide students with data about the type of litter and also develop an emotional response to the issue which could motivate action and to get more people involved. Sustainable Coastlines carries out beach cleanups and have a project linking to stormwater drains.



[sustainablecoastlines.org/](https://sustainablecoastlines.org/)

### Documentation

This can take any format agreed by students and/or teachers, e.g. the plan and evaluations could be a report, presentation or video and can include photos, speeches, websites, letters, and/or blogs as evidence of action. The student must present individual evidence of planning and evaluation but can share evidence of action.

### Evaluation and reflective process

Reflective practices need to be taught and students must keep a learning journal or blog in which to record thoughts and ideas about the action process.

### Conditions

It is expected that students will complete this action assignment over an extended period of time (say 10 -16 weeks) in order to complete their actions. Consultation is necessary and may be done through milestone meetings where students will discuss appropriateness of their action and time management.

In order to ensure authenticity of student work, individual reflective logs or learning journals are to be kept along with evidence of the processes involved while planning and taking action. The students may plan and carry out the action in groups however the report of their plan, action, and evaluation that is submitted must be completed individually.

The planning of the action may be completed in class time but aspects of the action will need to be done in the student's own time. The action plan and evidence of the implementation needs to be sighted by the teacher at scheduled times.

### Resource requirements

Students should have been introduced to the concept of action and have explored examples of action for sustainability. It could be useful here to invite a speaker from a well-known organisation, e.g. Auckland Council or Wai Care, which has taken action for sustainability, so that students can hear the philosophy behind the action and develop an understanding of the skills required.

It is expected that students will have an understanding of the concept of a sustainable future. It is important that time is allocated so that students can investigate the criteria other organisations use to judge whether the actions they are taking meet sustainability outcomes. Relevant organisations include councils, community groups and businesses. Students also need to develop criteria by which they can evaluate the effectiveness of their personal action plan towards a sustainable future. This includes the identification of key competencies and project management skills they are developing while working collaboratively to develop a plan.



[decision-making-confidence.com/decision-making-process-grid.html](https://decision-making-confidence.com/decision-making-process-grid.html)

Name: \_\_\_\_\_

# INTERNAL ASSESSMENT RESOURCE

Achievement Standard Education for Sustainability 90810: Undertake a personal action, with reflection, that contributes to a sustainable future.

Subject reference: Education for Sustainability 2.1  
Resource title: Storming the Waters! Stormwater action.

Credits: 6

Evidence/Judgements for Achievement	Evidence/Judgements for Achievement with Merit	Evidence/Judgements for Achievement with Excellence
Undertake a personal action, with reflection, that contributes to a sustainable future.	Undertake a personal action, with in-depth reflection, that contributes to a sustainable future.	Undertake a personal action, with critical reflection, that contributes to a sustainable future.

## STUDENT INSTRUCTION SHEET

By the end of this assessment activity you will submit evidence to show that you can:

Name: \_\_\_\_\_

## Task 1: Understanding the issue

Name: \_\_\_\_\_

## Task 2: Planning

## Task 3: Implementing your action

Name: \_\_\_\_\_

### Task 4: Evaluation

Name: \_\_\_\_\_

## Checklist

Your report should include:

Action chosen and the reason relating to a sustainable future	Complete

### A detailed plan with evidence of action


### Critical evaluation of how the action supports sustainability


### Personal reflection of your attitudes, values and behaviours in response to carrying out this action


## Assessment Schedule: EFS 2.1 Storming the waters! stormwater action

Task	Evidence/Judgements for Achievement	Evidence/Judgements for Achievement with Merit	Evidence/Judgements for Achievement with Excellence
	Undertake a personal action, with reflection, that contributes to a sustainable future	Undertake a personal action, with in-depth reflection, that contributes to a sustainable future	Undertake a personal action, with critical reflection, that contributes to a sustainable future
Task 1	<b>Understanding the issue</b> <ul style="list-style-type: none"> <li>Outline of importance of the stormwater issue with at least one aspect of sustainability.</li> </ul>	As for achieved.	As for achieved.
Task 2	<b>Planning</b> <ul style="list-style-type: none"> <li>Goal stated.</li> <li>One action recommended.</li> <li>Contribution of action to aspect(s) of sustainability identified and linked to stormwater issue.</li> <li>Description of clear steps to be taken.</li> <li>Time frame shows a clear sequence.</li> <li>Data collection and /or measurement methods stated.</li> </ul>	As for achieved.	As for achieved.
Task 3	<b>Evidence of action implemented</b>		
Task 4	<b>Evaluation</b> Written evaluation and learning journal providing evidence submitted, including any modifications to the original plan. <ul style="list-style-type: none"> <li>Judgment of the effectiveness of the action plan provided.</li> <li>How action contributed to a sustainable future based on the aspect(s) of sustainability addressed in the plan</li> <li>Evidence of appropriate data collection and validity of measurements.</li> <li>Personal response to the action is described and related to whether it had changed their attitudes, values or behaviours, with regards to their responsibility towards resource use and waste (no change is acceptable with reasonable discussion).</li> </ul>	<b>Comprehensive evaluation</b> As for achieved, plus: <ul style="list-style-type: none"> <li>A personal response explains why or why not the personal action changed own attitudes, values or behaviours in relation to the sustainability issue.</li> </ul>	<b>Critical evaluation</b> As for achieved, plus: <ul style="list-style-type: none"> <li>Drawing conclusions of the strengths, weaknesses, opportunities and threats of the action in relation to aspect(s) of sustainability</li> <li>The effectiveness of the action is evaluated on criteria based on aspects of sustainability in contributing to a sustainable future.</li> <li>A personal response to the action provided using supporting evidence and examples using one or more of;               <ul style="list-style-type: none"> <li>Stating supported opinions or judgments</li> <li>Considering implications</li> <li>Projecting future impacts</li> <li>Evaluating options</li> <li>Suggesting alternatives and next actions for personal and social responsibility</li> </ul> </li> <li>A discussion as to whether the action has changed their attitudes, values or behaviours in contributing to a sustainable future (no change is acceptable with reasonable discussion).</li> </ul>

Please refer to assessment schedules for internal assessment resources for examples of student responses.



[ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards/Social-sciences/Education-for-sustainability/Level-2-Education-for-sustainability](https://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards/Social-sciences/Education-for-sustainability/Level-2-Education-for-sustainability)

# SECONDARY SCHOOL STORMWATER NCEA RESOURCES

INTERNAL ASSESSMENT RESOURCE:  
EFS 2.2 (2015)

## Education for Sustainability (Efs) 2.2

Supports internal assessment for Achievement Standard: 90811

Credits: 4

### **Stormy Waters – The science of stormwater**

Explain how human activity in a biophysical environment has consequences for a sustainable future.

This resource has been generated by Auckland Council with Auckland schools. Assessment resources are still to be moderated. It is provided for educational purposes only for the aligned Education for Sustainability Achievement Standards. It is based on the learning objectives from [seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability](http://seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability).

Teachers must manage authenticity for any assessment from a public source, because students may have access to assessment schedule. Using this assessment resource without modification may mean that students' work is not authentic.

# TEACHER GUIDELINES

The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.

Teachers need to be very familiar with the outcome being assessed by Achievement Standard Education for Sustainability 90811. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing students against it.

## Context/setting

Students will need the opportunity to learn about:

- stormwater
- data collection of the impact stormwater has on a stream environment
- human activity and stormwater
- sustainability of a biophysical environment
- consequences for a sustainable future including environmental, social, economic and/or cultural aspects around stormwater.

This assessment activity requires students to conduct an inquiry into human activity in relation to stormwater that affects a local stream and to present evidence on the consequences of this activity on a sustainable future.

Adapt the activity to meet the needs and interests of your students. Select a stream environment in your local community. Students could use their own field data and observations collected during their practical investigation work as well as relevant resources and information they collect during their research. You can also provide resource materials (including tables, graphs, resources sheets, photographs, websites, videos and/or reference texts) as appropriate.

Teachers can adapt the task (and assessment schedule) to suit an investigation of a local environment, e.g. a wetland, stream, river, lake or estuary. Students may use a range of data, collected by themselves and others, or provided by the teacher, in order to investigate the consequences of human activity on the ecology and one other physical system. Information about at least two interrelated species should be included in their final report.

This assessment task has been written to work in conjunction with the internal assessment resource for EFS 2.1.

## Conditions:

It is expected that students will complete this assessment activity over an extended period of time between 6-8 weeks. Meet with students on a regular basis to monitor progress.

The total time for the assessment will depend on whether it is completed in conjunction with the final written report for EFS 90810 Undertake a personal action, with reflection that contributes to a sustainable future or otherwise. Wherever such integration between different parts of the programme occurs, teachers must ensure that opportunity for the work presented for each assessment is developed sufficiently in order to meet the criteria for each standard. In all such cases, teachers should refer closely to each relevant standard, including the explanatory notes and the conditions of assessment.

## Resource requirements

Students should have access to;

- a local stream environment for data gathering
- technology and relevant equipment for data collection
- internet and useful websites relating to stormwater.

### Additional information

This assessment resource requires the student to conduct an inquiry into human activity related to stormwater and the impact on a sustainable future. Students will need to develop understanding about the aspects of sustainability – environmental, social, economic, and cultural, and/or Māori concepts related to streams and waterways. The expression of Māori concepts will vary between hapū and iwi. Consult with your local Māori community on how these concepts should be expressed.

This assessment will benefit from working with Wai Care [waicare.org.nz](http://waicare.org.nz), which is a community stream monitoring initiative. Students will require internet access for research.



The Education for Sustainability community on TKI provides useful material to support this activity. [efs.tki.org.nz](http://efs.tki.org.nz)



Ministry for the Environment reports provide a variety of examples of human interactions that affect waterways. [mfe.govt.nz/publications/water/](http://mfe.govt.nz/publications/water/)



Biodiversity NZ [biodiversity.govt.nz/resources/index.html](http://biodiversity.govt.nz/resources/index.html)



Department of Conservation (DOC) [doc.govt.nz/nature/valuing-nature/biodiversity](http://doc.govt.nz/nature/valuing-nature/biodiversity)



Auckland Council information about stormwater and relevant catchments:

[aucklandcouncil.govt.nz/EN/environmentwaste/stormwater/Pages/home.aspx](http://aucklandcouncil.govt.nz/EN/environmentwaste/stormwater/Pages/home.aspx)

[aucklandcouncil.govt.nz/en/ratesbuildingproperty/propertyinformation/gis\\_maps/pages/home.aspx](http://aucklandcouncil.govt.nz/en/ratesbuildingproperty/propertyinformation/gis_maps/pages/home.aspx)

Name: \_\_\_\_\_

# INTERNAL ASSESSMENT RESOURCE

Achievement Standard Education for Sustainability 90811: Explain how human activity in a biophysical environment has consequences for a sustainable future.

Subject reference: Education for Sustainability 2.2

Resource title: Stormy Waters – The science of stormwater

Credits: 4

Evidence/Judgements for Achievement	Evidence/Judgements for Achievement with Merit	Evidence/Judgements for Achievement with Excellence
Explain how human activity in a biophysical environment has consequences for a sustainable future.	Explain in-depth how human activity in a biophysical environment has consequences for a sustainable future.	Comprehensively explain how human activity in a biophysical environment has consequences for a sustainable future.

## STUDENT ASSESSMENT CONDITIONS

Human impact on our local stream

Dates of the assessment: \_\_\_\_\_

Authenticity statement: Please read the following authenticity statement and sign below.

**The work I hand in for assessment purposes will be my own. I will not give my work to another student who may present it as their own.**

I understand that if I am found to have submitted work that is not my own, or given my work to another student, I will receive no credits for that assessment.

I have read and fully understand the above statement and this assessment task is my own work.

Student signature: \_\_\_\_\_

Name: \_\_\_\_\_

# STUDENT INSTRUCTION SHEET

Name: \_\_\_\_\_

Task 1: Explain key features of the stream environment.

Name: \_\_\_\_\_

Name: \_\_\_\_\_

**Task 2: Explain the biophysical nature of the stream environment.  
Include any data you have measured**

A) Ecological system

Drawing:



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Name: \_\_\_\_\_

**Task 3: How does human activity in your area affect stormwater and what are the consequences on the local stream.**

Name: \_\_\_\_\_

**Task 4: Explain how human activity impacts stormwater and the consequences for the sustainable future of Auckland.**

1	
2	
3	

Name: \_\_\_\_\_

1	2
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## Assessment schedule: EFS 2.2 Stormy waters – the science of stormwater

Task	Evidence/Judgements for Achievement	Evidence/Judgements for Achievement with Merit	Evidence/Judgements for Achievement with Excellence
	Explain how human activity in a biophysical environment has consequences for a sustainable future.	Explain in- depth how human activity in a biophysical environment has consequences for a sustainable future.	Comprehensively explain how human activity in a biophysical environment has consequences for a sustainable future.
1 2	<ul style="list-style-type: none"> <li>Explanation of the characteristics of the local stream in relation to stormwater. Could include a map showing key features.</li> <li>The biophysical environment is an urban stream with a muddy or rocky bottom with a gentle flow rate. The stream is near the bottom of the catchment which is mainly housing with some industry further upstream. There is some riparian planting where we tested the stream but some of the stream is piped.</li> <li>Ecological system and the physical system it interacts with is explained. This will include data and measurements.</li> </ul> <p><i>Algae and plant species are key producers and provide the basis for a complex food web (illustrated) with a range of macro-invertebrates that are indicators for the health of the stream environment. The presence of several damselfly larvae and mites from invertebrate sampling indicate that the stream is not completely degraded but not fully healthy.</i></p>	As for achieved.	As for achieved.
3	<p>An outline of human activity that impacts on stormwater and the local stream.</p> <p><i>Stormwater comes off the road, which is an impermeable surface and is piped into the stream at various points. Urban development is a human activity that increases impermeable surfaces that increases stormwater runoff pollutants from cars can be collected by stormwater off roads which also enters the streams. The stormwater also collects sediment from the new building development which is not protected near to the stream.</i></p>	As for achieved.	As for achieved.

Task	Evidence/Judgements for Achievement	Evidence/Judgements for Achievement with Merit	Evidence/Judgements for Achievement with Excellence
	Plan, implement and evaluate a personal action that will contribute towards a sustainable future.	Plan in detail, implement and comprehensively evaluate a personal action that will contribute towards a sustainable future.	Plan in detail, implement and critically evaluate a personal action that will contribute towards a sustainable future.
4	<p>Conclusions of the consequences of human activity and stormwater are stated in relation to a sustainable future.</p> <p><i>After heavy rain the stormwater brings mud and sand from the land. This makes the water less clear which makes it more difficult for kokopu to find food and also affects the gills of the macro-invertebrates for example, damsel fly larvae. This disrupts the food chain in the stream as some species do not survive and the health of the stream deteriorates and will continue to get worse .</i></p>	<p>Informed conclusions about why human activity in a biophysical activity has consequences for a sustainable future in terms of aspects of sustainability. The clear logical conclusions will be supported by evidence.</p> <p><i>As this stream is in the middle of an urban environment there is an increase of impermeable surfaces and runoff areas where the stormwater can collect pollutants and sediment. As the city grows more and more land is cleared to build new houses. When the land is cleared it is easy for rain to wash the surface soil on to the roads and into the stormwater drains and the streams. This means that the particles of mud make the water cloudy and the habitat for the macro-invertebrates less tolerable. Not as many macro-invertebrate species can survive so there is less food for fish and they could leave or eventually die out. Then the habitat would only have more tolerant species like bloodworms that can survive the conditions.</i></p>	<p>Insightful conclusions are drawn about the wider implications of how human activity and stormwater in a biophysical environment has consequences for a sustainable future.</p> <p>The conclusions may include projections of future impacts and consideration of options that may improve the a sustainable future.</p> <p><i>Sediment suspended in the water or settled on the streambed makes the habitat less suitable for organisms like mayfly larvae. As the stream becomes more degraded and other small organisms die out, species like native freshwater fish which are higher up the food chain are affected. There is less and less biodiversity as the stream becomes more degraded. This sediment will eventually travel down to estuaries, affecting migration of juvenile fish and silting up the harbours. Not only does this affect the physical habitat of the receiving harbour there is less food for marine species and therefore limits population. There are more regulations about containing sediment runoff that could prevent some silt but these need to be strictly enforced.</i></p>

The examples above relate to only part of what is required, and are purely indicative.

Final grades will be decided using professional judgement based on a holistic examination of the evidence provided against the criteria in the Achievement Standard.

Please refer to assessment schedules for internal assessment resources for examples of student responses.



[ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards/Social-sciences/Education-for-sustainability/Level-2-Education-for-sustainability](https://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards/Social-sciences/Education-for-sustainability/Level-2-Education-for-sustainability)

# SECONDARY SCHOOL STORMWATER NCEA RESOURCES

## INTERNAL ASSESSMENT RESOURCE: EFS 2.3 (2015)

### Education for Sustainability (Efs) Level 2

Supports internal assessment for Achievement Standard: 90813

Credits: 3

#### What's up in my stream?

Demonstrate understanding of how different personal values have implications for a sustainable future.

This resource has been generated by Auckland Council with Auckland schools. Assessment resources are still to be moderated. It is provided for educational purposes only for the aligned Education for Sustainability Achievement Standards. It is based on the learning objectives from [seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability](http://seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability).

Teachers must manage authenticity for any assessment from a public source, because students may have access to assessment schedule or student exemplar material. Using this assessment resource without modification may mean that students' work is not authentic.

# TEACHER GUIDELINES

The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.

Teachers need to be very familiar with the outcome being assessed by Achievement Standard Education for Sustainability 90813. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing students against it.

This standard requires an understanding of Learning objective 7.3: *Students will gain knowledge, skills, and experience to: examine the values of different groups of people, how these values are expressed in various practices, and the present and future consequences for sustainability.*

## Context/setting

Students will need the opportunity to learn about:

- personal values and related attitudes and behaviour
- a range of values associated with stormwater and the environment
- how different values impact on stormwater management
- implications for a sustainable future.

This assessment task does not require a value change by the students but it does encourage them to explore different value positions and understand the behaviours that arise from those values. They are also challenged to reflect on their own values and behaviours in relation to sustainability. It is not their values or behaviours that are being assessed here but their ability to discern (explain or discuss) which values and behaviours would support a sustainable future. They could visit a stream environment to explore the impact of stormwater and also have the opportunity to have guest speakers with a range of perspectives on stormwater the environment.

## Conditions

The students may have access to their stormwater notes and other resources that will help them complete the tasks. This is not a closed book assessment but must be completed individually.

It is suggested that this activity take place over 3-5 weeks .

## Resource Requirements

Students will require internet access for research.



Students will complete this assessment using the resources included in this resource and [niwa.co.nz/freshwater-and-estuaries/stormwater-management/stormwater-an-introduction](http://niwa.co.nz/freshwater-and-estuaries/stormwater-management/stormwater-an-introduction)



Site and catchment maps can be generated on Auckland Council's GIS viewer. They can be set up as aerial maps, showing streams and the stormwater network. See: [Aucklandcouncil.govt.nz/EN/ratesbuildingproperty/propertyinformation/GIS\\_maps/Pages/Home.aspx](http://Aucklandcouncil.govt.nz/EN/ratesbuildingproperty/propertyinformation/GIS_maps/Pages/Home.aspx) Contact Auckland Council's Call Centre for further support on 09 301 0101.



[waitakere.govt.nz/abtcit/ei/ecowtr/stormwater/index.asp](http://waitakere.govt.nz/abtcit/ei/ecowtr/stormwater/index.asp)

## Additional Information

This assessment resource requires the student to conduct an inquiry into different values related to stormwater and the environment and the implications for a sustainable future. Students will need to develop understanding about the aspects of sustainability – environmental, social, economic, and cultural, and/or Māori concepts related to stream and waterways. The expression of Māori concepts will vary between hapū and iwi. Consult with your local Māori community on how these concepts should be expressed.

This assessment will benefit from working with Wai Care [waicare.org.nz](http://waicare.org.nz), which is a community stream monitoring initiative and could be done in conjunction with achievement standard 90810 and/or 90811.

Name: \_\_\_\_\_

# INTERNAL ASSESSMENT RESOURCE

Achievement Standard Education for Sustainability 90813:

Demonstrate understanding of how different personal values have implications for a sustainable future.

Subject reference: Education for Sustainability 2.3

Resource title: What's up in my stream?

Credits: 3

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of how different personal values have implications for a sustainable future.	Demonstrate in-depth understanding of how personal values have implications for a sustainable future.	Demonstrate comprehensive understanding of how personal values have implications for a sustainable future.

## STUDENT INSTRUCTION SHEET

For this assessment you will:

- Demonstrate comprehensively your understanding of how different personal values associated with stormwater and the environment have implications for a sustainable future. Reflect on your own values and associated behaviour about stormwater and the environment and how these have implications for a sustainable future.
- This assessment is not about values positions and why people hold them but an exploration of the values and behaviours that support a sustainable future. In order to explore those positive values and behaviours it may be pertinent to explore the oppositional position i.e. values and behaviours that do/would not support a sustainable future.

Name: \_\_\_\_\_

A *sustainable future* requires the development of ways of thinking and acting to meet the needs of the present generation without compromising the ability of future generations (of all living things) to meet their own needs. In Aotearoa New Zealand, a sustainable future reflects, wherever possible, consideration of Māori concepts and values relating to the environment, which may vary between hapū and between iwi.

*Values* are deeply-held beliefs that influence the way people think, feel and act.

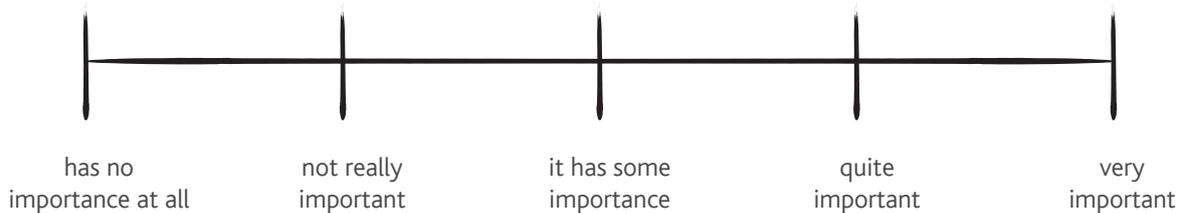
*Behaviours* in this context are actions in a given situation that arise from people's values.

*Implications* for a sustainable future are the potential result of behaviours that promote or disrupt the sustainability of an environment.

### Identify your value of stormwater

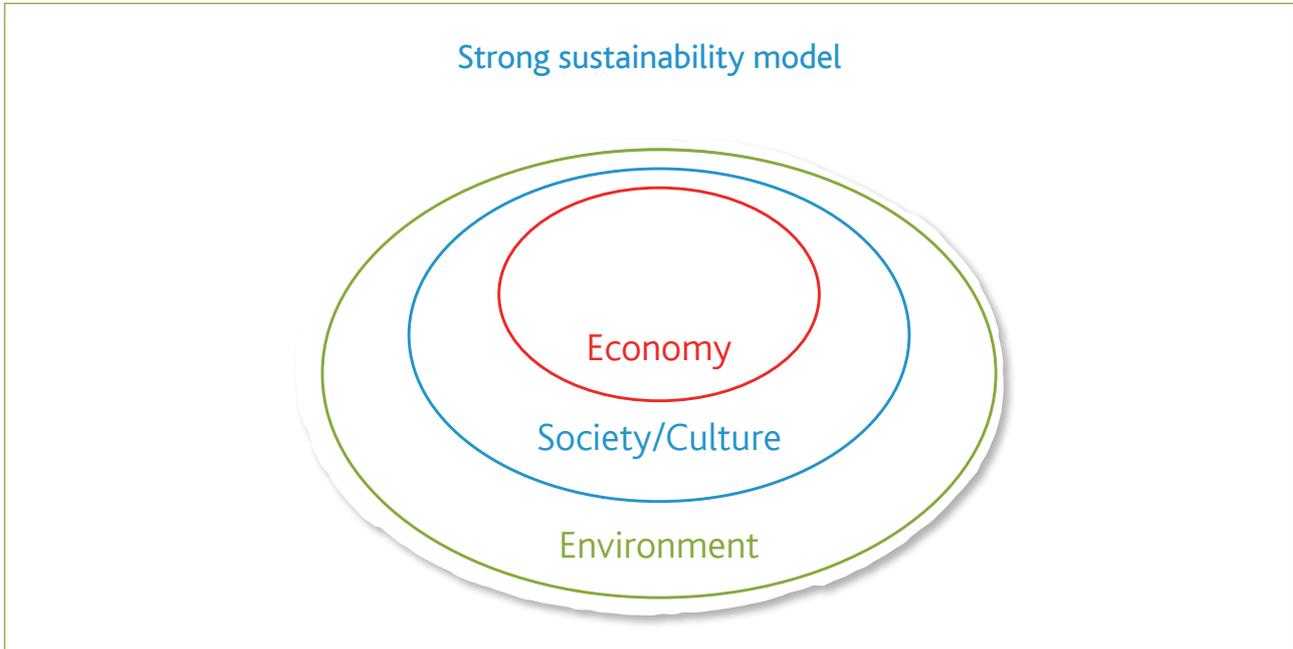
Identify how important stormwater is to you:

Place an **X** on the continuum below.



Name: \_\_\_\_\_

### Identifying different values of stormwater



For each of the people/groups listed below, match the aspect of sustainability that they are most likely to value. Draw a line to connect them - you may use aspects more than once.

Name: \_\_\_\_\_

**Task 1: Examine the characteristics of different personal values (own and others) and the behaviours associated with them about stormwater**

Group 1:

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Use examples to examine the behaviours associated with their values.

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Name: \_\_\_\_\_

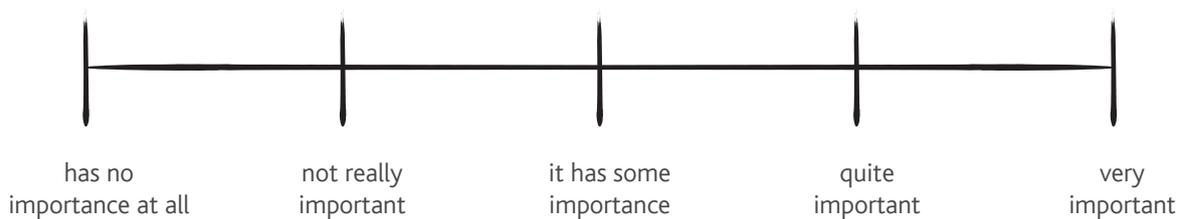
**Task 3: For the group(s) you have chosen justify how or why different personal values and behaviours are more likely to lead to a sustainable future.**

Name: \_\_\_\_\_

### Task 4: Identify your value of stormwater

Identify how important stormwater is to you:

Place an **X** on the continuum below.









## Assessment Schedule: What's up my Stream?

Task	Evidence/Judgements for Achievement	Evidence/Judgements for Achievement with Merit	Evidence/Judgements for Achievement with Excellence
	Demonstrate understanding of how different personal values have implications for a sustainable future.	Demonstrate in-depth understanding of how personal values have implications for a sustainable future.	Demonstrate comprehensive understanding of how personal values have implications for a sustainable future.
1	<p>The characteristics of at least two different personal values are examined including their own.</p> <ul style="list-style-type: none"> <li>• <i>Respect for the waterways as part of a bigger environmental system whereby the stream needs to be cared for and stormwater runoff managed. e.g Riparian planting.</i></li> <li>• <i>Economic value of the land whereby the stream must not lower the price of the property, e.g piped underground.</i></li> <li>• <i>Hauora -the balance of a healthy environment and community e.g. people are aware of the impact of stormwater and do not dump toxins down drain.</i></li> </ul>	As for achieved.	As for achieved.
2	<p>For each of the two groups examples are used to examine the behaviours associated with the values:</p> <p><i>e.g Wai Care – monitoring with the community to raise awareness and give knowledge and data on which to base decisions. For improvements like fencing and riparian planting to protect streams from erosion and fertiliser runoff, as well as to provide shade, shelter and food for aquatic species.</i></p>	As for achieved.	As for achieved.

Task	Evidence/Judgements for Achievement	Evidence/Judgements for Achievement with Merit	Evidence/Judgements for Achievement with Excellence
	Demonstrate understanding of how different personal values have implications for a sustainable future.	Demonstrate in-depth understanding of how personal values have implications for a sustainable future.	Demonstrate comprehensive understanding of how personal values have implications for a sustainable future.
3	<p>Conclusions stated about the implications at least 2 personal values and behaviours for a sustainable future.</p> <p>They may have also commented on those values and/ or behaviours that currently do not support sustainability outcomes.</p> <p><i>Because Wai Care values environmental sustainability and works with the community to raise awareness about the effect of stormwater as well as supports them to participate in actions like riparian planting the impact of stormwater on streams will be reduced. if the stream becomes healthier there will be more life in the stream which will contribute to a healthier ecosystem and also reduce pollution into the sea.</i></p>	<p>For each of the two groups, informed conclusions are drawn based on examples and evidence about why certain values (own and others) and behaviours around stormwater have implications for a sustainable future.</p> <p><i>e.g. Project Twin Streams values community participation and therefore works to involve the community in improving the stream and reducing the impact of stormwater. This active engagement in working together for a common environmental goal increases awareness and ownership of the local environment and therefore fosters a respect now and in the future. Actions that arise from our of caring for a local waterway will be a continued line - planting of the waterway to improve water quality and other actions to raise the profile of the stream with more local residents, so they understand their own actions, e.g. car washing increasing pollution like phosphates in the stormwater and eventually the waterways to the harbours.</i></p>	<p>Conclusions are justified based on examples and evidence about how or why some different personal values (own and others) and behaviours around stormwater are more likely to lead to a sustainable future than others.</p> <p><i>e.g. Regional councils have always wanted to protect the waterways but in the past have used technology to reduce the impact of stormwater on the waterways and surrounding land. Regional councils have laws to uphold and value legislation as a means of ensuring compliance. There has been a shift in valuing a shared responsibility and a commitment to support social values inherent in a community taking responsibility for its actions. Therefore council works more collaboratively with the community to educate about sustainable behaviour now and for the future as community will share these values with their children.</i></p>

Task	Evidence/Judgements for Achievement	Evidence/Judgements for Achievement with Merit	Evidence/Judgements for Achievement with Excellence
	Demonstrate understanding of how different personal values have implications for a sustainable future.	Demonstrate in-depth understanding of how personal values have implications for a sustainable future.	Demonstrate comprehensive understanding of how personal values have implications for a sustainable future.
4	<p>Conclusions are drawn about their own value of stormwater and the environment and the implications for a sustainable future.</p> <p>Has identified values they believe they hold on stormwater and implications for a sustainable future.</p> <p><i>My value has changed on stormwater as through education and being made aware of the impact of stormwater on the local stream. I now am more careful about what my family puts down the drain as I respect my community and want it to be a place of beauty and not polluted so we can all get into the environment to appreciate it and also learn how to care for it for our future generations.</i></p>		

The examples above relate to only part of what is required, and are purely indicative.

Final grades will be decided using professional judgement based on a holistic examination of the evidence provided against the criteria in the Achievement Standard.

Please refer to assessment schedules for internal assessment resources for examples of student responses.



[ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards/Social-sciences/Education-for-sustainability/Level-2-Education-for-sustainability](https://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards/Social-sciences/Education-for-sustainability/Level-2-Education-for-sustainability)

# SECONDARY SCHOOL STORMWATER NCEA RESOURCES

INTERNAL ASSESSMENT RESOURCE:  
EFS 3.5 (2015)

## Education for Sustainability (EfS) Level 3

Supports internal assessment for Achievement Standard: 90832

Credits: 5

### **Stormwater Strategy – Stepping up for Stormwater**

Develop a strategy for an organisation that will contribute to a sustainable future.

This resource has been generated by Auckland Council with Auckland schools. Assessment resources are still to be moderated. It is provided for educational purposes only for the aligned Education for Sustainability Achievement Standards. It is based on the learning objectives from [seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability](http://seniorsecondary.tki.org.nz/Social-sciences/Education-for-sustainability)

Teachers must manage authenticity for any assessment from a public source, because students may have access to assessment schedule or student exemplar material. Using this assessment resource without modification may mean that students't work is not authentic.

# TEACHER GUIDELINES

The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.

## Context/setting

Students will need the opportunity to learn about:

- aspects of sustainability in relation to stormwater including Maori concepts related to the environment
- systems thinking
- strategies for a sustainable future
- policy and practices around stormwater management
- research and data analysis
- reflective practice.

It is expected that this activity will come at the end of a learning module focussed around understanding the needs of organisations as they try to act more sustainably in terms of stormwater. Many organisations within Auckland are responding to local government policy and legislation to do with stormwater discharge and sustainable practices.



[aucklandcouncil.govt.nz/EN/environmentwaste/stormwater/Pages/stormwaterindustryprofessionals.aspx](http://aucklandcouncil.govt.nz/EN/environmentwaste/stormwater/Pages/stormwaterindustryprofessionals.aspx)

An organisation could include, but is not limited to, a local business, a household, a local council, a local board, a government agency, a NGO or a school. The organisation may be the student's own school or a nearby kindergarten, primary, or intermediate school.

A partnership must be established. The student or students are required to collaborate with a partner or stakeholder to address a common goal. The partner would be someone directly involved in the implementation of the proposed strategy, should it be accepted i.e. someone in a management role. It is important that students demonstrate active participation skills to competently contribute to discussions, share knowledge, build consensus, assess needs, and manage roles and responsibilities. It may be advisable to prepare stakeholders in advance to work with students and understand expectations.

As they develop a strategy, the partners must identify needs and emerging trends. The proposed strategy should be framed around aspects of sustainability – environmental, social, economic, and cultural. It could entail working with tools used by organisations such as Landcare Research – Manaaki Whenua.



[landcareresearch.co.nz/science/living/cities,-settlements-and-communities/urban-stormwater-management](http://landcareresearch.co.nz/science/living/cities,-settlements-and-communities/urban-stormwater-management)

Students will also need to understand how to engage reflectively with their learning. It is expected that students will use a learning journal (in whatever format) to capture their thoughts and ideas on the collaborative process that they have undertaken to develop this strategy. The teacher and/or partner is/are required to observe and record some indicators/ evidence of participation and contribution by the student with the partner. The student must provide this collected evidence on the due date.

## Conditions

## Resource requirements

Students should have access to internet capable computers, telephones and faxes. Exemplars of strategies developed by organisations should be shown and discussed with students. It may also be useful to have a list of organisations willing to enter into short-term collaborative partnerships so that students do not get 'knocked back' in the first instance.

Organisations to partner with:

- student's own school
- local primary schools or kindergartens
- marae and/or local hapu or iwi
- local council
- local boards
- local businesses e.g. security companies with car fleets
- farmers
- concrete industry
- old age homes
- rugby or sports clubs for carpooling
- lawn mower contractors
- golf courses
- car valets
- industry
- developers and builders
- community groups
- businesses where students have part time jobs
- cafes and shops.

## Resources

The following are useful references for both teacher and student use.

### Sustainability



NZ Business Council for Sustainable Development: [nzbcسد.org.nz/](http://nzbcسد.org.nz/)



Ministry for the Environment – Simply Sustainable:  
[mfe.govt.nz/fresh-water/tools-and-guidelines](http://mfe.govt.nz/fresh-water/tools-and-guidelines)



Auckland Council Stormwater guidelines: [content.aucklanddesignmanual.co.nz/design-thinking/wsd/Documents/20032015%20GD04%20WSD%20Guideline%20Document.pdf](http://content.aucklanddesignmanual.co.nz/design-thinking/wsd/Documents/20032015%20GD04%20WSD%20Guideline%20Document.pdf)



World Business Council for Sustainable Development: [wbcسد.ch/](http://wbcسد.ch/)

### Strategy



[slideshare.net/earlstevens58/7-guide-to-writing-a-strategic-plan](http://slideshare.net/earlstevens58/7-guide-to-writing-a-strategic-plan)

Name: \_\_\_\_\_

# INTERNAL ASSESSMENT RESOURCE

**Achievement Standard Education for Sustainability 90832:**  
Develop a strategy for an organisation that will contribute to a sustainable future.

**Subject reference: Education for Sustainability 3.5**  
**Resource title: Stormwater Strategy – Stepping up for stormwater**

Credits: 5

Evidence/Judgements for Achievement	Evidence/Judgements for Achievement with Merit	Evidence/Judgements for Achievement with Excellence
Develop a strategy for an organisation that will contribute to a sustainable future.	Develop an in-depth strategy for an organisation that will contribute to a sustainable future.	Develop a comprehensive strategy for an organisation that will contribute to a sustainable future.

## STUDENT INSTRUCTION SHEET

**By the end of this assignment you will be able to show that you can:**

- effectively establish, a working partnership with an organisation
- collaboratively develop a comprehensive strategy that will improve stormwater runoff and/or improve local waterways
- present the strategy for a sustainable future.

**Time:** in order to complete this assignment you will be allocated in-class time but you will be expected to complete much of it your own time.

**Due:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**You are required to use a learning journal** (in whatever format) to capture your thoughts and ideas on the collaborative process you have undertaken to develop this strategy.

Dates for conferencing are: \_\_\_\_\_

**Students can work in two ways to collaborate on a stormwater strategy:**

1. They may have the opportunity to work with stormwater managers from local government or private business, whereby they can help develop a strategy that **may** focus on infrastructure changes such as landscaping and low impact design stormwater management options.
2. Alternatively, students could work with business or with community organisations to develop a strategy around behaviour and design that will minimise stormwater contamination and engage people in understanding the importance of waterways.

You will need to collaborate to develop a comprehensive strategy for your school or an organisation in your community that outlines the changes required to contribute to a sustainable future. You will be working collaboratively with people who have a position to make decisions in organisations as your partner(s).



See Unitec for an example: [unitec.ac.nz/about-us/environmental-sustainability-strategy](http://unitec.ac.nz/about-us/environmental-sustainability-strategy)

**Strategy** is a high level plan to achieve one or more goals under conditions of uncertainty.  
See [en.wikipedia.org/wiki/Strategy](https://en.wikipedia.org/wiki/Strategy)

A strategy is important because the resources available to achieve these goals are usually limited.

**Max McKeown** (2011) argues that "strategy is about shaping the future" and is the human attempt to get to "desirable ends with available means".

See [en.wikipedia.org/wiki/Max\\_McKeown](https://en.wikipedia.org/wiki/Max_McKeown)

A strategy could address ways of reducing the harmful effects of stormwater runoff and/or preventing stormwater pollution. This could include investigating flooding, pollution prevention, sediment and erosion control, discharge, transport, litter and waste minimisation, drainage, car washing, landscaping, low impact design device (LIDD) construction or community action.

**This process of working collaboratively takes time. You have to be prepared to establish a collaborative working relationship, as well as timeline and milestones with a partner or representative stakeholder group within the school.**

As Albert Einstein said: "We cannot solve our problems with the same thinking we used when we created them."

### Timeline

The deadline for handing in your strategy is \_\_\_/\_\_\_/\_\_\_

Milestone meeting one is on \_\_\_/\_\_\_/\_\_\_

**Between meetings: Journal/blog to background the organisation's practices at present.**

Milestone meeting two is on \_\_\_/\_\_\_/\_\_\_

**Between meetings: Journal/blog an outline of strategy and links to sustainability.**

Final milestone meeting is on \_\_\_/\_\_\_/\_\_\_

Name: \_\_\_\_\_

## Step 1 - Starting off

## Step 2 - Understanding the organisation and the stormwater practices



Name: \_\_\_\_\_

### Step 3 - Strategising

### Step 4: Evaluation and submission

# ASSESSMENT SCHEDULE: EFS 3.5: STORMWATER STRATEGY: STEPPING UP FOR STORMWATER

Task	Evidence for Achieved	Evidence for Achieved with Merit	Evidence for Achieved with Excellence
	Develop a strategy for an organisation that will contribute to a sustainable future.	Develop an in-depth strategy for an organisation that will contribute to a sustainable future.	Develop a comprehensive strategy for an organisation that will contribute to a sustainable future.
1	<p>Evidence of:</p> <ul style="list-style-type: none"> <li>• Communication with the organisation</li> <li>• A timeline established with a partner</li> <li>• Reflection on the collaborative process with partner (usually in a journal).</li> </ul>	As for achieved.	As for achieved.
2	<p>Research of stormwater issue for the organisation using aspects of sustainability.</p> <p>Includes:</p> <ul style="list-style-type: none"> <li>• An analysis of present practice around stormwater</li> <li>• Data on 3 or more stormwater issues relevant to the organisation.</li> </ul>	As for achieved.	As for achieved.
3	<p>A strategy to improve stormwater is developed that includes;</p> <ul style="list-style-type: none"> <li>• A range of possible objectives</li> <li>• A rationale based on sustainability</li> <li>• Proposal of further actions.</li> </ul>	<p>An in depth strategy that includes;</p> <p>Advantages and disadvantages of the objectives in terms of sustainability and organisational needs.</p>	As for merit.

Task	Evidence for Achieved	Evidence for Achieved with Merit	Evidence for Achieved with Excellence
	Develop a strategy for an organisation that will contribute to a sustainable future.	Develop an in-depth strategy for an organisation that will contribute to a sustainable future.	Develop a comprehensive strategy for an organisation that will contribute to a sustainable future.
4	Conclusions about how the strategy will contribute to a sustainable future. It is expected that there will be more than one reason included in this conclusion.	Informed conclusions about why the chosen objectives /goals were selected based on evidence about the organisations current situation.	<p>Insightful conclusions based on qualitative and/or quantitative evidence of about the likely effectiveness of the strategy in addressing the stormwater issue required to contribute to a sustainable future.</p> <p>Insightful could include aspects of systems thinking or original connections, exploration of future implications or use of higher level thinking skills such as analysis or synthesis.</p>



Refer to: [ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards/Social-sciences/Education-for-sustainability](https://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards/Social-sciences/Education-for-sustainability) for examples of student responses