BOSTES
BOARD OF STUDIES TEACHING & EDUCATIONAL STANDARDS NSW

Earth and Environmental Science Stage 6

Draft Writing Brief Consultation Report

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1. Background information

The preparation of the *Earth and Environmental Science Stage 6 Draft Writing Brief* took into account the broad directions for the learning area, which were developed following public consultation and endorsed by BOSTES in December 2014.

BOSTES conducted consultation in Term 4, 2015 to engage stakeholders in the syllabus development process and to seek their feedback on options and proposals in the draft writing brief.

The consultation program included:

- afternoon consultation meetings at
  - Parramatta on 26 October 2015
  - Albury on 27 October 2015
  - Port Macquarie on 29 October 2015
  - Merimbula on 2 November 2015
  - Hurstville on 4 November 2015
  - Asquith on 5 November 2015
  - Sydney on 26 November 2015
- an online survey on the BOSTES website from 19 October to 29 November 2015
- written submissions from:
  - NSW Department of Education
  - Catholic Education Office Sydney
  - Association of Independent Schools of NSW
  - Association of Heads of Independent Schools of Australia
  - NSW Teachers Federation
  - Science Teachers' Association of NSW
  - University of Sydney Science Faculty
  - Blue Mountains Grammar School
  - 1 individual.

Professional associations and schooling sectors conducted a range of activities during the consultation period to inform feedback to BOSTES.

Feedback from consultation was analysed and informed revisions to the draft writing brief. The final writing brief will be used to develop the draft syllabus.

2. Executive summary

The *Earth and Environmental Science Stage 6 Draft Writing Brief Consultation Report* provides a description of the consultation process and a summary and analysis of feedback received. The summary analysis outlines confirmation of the general directions of the draft syllabus writing brief as well as key matters raised and proposed actions and amendments. The Consultation Report presents data and findings gathered through 26 survey responses, 9 written submissions, a Board Curriculum Committee (BCC) meeting and 7 consultation meetings.

The *Earth and Environmental Science Stage 6 Draft Writing Brief* provided three course options for analysis and feedback. Equal support was given for Option 2 and Option 3. There was, however, strong agreement that depth studies incorporating investigative projects would provide for deeper learning and cater for the needs of a broad range of students. There was support for the inclusion of depth studies.

Respondents also offered a range of comments relating to the need to refine the rationale, aim, objectives and outcomes, reduce content to provide opportunities for depth of study, and to support students learning about contemporary science as it is practised. It was recommended that content relating to geology and geological processes be strengthened. Respondents also supported development of an extension course/s in science. It was suggested that assessment requirements be clarified, and that learning materials would be required to support implementation.

Key matters

The key matters to emerge from the consultation included:

- there was equal support for Option 2 and Option 3 with its depth study component
- the rationale, aim and objectives require some revision to provide greater consistency and clarity
- the objectives should address the fundamental knowledge, understanding and skills of geology and geological processes, including Earth history
- depth studies are supported. However, how they are assessed for the HSC requires clarification
- the content requires reduction, and should be sequential, clear and less prescriptive
- development of an Extension course(s) for Science should be considered
- Senior Years assessment policies, procedures and requirements require clarification

Actions in response to key matters

- Aspects of Options 2 and 3, including depth studies, will be incorporated.
- The rationale, aim and objectives will be reviewed and amended to provide consistency and clarity.
- The objectives will be reviewed to include the knowledge, understanding and skills of geology and geological processes.
- Depth studies will be included and details about their nature and structure including investigative projects and assessment requirements and processes will be provided.
- Content will be reduced through a review of the scope and breadth of learning in each area of study.
- An Extension course(s) in Science will be considered for development following draft syllabus development in the science courses.
- Senior Years assessment policies and procedures will be reviewed during draft syllabus development.

A summary of key matters and related actions is contained in Section 4 of this report.

3. Summary of respondents

Consultation stakeholder and teacher meetings

1 Board Curriculum Committee (BCC), 7 teacher meetings

BCC members	8	Government sector	11	Catholic sector	7
Independent sector	8	Other	0		

Online survey respondents

26 online survey responses

Respondent:					
Academic	0	Parent	0	Pre-service teacher	0
Principal	0	School executive	3	School faculty	1
Student	0	Teacher	22	Other	0

I am:			
An Aboriginal person	0	A Torres Strait Islander person	0
An Aboriginal and Torres Strait Islander person	0	Not an Aboriginal and/or Torres Strait Islander person	26

Sector:			
Government	11	Catholic	7
Independent	8	Non-school based	0

Area of NSW:			
Metropolitan	18	Regional	8

Number of people contributing to this survey:					
1	24	2–5	1	6 or more	1

4. Key matters

Key matters	Actions
There was equal support for Option 2 and Option 3 with its depth study component.	Aspects of Options 2 and 3, including depth studies, will be incorporated.
The rationale, aim and objectives require some revision to provide greater consistency and clarity.	The rationale, aim and objectives will be reviewed and amended to provide consistency and clarity.
The objectives should address the fundamental knowledge, understanding and skills of geology and geological processes, including Earth history.	The objectives will be reviewed to include the knowledge, understanding and skills of geology and geological processes.
Depth studies are supported. However, how they are assessed for the HSC requires clarification.	Depth studies will be included and details about their nature and structure including investigative projects and assessment requirements and processes will be provided.
The content requires reduction, and should be sequential, clear and less prescriptive.	Content will be reduced through a review of the scope and breadth of learning in each area of study.
Development of an Extension course(s) for Science should be considered.	An Extension course(s) in Science will be considered for development following draft syllabus development in the science courses.
Senior Years assessment policies, procedures and requirements require clarification.	Senior Years assessment policies and procedures will be reviewed during draft syllabus development.

5. Analysis

5.1 Rationale

Summary

All survey respondents agreed that the proposed rationale describes the nature of the course, explains its purpose in the curriculum and reflects a contemporary view of the course.

Respondents indicated that a greater emphasis on the principles of geology and geological processes should be included.

Feedback affirming the rationale

Feedback	Sources
The proposed rationale describes the nature of the course in broad terms and explains its purpose in the curriculum. It reflects the focus on learning science as it is practised, and a contemporary view of the course.	AHISA BCC DoE STANSW Survey (x23) USYD

Key matters and actions

Key matters	Sources	Actions
There is a need for the inclusion of basic geological concepts and processes in the rationale.	Survey (x2)	The rationale will be reviewed to include references to geological processes.
The rationale does not clearly relate to the aim and objectives.	AIS CEOSYD Survey (x3)	The rationale will be reviewed to describe more clearly the nature of the course and further explain its purpose in the curriculum.

5.2 Aim

Summary

The majority of survey respondents agreed that the proposed aim provides a statement of the overall purpose of the syllabus.

Some respondents commented that geological knowledge and processes must be included as they inform current geology and environmental science practice, underpin current issues and consider future ramifications.

Feedback affirming the aim

Feedback	Sources
The proposed aim provides a clear statement of the overall purpose of the course.	DoE Survey (x3) USYD

Key matters and actions

Key matters	Sources	Actions
An understanding of earth history should be included in the aim.	Survey (x2)	The aim will be reviewed to reference earth history.
The language of the aim needs to be more succinct.	Survey (x3)	The language of the aim will be reviewed.

5.3 Objectives

Summary

The majority of respondents agreed that the proposed objectives define, in broad terms, the knowledge, understanding, skills, values and attitudes developed through studying this course.

Several respondents commented that the objectives were ill defined and that more detail was required.

Feedback affirming the objectives

Feedback	Sources
The proposed objectives define in broad terms the knowledge, understanding, skills, values and attitudes to be developed through study of this course.	BCC DoE Survey (x3) USYD

Key matters and actions

Key matters	Sources	Actions
The proposed knowledge and understanding objectives are too broad.	AIS Asquith (CM) CEOSYD Survey (x3)	The objectives will be reviewed for clarity and purpose. However, the outcomes provide further detail of objectives.

5.4 Outcomes

Summary

The majority of survey respondents agreed that the sample of outcomes is appropriate. However, some respondents commented that the outcomes required greater detail.

Feedback affirming the outcomes

Feedback	Sources
The sample of outcomes is suitable and reflects the aim of the course.	AHISA BCC DoE STANSW Survey (x4) USYD
The focus on skills informing knowledge and understanding is welcomed.	AHISA DoE USYD

Key matters and actions

Key matters	Sources	Actions
Further consideration of outcomes is required to include the scope of learning in Earth and Environmental Science.	AIS Survey (x7)	The outcomes will be reviewed to include learning in Earth and Environmental Science.
Greater detail in the outcomes is required.	AIS Survey (x6)	The outcomes will be reviewed for their level and consistency of specificity during syllabus development.

5.5 Diversity of learners

Summary

Most respondents indicated that the course, including depth studies incorporating investigative projects, offers scope to cater for the diversity of learners.

Feedback about the diversity of learners and Life Skills outcomes and content

Feedback	Sources
Depth studies are supported as a way to cater for the diversity of learners.	AIHSA BCC CEOSYD DoE Survey (x16)

Key matters and actions

Key matters	Sources	Actions
The content should be reduced to enable flexible teaching and learning approaches to meet the diversity of learners.	BCC CEOSYD DoE NSWTF STANSW Survey (x6) USYD	The content will be reviewed and reduced to promote depth of learning and flexible teaching and learning approaches.
Course structures to meet the diversity of students and post-school pathways should be considered.	BCC DoE Asquith (CM)	The development of the syllabus will take account of the range of students, their aspirations and study pathways.

5.6 Course structure and options

Summary

Preferred option
Option 2 and Option 3 were supported equally. Option 1 received little support.

Option 3 was supported because of the inclusion of depth studies. Respondents who supported Option 2 indicated that further details regarding implementation and assessment of depth studies were required.

Course content
The majority of survey respondents agreed that the sequence of content and areas of study presented is logical, appropriate and contemporary, and provides learning opportunities to prepare students to undertake further study.

Some respondents felt that there was not enough focus on the fundamental concepts of geology and geological processes.

A common multidisciplinary unit
Most respondents noted that a common unit was not necessary. They indicated that multidisciplinary studies were adequately addressed by the Stage 4 and Stage 5 Science syllabus.

Depth studies
There was support for the inclusion of depth studies in the draft syllabus structure. Most survey respondents agreed that depth studies incorporating investigative projects enable the development of students' personal interests. However, many respondents raised matters with regard to equity, logistics and assessment.

Additional quantitative aspects for consideration
Many respondents indicated that the current qualitative and quantitative demands of the course were appropriate.

An Extension course
There was support for consideration of an Extension course(s) for sciences.

Respondents also indicated that the nature of the proposed Extension course(s) required greater clarification.

Other structures and options
The majority of survey respondents indicated that the course structures and options provided were sound.

Feedback affirming the course structure and options

Feedback	Sources
Course content The content within Options 2 and 3 is appropriate and contemporary.	AHISA Albury (CM) Asquith (CM) BCC CEOSYD DoE Hurstville (CM) Merimbula (CM) Parramatta (CM) Port Macquarie (CM) Survey (x16) USYD
Depth studies Depth studies incorporating investigative projects meet the needs of the diversity of learners.	AIS Albury (CM) BCC CEOSYD DoE Hurstville (CM) Submission 1 Survey (x7) USYD

Key matters and actions

Key matters	Sources	Actions
Course content The course content should be reduced and less prescriptive.	AIS NSWTF STANSW Survey (x9)	The content will be reduced to provide flexibility with regard to teaching and learning.
Options 2 and 3 should have greater focus on the principles of geology and its processes.	Asquith (CM) DoE Survey (x7) Sydney (CM)	The principles of geology and its processes will be included in the course structures.
A common multidisciplinary unit An introductory multidisciplinary unit is not necessary.	Albury (CM) Asquith (CM) CEOSYD Merimbula (CM) Parramatta (CM) Survey (x14) Sydney (CM)	A common multidisciplinary unit will not be developed.
Depth studies The nature, implementation, logistics and assessment requirements of the proposed depth studies require clarification.	AIS Albury (CM) Asquith (CM) BCC CEOSYD DoE NSWTF Parramatta (CM) STANSW Submissions 1, 2 Survey (x6) USYD	Further information and advice about depth studies will be provided during syllabus development.
Sufficient time needs to be allocated for depth studies.	Survey (x6) USYD	Content will be reduced to provide time and opportunities for depth studies.
Other structures for consideration An Extension course should be developed in each science discipline.	AHISA AIS BCC DoE NSWTF Submission 2 Survey (x2)	An Extension course(s) in Science will be considered for development following syllabus development in the science courses.

5.7 Assessment and reporting

Summary

Most respondents indicated that the current arrangements for internal and external assessment are adequate. However, some indicated that the HSC examination requirements should be reviewed.

Many respondents indicated that external assessment should be strengthened to focus on assessing skills and understanding.

Feedback affirming the information on assessment and reporting

Feedback	Sources
The present system of school-based and external assessment is appropriate.	Survey (x6)

Key matters and actions

Key matters	Sources	Actions
The use of technology for external assessments is not supported.	Survey (x6)	Appropriate use of ICT and other technologies will be investigated.
Assessment requirements for Year 11 and Year 12 require clarification.	DoE	Assessment policies, procedures and specifications will be reviewed during syllabus development.
The importance of the assessment of the practical components of Earth and Environmental Science should be enhanced.	AIS	

5.8 Other comments

Summary

Most survey respondents agreed that the draft writing brief provides a sound basis for developing the course.

Feedback affirming the draft writing brief

Feedback	Sources
The draft writing brief provides a sound basis for developing the final writing brief.	BCC DoE Survey (x17) USYD

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Key matters and actions

Key matters	Sources	Actions
The continuum of learning from Stage 5 into Year 11 and 12 requires strengthening.	AIS Asquith (CM) DoE NSWTF STANSW Survey (x8)	The continuum of learning from Stage 5 Science will be reviewed and strengthened.

6. Quantitative analysis of survey responses

Note: Due to rounding, some percentages may not total 100%.

Survey Item	Number of responses	Strongly agree	Agree	Disagree	Strongly disagree	Yes	No
Rationale 1. The proposed rationale describes the nature of the course in broad terms and explains its purpose in the curriculum.	23	22%	78%	0%	0%		
2. The proposed rationale reflects a contemporary view of the course.	23	30%	70%	0%	0%		
Aim 3. The proposed aim provides a statement of the overall purpose of the syllabus.	23	26%	70%	4%	0%		
Objectives 4. The proposed objectives define in broad terms the knowledge, understanding, skills, values and attitudes to be developed through study in this course.	23	17%	78%	4%	0%		
Outcomes 5. The sample of outcomes is appropriate.	23	13%	70%	17%	0%		
Course structure and options							
6. Option 1 is preferred.	6					27%	
7. Option 2 is preferred.	8					36%	
8. Option 3 is preferred.	8					36%	
9. The sequence of content and areas of study presented in the options are logical and appropriate	22	5%	68%	27%	0%		
10. The content and areas of study in the options are contemporary	20	15%	80%	0%	5%		
11. The content and areas of study provide learning opportunities to prepare students to undertake further study	22	18%	77%	5%	0%		

Survey Item	Number of responses	Strongly agree	Agree	Disagree	Strongly disagree	Yes	No
Survey Item	**Number of responses**	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**	**Yes**	**No**
12. The structure and content provides flexibility to meet the needs and interests of the range of students	22	14%	68%	18%	0%		
13. A common multidisciplinary unit to commence the study of Stage 6 Science courses would focus students on the disciplines, and further develop common skills to assist students to choose appropriate discipline pathways	22	5%	32%	45%	18%		
14. Depth studies incorporating investigative projects provide opportunities for students to apply their scientific knowledge, understanding and skills.	22	27%	45%	23%	5%		
15. Are there additional quantitative analytical aspects that should be considered for inclusion in this course?	19					42%	58%
16. Is there another structure or option for Earth and Environmental Science that BOSTES should consider?	19					47%	53%
General 17. The draft writing brief provides a sound basis for developing the final writing brief, which is the blueprint for the development of the draft syllabus.	22	14%	64%	23%	0%		

7. Respondents

7.1 Consultation meetings

Afternoon consultation meetings (code: CM)

Location	Date (2015)	Total
Parramatta	26 October	73
Albury	27 October	8
Port Macquarie	29 October	14
Merimbula	2 November	5
Hurstville	4 November	60
Asquith	5 November	39
Sydney	26 November	26

Board Curriculum Committee consultation meeting at the BOSTES on 18 November 2015 (code: BCC)

Name	Organisation
Dr Timothy Wright	Chair
Mr Vatche Ansourian	NSW Department of Education
Ms Olivia Belshaw	Science Teachers' Association of NSW
Mr Robert Farr	Association of Independent Schools of NSW
Ms Regina Menz	Catholic Education Commission NSW
Mr Mike Morgan	NSW Teachers Federation
Mr Paul Reilly	NSW Department of Industry – TAFE NSW
Mr Tim Spencer	Federation of Parents and Citizens' Association NSW

7.2 Written submissions

Organisations, groups and individuals	Code
Association of Heads of Independent Schools of Australia	AHISA
Association of Independent Schools of NSW	AIS
Blue Mountains Grammar School Science Faculty	Submission 2
Catholic Education Office Sydney	CEOSYD
NSW Department of Education	DoE
NSW Teachers Federation	NSWTF
Science Teachers' Association of NSW	STANSW
University of Sydney Science Faculty	USYD
Individual Respondent	Submission 1