



## **CALL 1 – APPLICATION FORM & GUIDANCE FOR EARLY CAREER RESEARCH**

**EPSRC Future Manufacturing Research Hub:  
SUSTAIN - Strategic University Steel Technology and Innovation Network**

**Call Type:** Invitation for Proposals  
**Closing Date:** 16:00: Friday 18<sup>th</sup> December 2020  
**Related Themes:** Carbon Neutral, Iron and Steelmaking and Smart Steel Processing

### 1. Summary

[SUSTAIN's](#) platform activity is designed to provide a launch pad for the professional development of early career researchers (ECR's), providing them with the opportunity to apply as Primary Investigator (PI) for EPSRC funding that they would not normally be eligible for. The assessment process itself will act as a learning process as investigators will be exposed to the same level of rigour in critique and evaluation. The purpose of this Call is to provide leverage for eligible post doctoral (PDRA's) to develop their own ideas, test these new ideas within SUSTAIN and gain experience of running their own research programme.

Activity	Date
Call Launched	Friday 6 <sup>th</sup> November 2020
Call Webinar	Friday 6 <sup>th</sup> November 2020
Surgery Sessions	November 2020
Closing date for applications	<b>16:00 Friday 18<sup>th</sup> December 2020</b>
Evaluation for shortlist of applications by	End January 2021
Shortlisted candidate interviews	February 2021
Grants announced and feedback given by	March 2021
<b>Projects must start within 3 months of the receipt of the offer letter. However, given the current global situation with COVID-19 this may change in the near future.</b>	

This scheme has been conceived to:

- Help stimulate new ideas in steel technology and sustainability research
- Encourage high quality ECRs from other disciplines to apply their ideas and move into steel research
- Help ECRs to apply for Fellowship funding to aid their professional development.
- Allow ECRs to develop their own ideas in a controlled environment and deliver research outputs that are complementary to the SUSTAIN portfolio.

### 2. Background

SUSTAIN launched as a partnership between Swansea, Warwick and Sheffield Universities and the five major UK steel producers by volume. The shared vision of the SUSTAIN partners is to transform the steel supply chain from a reliance on CO<sub>2</sub> intensive commodity products to a flexible and responsive sector where energy and resources are used and reused far more effectively. This disruptive approach will allow UK iron and steel makers to become world leaders in carbon neutrality and zero waste and focussed on functional high value products created via novel approaches to manufacturing. SUSTAIN was co-created with industry and builds on two years of analysis and planning by the primary UK steel makers and the three strategic academic partners. The Hub has recently expanded the network by

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drawing upon complementary research activities and expertise from the wider UK academic community.

The next phase in this process is to invite fresh innovative ideas from eligible PDRAs who would like the autonomy to progress their own ideas and gain experience in bid writing, panel assessment and managing their own research.

SUSTAIN has ambitious and challenging research goals which through connected innovation vehicles are projected to help double UK steel manufacturers GVA by 2030, boost jobs to 35,000+ and increase productivity by 15%. The future health and sustainability of the industry is key to delivering the UK industrial strategy and its decarbonisation 2050 target. For example, decarbonisation of transport through electrification is dependent upon new stronger and lighter steels that are more resistant to degradation and transforming construction will be steel and glass intensive. To deliver this clean growth SUSTAIN is exploring innovative new ways of recovering and reusing energy currently emitted to atmosphere and closing the materials cycle. SUSTAIN will have a major effect on UK carbon emissions and the application, use and reuse of the world's most recycled and influential advanced material. The SUSTAIN innovation ecosystem (Figure 1) can lead a global change in how we exploit steel, its by-products and energy intensity and welcomes the opportunity to expand this across the UK academic community through this request for transformational fundamental research ideas. This broader network has the potential to transform the UK steel making industry to one of carbon neutrality and zero waste, focused on high value functional products created via entirely new manufacturing approaches.

### 3. The SUSTAIN Challenge

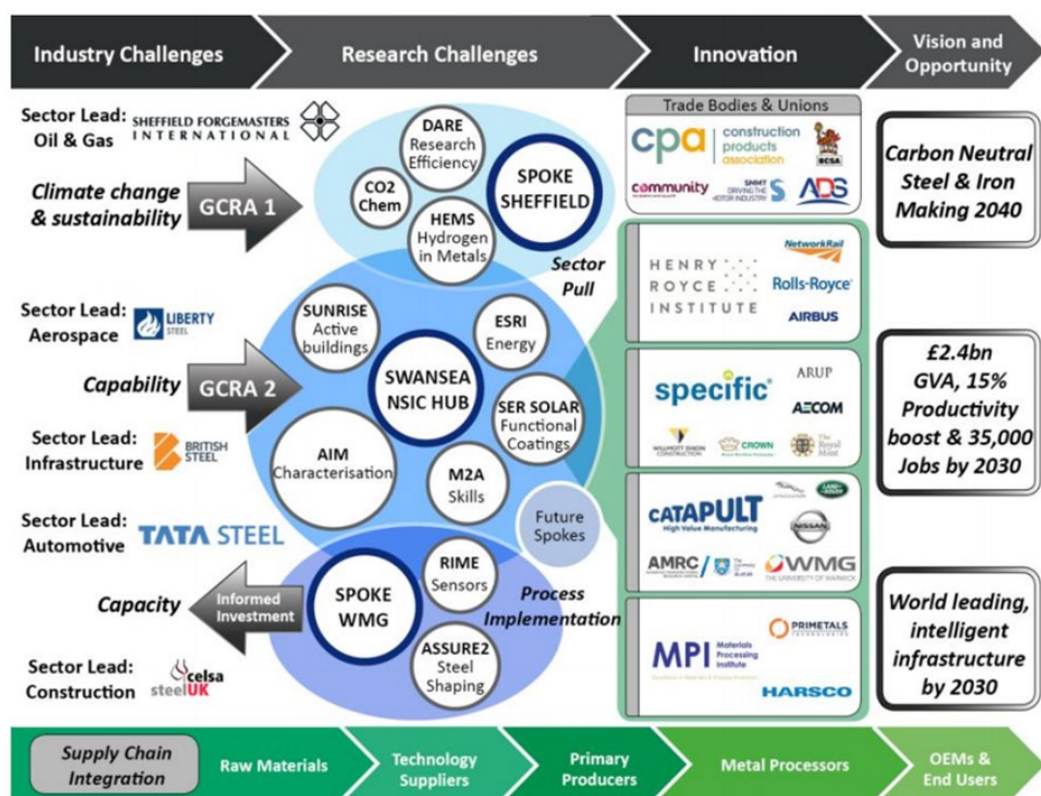


Figure 1: a schematic representation of the current SUSTAIN innovation ecosystem and its objectives.



#### 4. Academic Impact

The SUSTAIN partnership aims to produce significant academic impact to the steel industry as a whole through the application of strong, novel research at the TRL 0-2 level. Through this research it is expected that high value publications, patents and an increased level of academic esteem will be developed for the existing and future partner institutions. The research journey from where we stand in 2020 to the delivery of an actual carbon neutral steel industry will form a close bond between the individuals and groups performing the research that will ensure future collaboration, projects and funding leverage with the industry. The area of focus upon carbon neutrality and digital systems, including Industry 4.0 will enable access to practical training and skill development in key areas for the UK's future success.

#### 5. Technological Impact on UK Manufacturing Research

SUSTAIN will be instrumental in maintaining a leading and differentiated technology base within the UK, which is imperative to securing the future success of the steel industry. Supply chains will also benefit by more secure access to a successful UK steel sector supplying high quality sustainable products and with increased focus on development of the leading-edge products for the future and the technologies pathways to manufacturing. Our model of regional clusters with international standing working with industry is unique and disruptive and builds on the complementary markets the companies serve. It also connects to an established innovation eco-system via the IKC (SPECIFIC), Henry Royce Centre and HVM catapult (WMG/AMRC) together with MPI giving an internationally unique lab to line capability. The five UK steel producers are committed to increase infrastructure investment to £300MPA aligned to a high-risk research agenda which SUSTAIN can deliver. SUSTAIN encompasses the steel supply chain representing a large proportion of UK manufacturing who will influence the innovation road map.

Environmentally, sustainable steel will be central to the transformation of UK manufacturing and aligned to key sectors advocated by, and themes of the [UK Government Industrial Strategy](#).

#### 6. Scope of the Call

The ECR proposals should address challenges at TRL 0-2 (i.e. fundamental research) and be aligned with at least one of the priority areas outlined within the Grand Challenges and the SUSTAIN ECR Challenge Scope:

##### [SUSTAIN Grand Challenges](#)

- **GCRA 1:** Carbon Neutral Iron and Steelmaking
- **GCRA 2:** Smart Steel Processing

##### [ECR Challenge Scope](#)

- High Temperature Reactions and Kinetics
- Computational Modelling and Big Data
- Characterisation and Monitoring
- Metallurgical Rules

Proposals should be novel and aim to provide step-change improvements in one of the four Challenge areas. Ideas outside of the Challenge scope will also be considered if they are deemed to have



significant potential impact upon the UK Steel Industry and the SUSTAIN Grand Challenges. The main scope should be focused upon significantly improving the UK steel industry's Carbon Footprint through direct changes and augmentation of systems and processes, the introduction of novel technology and provision of digital methods for tracking, improved supply chain management and closed loop recycling of products.

Applicants are strongly encouraged to discuss their ideas with industrial project partners who may be able to facilitate future trials, provide knowledge and experience and help demonstrate a potential pathway to manufacturing and exploitation. The SUSTAIN team will be on hand to help facilitate these discussions for those applicants without existing contacts or looking for new ones. Hence this aspect is not designed to dissuade applicants without this experience, for example those who have previously worked with other sectors or exclusively on non-applied research.

For detailed descriptions of the GCRA Challenges and the ECR Challenge Scope please follow:

- [SUSTAIN Grand Challenges](#)
- [ECR Challenge Scope](#)

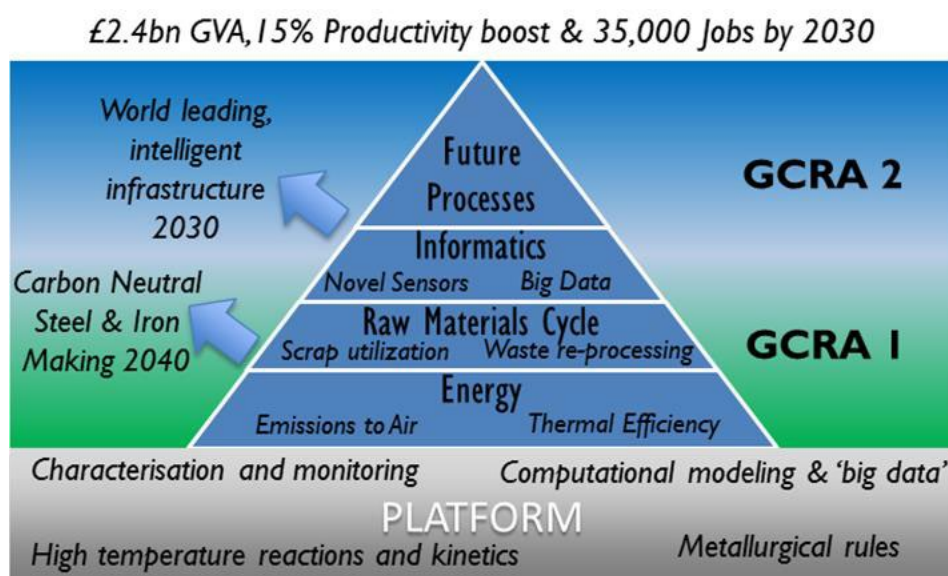


Figure 2: Diagram of SUSTAIN's key thematic areas and underpinning research showing the importance of the ECR platform for delivering the project vision.

The scope of the ECR platform activity will be managed, mentored and directed by the Scientific Leads (SLs). They have defined priority areas for this call (cross cutting themes) that address underpinning knowledge requirements for the project core research programme. A diagram explaining the SUSTAIN vision and the relationship between the platform and GCRA is shown in Figure 2.

Projects will:

- Be investigator led with resources being deployed flexibly to nurture the talent of PDRAs and ECRs
- Upskill staff, support career progression and support bidirectional knowledge transfer between academia and industry (as guided by Vitae concordat for early career researchers)
- Be a critical enabler for PDRAs that are often ineligible to apply for responsive mode and first grant schemes despite having potentially innovative ideas



- Be mentored and advised by highly experienced SL's (all internationally leading), plus additional mentoring from industry as required
- Align to SUSTAIN's four ECR scientific challenges and will be assessed via a panel of SUSTAIN Co-Is who are ideally placed to judge impact and quality
- Be a sustainable path for future leaders in the field and generate new scientific knowledge and publications

## 7. Role of Scientific Leads (SLs)

The SLs will be available to provide scientific, project management, and bid writing support to the successful candidates. Details of the role of the SL's can be found in the [Additional Information for ECR Platform Call here](#).

## 8. Funding Available

A total of 9 PDRA years (circa £1m) of funding is available over the duration of the SUSTAIN project, these opportunities will be split into three separate calls and assessment periods. Projects are expected to last from 3-6 months (Full Time Equivalent), however projects lasting up to 12 months and in exceptional circumstances, longer, will also be considered. Funding will be at 80% FEC and does not cover capital expenditure. For support with developing a budget we recommend you discuss with your local research office and/or your current supervisor.

It is intended that the ECR funding will build a platform to launch the applicant into further funding opportunities including Fellowships, etc. Leveraging the ECR funding with other funding streams will also be viewed favourably.

## 9. Equipment

Funding for the purchase of equipment is not eligible.

The Hub, spokes, industrial partners and other affiliated project partners are committed to supporting the UK's research community and have jointly agreed to provide access to facilities, equipment and expertise at cost to proposals funded through this call (subject to terms and conditions agreed on a case by case basis). If you believe that your proposal would benefit from access to specialist equipment please contact SUSTAIN via [info.sustainsteel@swansea.ac.uk](mailto:info.sustainsteel@swansea.ac.uk) where your query will be passed to the relevant person.

## 10. Eligibility

- Only applicants employed by SUSTAIN Spoke Institutions at the time of the award may apply (Sheffield, Warwick and Swansea)
- Current SUSTAIN Co-Is or other academic staff eligible to apply for UKRI research funding are not eligible to apply but can support a proposal.
- Applicants currently working within existing research projects can use the funding to move out of their current research project to develop their own ideas, however this will need full agreement of that project's PI, their institution and EPSRC in terms of pausing their existing project and signoff of project extension. In the case of the above, a letter of support from the applicant's PI and their institution is required.
- Applicants can use the funding to extend their contract.



Applicants will need to bear in mind the delay between submitting the proposal and the date when funding is actually awarded.

### 11. Process for the Applicant to follow for preparation and submission of their proposal

- Attendance at the [ECR webinar workshop](#) on 6<sup>th</sup> November 2020 (not mandatory but alignment to the SLs is important to the assessment of the project).
- Applicant considers new idea
- Applicant to discuss proposal with their line manager, confirm letter of support will be forthcoming, understand and follow their institutions internal procedures for applying for funding
- Develop Proposal (with support from ECR champions [Dr Hollie Cockings](#) and [Dr Elizabeth Sackett](#))
- Academic evaluation and proposal shortlisting
- Feedback to unsuccessful applicants from SLs;
- Panel interview – A limited number of applicants will be invited to interview. (A full EPSRC style panel evaluation and interview will be performed to provide applicants with experience)

### 12. How to Apply

Please complete in full the application form (Appendix A) of this document.

The guidance and application form includes:

- General guidance
- Practical applicant information to be completed
- Alignment to SUSTAIN Grand Challenges
- ECR Challenge Scope
- Proposed start date, duration and flexible working requirements
- The original research or a summary of the state of the art in the field
- The proposed project (with up to x2 A4 sides for completion)
- Contribution to SUSTAIN targets and [KPIs](#)
- Resource requested
- Table information including work package details, work plan (Gantt chart) and any applicable fellowship proposals that have been applied for or could be combined with this grant.

#### Submission Checklist

- Application form (Appendix A of this document)
- A summary CV of the proposed candidate(s)
- A list of publications from the proposed candidate(s)
- Letter of support from your own line manager
- Letter of support from supporting universities / industrialists / organisations where applicable. Partners included in the proposal must provide a letter of support for the applicant to submit with the proposal. Letters should be on headed paper, signed and dated and submitted with your application, however given the current circumstances with COVID19 we understand this may be difficult. Please contact the SUSTAIN team if this is the case at [info.sustainsteel@swansea.ac.uk](mailto:info.sustainsteel@swansea.ac.uk)



### 13. Assessment Process

Submissions will be considered by a panel consisting of SUSTAIN Hub Champions supported by members of the SUSTAIN management team to ensure a fair and unbiased process. In order of importance, the evaluation criteria for applications will be:

- 1. Fit to Scope:** Does the proposal address one or more of the topics outlined in the call scope and is the proposal at an appropriate TRL?
- 2. Research Quality:** Is the proposal likely to result in high quality research outcomes, in the form of journal publications, patents etc.?
- 3. Novelty:** Does the proposal contain genuine scientific novelty and is the work timely? Is it being addressed elsewhere?
- 4. Relevance:** Is the proposal relevant to the interests of industrial partners or represent the opportunity to significantly improve the U.K.'s manufacturing capability?
- 5. Ambition:** Does the proposal offer suitable levels of challenge, ambition and risk? High-risk, high return studies are encouraged.
- 6. Impact:** Is the approach credible and will the team be able to deliver? If feasibility is demonstrated is there potential for developing a larger collaborative project, either at a similar fundamental level or at higher TRLs?
- 7. Planning:** How well has the proposal been planned? Are the requested resources appropriate to deliver the proposed programme within the timeframe and have they been fully justified?



### 14. Equality & Diversity

The University is committed to supporting and promoting equality and diversity in all of its practices and activities. We aim to establish an inclusive environment and welcome diverse applications from all protected characteristics. We particularly encourage applications from women, as this cohort is under-represented in engineering across academia and industry.

### 15. Terms & Conditions of the award

Successful applications will be required to enter into a legal binding agreement with Swansea University that will incorporate the [UK Research and Innovation standard terms and conditions](#) of the grant.

### 16. GDPR

The data you provide will be utilized and deleted in alignment with GDPR requirements, by following the [SUSTAIN Privacy Policy](#).

### 17. Contacts

Applicants are asked to consult their university's research office ahead of submitting a proposal to this call, in order to be clear of the requirements for meeting the deadlines set out in page 1 of this document. The award is contractually and financially from Swansea University to the University in question. If you have further questions, please e-mail [info.sustainsteel@swansea.ac.uk](mailto:info.sustainsteel@swansea.ac.uk)

Completed forms must be submitted electronically in **PDF format** to:

[sustainsteel@swansea.ac.uk](mailto:sustainsteel@swansea.ac.uk)



Proposals must be submitted by 16:00, Friday 18th December 2020 in good time for the SUSTAIN team to arrange evaluation and outcomes of the proposals in the New Year.

The SUSTAIN team will acknowledge receipt of each proposal and assign a unique number.

### **18. Application Form**

Please refer to Appendix A below for Application Form

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## Appendix A

### SUSTAIN Early Career Research Call 1 Application Form Autumn 2020

#### General Guidance:

The Call is competitive, so application authors are therefore recommended to closely study the guidance within this Call Document and ensure that their proposal clearly addresses the aspects that will be assessed – See Section 13 of this document - Assessment Process.

Successful proposals will access a platform that enables eligible PDRA's to have the autonomy to progress their own ideas and gain experience in bid writing, panel assessment and managing their own research, whilst enacting the objectives and intent of SUSTAIN.

**This Call for funding will place special emphasis on providing eligible PDRA's the opportunity to develop their research led ideas and collaborate with SL's and where applicable, industrial contacts.** Please discuss any questions with a member of the SUSTAIN team who can be contacted by emailing: [info.sustainsteel@swansea.ac.uk](mailto:info.sustainsteel@swansea.ac.uk)

#### Submission Checklist:

- Application form (Appendix A of SUSTAIN ECR Call 1)
  - A summary CV of the proposed candidate(s)
  - A list of publications from the proposed candidate(s)
  - Letter of support from your own line manager
  - Letter of support from supporting universities / industrialists / organisations where applicable.
- Partners included in the proposal must provide a letter of support for the applicant to submit with the proposal. Letters should be on headed paper, signed and dated and submitted with your application, however given the current circumstances with COVID19 we understand this may be difficult. Please contact the SUSTAIN team if this is the case at [info.sustainsteel@swansea.ac.uk](mailto:info.sustainsteel@swansea.ac.uk)

**Project / Research Title:**

**PROPOSAL No**

Leave this section blank.  
The team will insert a unique identifier number for your proposal.

#### 1. Candidate Name(s):

Name of candidate	E-mail	Status - PI or Co-PI	Institution / Organisation name	Web address

**2. Contact Details of Research Officer / Support to Lead PI involved in this proposal:**

Name	E-mail	Telephone

**3. Host Institution(s):**

Hosting institution name	Web address	Name of technical host	E-mail

**4. Partners (if applicable):**

Institution	Institutional web pages	Name of point of contact	E-mail

**5. Grand Challenges:** Insert "M" for main theme and "S" for secondary theme(s)

Carbon Neutral Iron and Steelmaking		Smart Steel Processing	
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**ECR Scope Challenges:** Insert "M" for main theme and "S" for secondary theme(s)

<ul style="list-style-type: none"><li>High Temperature Reactions and Kinetic</li></ul>	
<ul style="list-style-type: none"><li>Computational Modelling and Big Data</li></ul>	
<ul style="list-style-type: none"><li>Characterisation and Monitoring</li></ul>	
<ul style="list-style-type: none"><li>Metallurgic Rules</li></ul>	

**Industrial Sector(s):** State main area of focus, e.g. steel making primary, supply chain, raw materials etc

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**6. Proposed Start Date, Duration and Style of Working:**

Projects are expected to last from 3-6 months (Full Time Equivalent), however projects lasting up to 12 months and in exceptional circumstances, longer, will also be considered. With the current COVID-19 situation, laboratory research is unlikely to take place in the near future. Provision for a late start will be made if required. Please identify below if your research can be completed remotely and if you need to include laboratory research.



Start Date	Duration	Remote Working Only	Laboratory Working Only	Remote & Laboratory Working Combined

**7. The Original Research:** State the original research principles from which your proposal is based.

**References:**

Ref 1:

Ref 2:

Ref 3:

Ref 4:

**8. The Proposed Project**

The proposed project **must be within x2 A4 pages** in single-spaced typescript in Arial 11 or other sans serif typeface of equivalent size, with margins of at least 2cm. It is recommended that this section includes:

- Main technical aims
- Proposed hosting arrangement
- Key activities and outputs
- Synergies of the partners and collaborators
- IP if relevant to this proposal
- Benefits arising from the research

**9. Contribution to SUSTAIN Targets and KPI's:**

State how this research will benefit the steel industry, contribute to net zero carbon emissions, increase supply chain efficiency & generate publications etc. Please visit the [SUSTAIN website](#) for [KPI](#) information.



## 10. Resources Required:

This section needs to show a clear understanding of the costs required for the project, including additional support from partners and third parties which may include pilot-scale demonstration and other potential funding received or required. Credit will be given for external funding or in-kind support e.g. from industry or other sources.

We recognise that proposals that have significant materials, laboratory or international travel costs are likely to need to identify funding contributions outside the SUSTAIN proof of concept funding to meet these needs. The SUSTAIN budget does not include these. Credit will be given for identifying external funding that complements the SUSTAIN funding.

The SUSTAIN funding will primarily cover staff time (including associated Indirect and Estate costs), with the remainder supporting consumables and travel. Funding for PhD students is not available.

## 11. Tables

The purpose of this section is to provide numerical information in a consistent form across all proposals in terms of project planning and delivery.

### 11.1 Work Packages within your project

WP No	Work package name	Start month	End month	Output
WP 1		eg Month 1	Eg Month 3	
WP 2				
WP 3				
WP 4	Add or delete rows as necessary.			

### 11.2 Gantt chart showing top level duration and interaction of your proposal.

Use this section.



**11.3 Key Performance Indicators (KPIs):** To be written by applicant in support of this proposal and to include papers, patents and industrial benefits as applicable.

**11.4 Grant Proposals:** Include additional proposals that are related to or in support of the proposal given in this document.

Grant proposals to:		Value to submit (£k)	Forecast to win (£k)

Completed forms must be submitted electronically in **PDF format** to: [sustainsteel@swansea.ac.uk](mailto:sustainsteel@swansea.ac.uk)

Proposals must be submitted by Friday 18 December 2020, 16:00 hrs.

We will acknowledge receipt of each proposal and assign a unique number. Queries should be sent to: [info.sustainsteel@swansea.ac.uk](mailto:info.sustainsteel@swansea.ac.uk)

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**SUSTAINEarlyCareerResearchCall1 FINAL VERSION 05.11.2020**