

Financial security

Document No: N-04404-GL2127 A981992

Date: 04/04/2025

Contents

1. Background	2
2. Purpose	2
3. Scope	2
4. Disclaimer	3
5. Relevant legislation	3
6. Requirement to provide financial security	3
7. Management plan requirements	4
7.1. Financial security content in management plans.....	5
7.1.1. Systems and processes to ensure compliance	5
7.1.2. Method for calculating amounts of security	5
7.1.3. Describe how the licence holder has verified the method	9
7.1.4. Financial security already provided.....	10
7.1.5. Financial security to be provided	10
7.1.6. Financial security timetable.....	10
7.1.7. Forms of security	11
7.1.8. Determinations by Minister	13
7.2. Management plan revisions relating to financial security	13
8. Compliance	13
8.1. Financial security that is no longer required	13
8.2. Financial security obligations during licence transfer	14
8.3. Commonwealth use of financial security	14
9. Document review	15
10. Related documents.....	15

1. Background

The Offshore Infrastructure Regulator (OIR) is provided with functions and powers under the *Offshore Electricity Infrastructure Act 2021* (OEI Act)¹. The OIR is responsible for regulating work health and safety, environmental management, and *infrastructure integrity*² of *offshore infrastructure activities*³ in the *Commonwealth offshore area*⁴.

An important aspect of the OIR's regulatory responsibility is providing oversight and assurance that licence holders are meeting their obligations in relation to financial securities required under the OEI Act.

2. Purpose

The purpose of this document is to provide guidance on the financial security requirements of the OEI Act and Offshore Electricity Infrastructure Regulations 2022 (OEI Regulations).

This document should be read in conjunction with related policy and guidance documentation as listed in section 10 of this document.

3. Scope

This document provides guidance in relation to the financial security obligations of licence holders, set out in the OEI Act and OEI Regulations.

Information is provided in relation to:

- the requirement to provide securities as set out in Division 4, Part 1 of Chapter 4 of the OEI Act
- the financial security matters that a *management plan*⁵ must address as specified in Division 5, Part 3 of the OEI Regulations
- other financial security matters addressed in Part 4 of the OEI Regulations.

The information provided in this guideline is primarily focused on feasibility-phase activities, however many of the concepts will also be applicable to commercial-phase activities. The OIR will provide updated guidance relevant to commercial licence activities in due course.

This guideline also provides information about the OIR's compliance monitoring of licence holder's arrangements to maintain financial security, at all times, while the licence is in force.

This guideline does not address the process of receiving or holding securities or entering into agreements on behalf of the Commonwealth. Licence holders must engage with the Commonwealth representative to provide securities to the satisfaction of the representative. For further information on those processes, please refer to guidance issued by the [Department of Climate Change, Energy, the Environment and Water \(DCCEEW\)](#) or email offshorefinancialsecurity@dcceew.gov.au.

¹ See section 8 of the OEI Act

² Ibid

³ Ibid

⁴ Ibid

⁵ Ibid

4. Disclaimer

This guidance is not a legal instrument and does not override or amend the requirements of the OEI Act or OEI Regulations in any way. It is provided to inform stakeholders and does not limit the discretion of the OIR to take any action it sees fit under relevant legislation. It reflects the current policies of the OIR, which may change from time to time. All changes will be notified publicly.

5. Relevant legislation

The following Commonwealth legislation is relevant to the consideration of financial securities by the OIR:

- *Offshore Electricity Infrastructure Act 2021* (OEI Act)
- Offshore Electricity Infrastructure Regulations 2022 (OEI Regulations).

This guidance does not cover requirements beyond the scope of the OEI framework. The reader should be aware of, and comply with, all other Commonwealth, State and Territory legislative requirements that may apply to the provision of financial security in other jurisdictions.

6. Requirement to provide financial security

117 Requirement to provide financial security

(1) The holder of a licence for which there is a management plan must, at all times while the licence is in force, provide the Commonwealth with financial security sufficient to pay any costs, expenses and liabilities that may arise in connection with, or as a result of:

- (a) the decommissioning of licence infrastructure; and*
- (b) the removal of equipment and other property from the licence area or a vacated area; and*
- (c) the remediation of the licence area and vacated areas, and any other area affected by activities carried out under the licence.*

Note 1: The purposes for which the financial security may be used are not limited to the matters in paragraphs (a), (b) and (c) (see subsection 119(2)).

The OEI Act requires all licence holders to have an approved management plan in place and to provide financial security to the Commonwealth before any **offshore renewable energy infrastructure**⁶ or **offshore electricity transmission infrastructure**⁷ can be installed.

⁶ See section 10 of the OEI Act

⁷ See section 11 of the OEI Act

The management plan must specify an amount of financial security that is sufficient for the Commonwealth to pay any costs, expenses and liabilities that may arise in relation to decommissioning, removal of property and remediation of areas affected by licence activities, if the licence holder fails to meet their obligations.

The financial security amount required for a particular *licence*⁸ may vary during the licence term as infrastructure is installed and removed from the *licence area*⁹.

Financial security is required when costs, expenses and liabilities have the potential to arise from the licence holders' activities and may not need to be provided at the time of submission or approval of the management plan. This is explained further in section 7.1.4 and 7.1.5 of this document.



Figure 1: Process overview for feasibility activities with no prior financial security provided

Financial security must be provided by the licence holder directly to the Commonwealth. The OIR does not receive, hold or return financial security on behalf of the Commonwealth.

7. Management plan requirements

This guideline addresses the content of a management plan relevant to financial security and provides additional context and information to assist licence holders.

The OIR's [Management plan content guideline](#) addresses the full scope of content to include in a management plan. Other management plan content requirements will have an influence on, or interaction with, the financial security matters and will need to be considered in developing the scope and assumptions used to calculate the amounts of securities. Both guidelines, as well as the OEI Act and Regulations should be thoroughly considered in preparing a management plan.

The OIR's assessment of management plans against the financial security provisions will be conducted in accordance with the processes and principles detailed in the OIR's [Assessment Policy](#).

⁸ See section 8 of the OEI Act

⁹ Ibid

7.1. Financial security content in management plans

A management plan must address compliance with financial security requirements of the OEI Act and OEI Regulations.

7.1.1. Systems and processes to ensure compliance

Regulation 92(1)

The plan must describe how the licence holder is complying, or is to comply, with section 117 of the Act.

The plan should detail how the licence holder will implement processes to monitor, audit and record compliance with the financial security obligations under section 117 of the Act including how the licence holder will ensure that financial security is in place before commencing activities and that securities will be maintained for the duration of the licence activities.

If the licence holder will be providing securities in accordance with a timetable, the plan should describe how compliance with that timetable will be ensured. Further information about the financial security timetable is provided in section 7.1.6.

7.1.2. Method for calculating amounts of security

Regulation 92(2)(a)

(2) Without limiting subsection (1), the plan must:

- (a) set out the method used to calculate the amount of financial security provided, or to be provided, to the Commonwealth for the purposes of subsection 117(1) of the Act, which must comply with subsection (3) of this section.*

The management plan must describe how the licence holder has used an appropriate method to calculate the amount of financial security that the licence holder must provide to the Commonwealth to comply with the OEI Act.

Licence holders are able to propose any method to calculate the amount of financial security to be provided. The calculation method may include using basic bottom-up costing, use of suitable cost estimation tools available in the public domain, or licence holders may choose to create new estimation tools independently or in cooperation with other licence holders.

For any calculation method selected, a licence holder will be required to demonstrate in the management plan that the method is suitable, robust and will result in amounts that reflect the greatest reasonably credible total costs to the Commonwealth. For complex calculation methods, this may require verification by an independent and competent third party, discussed further in section 7.1.3.

The management plan should clearly describe the scoping and the key assumptions that may impact the overall amount of financial security calculated using the method.

Scoping the calculation method

Regulation 92

- (3) *Without limiting the matters that the method set out under paragraph (2)(a) may deal with, the method must identify and calculate the costs, expenses and liabilities that may arise in connection with, or as a result of, the following:*
- (a) *the decommissioning of licence infrastructure;*
 - (b) *removing relevant structures, equipment and property from the licence area;*
 - (c) *removing things from a vacated area that would be relevant structures, equipment or property if the vacated area was still part of the licence area of the relevant licence;*
 - (d) *the remediation of the licence area and vacated areas, and any other area affected by licence activities.*

The method set out in the management plan must calculate the potential costs to the Commonwealth of decommissioning and removal, and remediation of areas affected by activities, as relevant to the scope of the licence activities described in the plan and on the assumption that the licence holder has failed to meet its obligations.

Section 117 of the OEI Act requires financial security to be provided in all cases, regardless of the probability of the licence holder defaulting on its obligations.

Licence holders must consider the full scope of costs, expenses and liabilities that may arise from establishing, executing and completing a new project including, but not limited to:

- project management, including stakeholder engagement and ensuring compliance with all relevant obligations
- procurement of, and costs of, contracts with consultants for planning, technical engineering or environmental work, verification or in-field support
- environmental field surveys
- costs for operational and post-cessation work prior to full decommissioning, including ongoing inspection, maintenance and repair, and emergency preparedness
- operational costs of decommissioning and removing all structures, equipment and property from the seabed
- logistics, freight and port costs
- recycling and waste management
- remediation and post-decommissioning monitoring.

Licence holders should ensure the scope of the method is consistent with the list of relevant structures, equipment and property in the management plan (see regulation 87).

The financial security obligations are relevant for all infrastructure including the geotechnical equipment that will rest on or be connected to the seabed intermittently. The method should assume that any geotechnical infrastructure has been left on the seabed resulting from an unplanned circumstance and needs to be removed by the Commonwealth.

Please refer to the OIR guideline [Authorisations for offshore infrastructure activities \(N-04403-GL2082\)](#) for further information about infrastructure under the scope of the OEI framework.

The value of the equipment to a supplier is not a relevant basis to exclude items of infrastructure from the scope of the method. The cost method cannot assume a supplier will meet the obligations to remove equipment if the licence holder fails to do so. Similarly, the perceived value and re-sale of recovered property should not be used to offset or reduce the amount calculated.

In cases where the management plan includes optionality for how decommissioning activities will be undertaken, the method should clearly indicate the particular scenario that is being used in the calculation and confirm that it represents the highest of the costs that could be incurred. For example, if two different vessel types or two different recovery techniques are provided, then the costs applied to the method should assume the more costly of the two options.

The method should address the costs of remediating the licence area, vacated areas and any other area affected by activities carried out under the licence. To estimate these costs the method should consider whether any damage to the environment may be caused by the licence activities and will require active remediation or ongoing monitoring. This may include remediation of damage caused by the decommissioning works, for example damage caused when removing buried infrastructure.

Emergencies and unexpected circumstances

Regulation 92(4)

- (4) *The method set out under paragraph (2)(a) must take into account any costs, expenses and liabilities that might arise from emergencies or unexpected circumstances in relation to anything mentioned in paragraph (3)(a), (b), (c) or (d).*

The scenarios selected for the method should include reasonably foreseeable unplanned circumstances identified in the plan. This may include unplanned disconnections of equipment, failed lifts or dropped objects and recovery of equipment that may have drifted outside the licence area.

The unplanned circumstances and emergencies identified for the purposes of the financial security should be consistent with those matters described elsewhere in the plan.

Where the emergencies described in the plan can be addressed through insurance or similar coverage, the plan should clearly identify that the costs associated with obtaining and holding that insurance are addressed in the method.

Costs to the Commonwealth

The OIR considers that in all circumstances costs to the Commonwealth for completing work on behalf of a licence holder will be higher than the costs for a licence holder to complete the same work.

If a licence holder defaults on its obligations, the Commonwealth may not hold the expertise, equipment, contracts, business relationships or resources to undertake offshore decommissioning and remediation works, may need to commission new engineering studies, and would be required to acquire these to complete work on behalf of a licence holder. Any efficiencies that may have been available to the licence holder for these aspects will not be available to the Commonwealth and therefore these efficiencies should not be included in the licence holder's assumptions for financial security calculation.

It may be reasonable for a licence holder to use evidence of its own internal effort as the basis of assumptions contained in a calculation method. However, it should be understood that the Government would be required to follow [Commonwealth Procurement Rules](#)¹⁰, set by the Department of Finance, in order to enter into contracts for the management and execution of activities required.

This will likely require public competitive tender processes, and therefore it cannot be assumed that the Commonwealth will engage the original supplier of the equipment to remove that equipment, nor that vessels that would have been contracted by the licence holder will be contracted by the Commonwealth to complete the scope of work required.

In addition to costs associated with undertaking in-field works, the costs for procuring contractors to undertake work should be considered in any calculation method. Examples of these costs include establishment of a project team to assess the circumstances and scope of works required, project plan and business case development, management of the procurement process including approach to market, contract development and execution and ongoing management.

The number of hours required to undertake these activities will vary depending on the number of contracts required and the scale and nature of the contracts being entered into. This will largely be driven by the scope and complexity of the proposed decommissioning campaign.

Roles required for the Commonwealth to undertake procurement processes may include:

- Project manager
- Specialist technical or regulatory advisors
- Procurement and finance advisors
- Legal advisors
- Executive/general managers.

This list of roles is not exhaustive. Additional roles may be required dependent on the complexity of the proposed activities with decommissioning scenarios for commercial scale offshore infrastructure projects likely to be significantly more complex, requiring full-time teams over several years.

Based on industry benchmarking, the OIR considers that hourly rates for the roles outlined above would reasonably fall within a range of \$250 to \$400.

¹⁰ <https://www.finance.gov.au/government/procurement/commonwealth-procurement-rules>

7.1.3. Describe how the licence holder has verified the method

Regulation 92(2)(b)

(2) Without limiting subsection (1), the plan must:

...

- (b) describe how the licence holder has verified that the method set out under paragraph (a) will calculate an amount of financial security that is sufficient to comply with subsection 117(1) of the Act and subsection (3) of this section;*

Licence holders may take a variety of approaches to demonstrate that the method they have used to estimate the amount of financial security for a licence has been appropriately verified.

For relatively straightforward calculations, an audit, review or other verification conducted in-house by suitably competent personnel may be appropriate.

For more complex projects it will likely be necessary to secure the services of an independent third-party verifier to scrutinise the calculation method and provide a report to demonstrate that the method is appropriate to accurately estimate the amount of financial security.

Regulation 108 allows the OIR to direct a licence holder to arrange for third party verification of financial security should this be considered necessary. The OIR may direct licence holders to engage a suitably qualified, competent and independent third party to verify the method, the amount calculated using the method, and any other matter considered necessary to ensure the financial security to be provided will be sufficient for the purposes of the OEI Act.

Verifying the method complies with the Act and Regulations

The plan should describe how the licence holder has verified that:

- the components that make up the method are appropriately scoped, taking into account the decommissioning scenario described in the management plan, and any costs, expenses and liabilities that might arise from emergencies or unexpected circumstances; and
- that the amount calculated is sufficient to pay any costs, expenses and liabilities that the Commonwealth may incur in connection with undertaking the required decommissioning, removal and/or remediation activities identified in the management plan.

Verifying the cost assumptions

The plan should describe how the licence holder has verified that the cost assumptions accurately reflect the full cost of the activities described. Licence holders may verify the inputs to the calculation in a variety of ways. For example, licence holders could use recently obtained quotes or information about current market rates for equipment and services. The approach to verification should be described in the plan but licence holders are not required to submit the materials used for the verification within the management plan.

7.1.4. Financial security already provided

Regulation 92(2)(c)

(2) Without limiting subsection (1), the plan must:

...

- (c) state the amount of financial security (if any) that the licence holder has provided, and describe the form or forms in which it has been provided; and*

Regulation 92(2)(c) applies to management plans for licences where some financial securities are already held by the Commonwealth.

The management plan must state the financial securities that the licence holder has in place for the licence and the form(s) of that security. This could be provided in a table listing the amount(s) of security in Australian dollars provided the form(s) of that security and any relevant additional information in relation to that security.

7.1.5. Financial security to be provided

Regulation 92(2)(d)

(2) Without limiting subsection (1), the plan must:

...

- (d) state any amounts of financial security that the licence holder is to provide, and describe the form or forms in which it is to be provided;*

For activities where no prior security has been provided or is currently being held by the Commonwealth, the securities must be provided to the Commonwealth after management plan approval but prior to commencement of licence activities.

Regulation 92(2)(d) requires the management plan to state the amount and form of securities that the licence holder proposes to provide in future to meet obligations under section 117 of the OEI Act. Licence holders should provide an indication of the timing for provision of securities, with reference to the activity timeframes described in the plan.

7.1.6. Financial security timetable

Regulation 92(2)(f)

(2) Without limiting subsection (1), the plan must:

...

- (f) if financial security is to be provided at different times in relation to particular licence infrastructure—include the material mentioned in section 103.*

Regulation 103 provides for financial securities to be provided at different times in relation to particular infrastructure. If licence holders choose to take this approach, the management plan must include a timetable for providing securities to the Commonwealth, on the basis that all required securities related to particular infrastructure are to be provided before that infrastructure is to be installed.

7.1.7. Forms of security

Regulations 109 and 110 describe forms that may and may not be treated as financial security for the purposes of section 117 of the OEI Act.

The OIR's assessment of the management plan will consider whether the forms of security identified in the plan appear consistent with the OEI Regulations and any published guidance from DCCEE as the representative of the Commonwealth. Given financial security is to be provided to the Commonwealth who will consider whether the terms of the proposed arrangement are appropriate, the licence holder does not need to include the detailed terms and conditions of the chosen forms in a management plan.

Licence holders are encouraged to provide flexibility when stating proposed forms of security in order to ensure that future arrangements with the Commonwealth are not constrained in any way by the content of a management plan. In most cases it will be sufficient to confirm that the form of any security will be consistent with those forms outlined in regulation 109.

Regulation 109 - Arrangements that may be treated as financial security

(1) *For the purposes of paragraph 117(4)(a) of the Act, the following arrangements may be treated as financial security for the purposes of section 117 of the Act:*

- (a) *an amount received by the Commonwealth as mentioned in paragraph 119(3)(a) of the Act and retained in accordance with paragraph 119(4)(d) of the Act;*
- (b) *a cash deposit held by a financial institution;*
- (c) *a credit facility with a financial institution;*
- (d) *a guarantee from a financial institution;*
- (e) *an insurance policy with a general insurer (within the meaning of the Insurance Act 1973).*

Note 1: Subsection (1) does not limit the kinds of arrangements that may be treated as financial security for the purposes of section 117 of the Act.

Note 2: The Minister may determine that the financial security that is required to be provided in relation to a particular licence must be provided in a particular form, which may be (but is not required to be) a form mentioned in subsection (1) (see section 102).

(2) *This section has effect subject to section 110.*

(3) *In this section:*

financial institution means a corporation that is an ADI (authorised deposit-taking institution) for the purposes of the Banking Act 1959.

Regulation 110 - Arrangements that are not to be treated as financial security

- (1) For the purposes of paragraph 117(4)(b) of the Act, the following kinds of arrangements are not to be treated as financial security in relation to a licence for the purposes of section 117 of the Act:
- (a) an arrangement involving self-insurance;
 - (b) an arrangement under which the Commonwealth is a beneficiary of a trust;
 - (c) a guarantee provided by a related body corporate (within the meaning of the Corporations Act 2001) of the licence holder.
- (2) For the purposes of paragraph 117(4)(b) of the Act, an arrangement is not to be treated as financial security for the purposes of section 117 of the Act if any of the following applies to the arrangement:
- (a) the arrangement does not limit the ability of persons other than the Commonwealth to recover amounts from financial security provided under the arrangement;
 - (b) it is not highly certain that the Commonwealth would be able to recover amounts under the arrangement when required;
 - (c) the terms of the arrangement are unclear.

The licence holder may utilise one or several acceptable forms of financial security that together aggregate to equal the financial security necessary to meet the requirements of the OEI Act. The management plan may also propose options for different forms of security to provide flexibility as to the final form to be agreed with the representative of the Commonwealth.



Figure 2 – Forms of financial security

7.1.8. Determinations by Minister

Regulation 92(2)(e)

(2) Without limiting subsection (1), the plan must:

...

- (e) describe any determinations made by the Minister under section 102 (Minister may require financial security to be in a particular form), and describe how any such determinations are being, or are to be, complied with.*

Under regulation 102, the Minister may make a determination that financial security for a particular licence is to be provided in a particular form or a combination of forms. If a determination of this nature applies, regulation 92(2)(e) requires the management plan for the licence to describe how the licence holder is complying or will comply with the determination.

7.2. Management plan revisions relating to financial security

The OIR's [Management plan lifecycle](#) guideline provides information on the circumstances that may require a management plan to be revised.

In revising a management plan, licence holders should consider the reasons for the revision and whether there are any specific changes to the content of the plan that might influence the scope, assumptions or inputs to the financial security estimation method.

For periodic revisions, at least once every five years, licence holders will need to demonstrate that financial security information remains current, including scope, assumptions and inputs. Consideration should be given to changes in inflation rates, exchange rates and other market rates since the amounts were previously calculated.

8. Compliance

Under section 118 of the OEI Act, a person commits an offence and may be liable for a penalty if subsection 117(1) of the Act requires the person to provide the Commonwealth with financial security in accordance with section 117, and the person does not comply with the requirement.

Under regulation 46, a licence holder commits an offence if there is a management plan for the licence and the licence holder carries out licence activities in a way that is contrary to the management plan.

The OIR will undertake inspections in accordance with published compliance monitoring and enforcement policies, to ensure licence holders are complying with their obligations to maintain financial securities at all times while the licence is in force.

8.1. Financial security that is no longer required

An amount of financial security provided by a licence holder in relation to a licence does not cease to be required and cannot be reduced, while the licence remains in force, otherwise than in accordance with a determination by the Minister.

Regulation 104 establishes that the Minister may determine that a licence holder is no longer required to provide a specified amount of financial security if satisfied that no further costs, expenses or liabilities are likely to arise in relation to the licence infrastructure, property, or remediation activities to which the financial security relates.

If a licence holder is satisfied that it has met all obligations and the security is no longer required, the licence holder may submit a request to have financial security returned. Further information about this process is available in [DCCEEW's guidance](#).

Any determinations regarding the reduction or release of securities will be a matter for the Minister, informed by relevant information. The regulations require that any such determination requires the Minister to seek and have regard to advice from the OIR in making this decision.

The basis for the OIR's advice will be compliance information held by the OIR including the outcomes of any compliance inspections that the OIR undertakes to ensure relevant activities that were undertaken in accordance with an approved management plan, and all obligations under the management plan have been met.

Regular communication with the OIR on the commencement and completion of activities, and the licence holders plans for seeking the return of financial security, will enable the OIR to consider this information when developing inspection schedules. Once the Minister has determined that that an amount financial security is no longer required, arrangements to return or cease the financial security will be facilitated by DCCEEW.

8.2. Financial security obligations during licence transfer

Regulation 107 outlines the obligations of a transferor and transferee in relation to financial securities where there is a transfer of a licence. Under regulation 107(5) the Minister may determine that a transferor's obligations under sections 117 and 118 of the OEI Act cease if the transferee has provided the Commonwealth with financial security required by section 117 of the OEI Act.

As specified in regulation 60, the transfer of a licence may also require revision of a management plan and therefore the timing of the various regulatory processes may require consideration. Early engagement with the OIR is encouraged in this circumstance.

8.3. Commonwealth use of financial security

The regulations provide that specified kinds of costs, expenses and liabilities incurred by the Commonwealth or the OIR in relation to a licence, or debts owed by a licence holder to the Commonwealth or the OIR, may be recovered by the Commonwealth from a financial security provided by the licence holder.

Regulation 111 provides that the Commonwealth may recover debts arising due to non-compliance or unpaid fees, levies or late payment penalties from a financial security in certain circumstances.

Regulation 112 provides that the Commonwealth may recover the costs expenses and liabilities from a financial security in certain circumstances where the Commonwealth or the OIR reasonably incurs costs, expenses or liabilities as a result of a non-compliance.

If a licence holder has outstanding debts owed to the Commonwealth or the OIR in relation to a licence or fails to meet its obligations in the licence area, resulting in the Commonwealth or the OIR incurring costs, expenses and liabilities, these amounts may be recovered from financial securities.

Regulations 111 and 112 provide specific controls around the circumstances when amounts may be recovered from financial securities. A detailed table within regulation 112(2) sets out the kinds of costs, expenses and liabilities that may be recovered for this purpose.

Compensation to other parties or claims for loss or damage resulting from planned or unplanned activities of a licence holder are not able to be recovered from financial securities.

9. Document review

This guideline is to be reviewed periodically by the OIR. Reviews will be undertaken as a result of changes to legislation, through feedback elicitation or as a result of accumulated experience.

10. Related documents

N-04401-PL2048 – Policy – Assessment

N-04403-GL2084 – Guideline – Management plan content

N-04403-GL2082 - Guideline – Authorisations for offshore infrastructure activities

N-04403-GL2254 – Guideline – Management plan lifecycle