deepC Store Limited
Level 5, 1008 Hay Street, Perth, WA 6000, Australia
ABN: 26 653 059 164
www.deepcstore.com

Hon Tanya Plibersek MP
Minister for the Environment and Water
PO Box 6022
House of Representatives
Parliament House
Canberra ACT 2600

24th May 2023

Follow Up Letter regarding the CO_2 supply specification and CO_2 supply source for CStore1 (the "Follow Up Letter")

Dear Minister,

As a follow up our "In Confidence - Letter regarding the CO_2 supply specification and CO_2 supply source for CStore1" letter dated 1st February 2023 and issued to members of the Sea Dumping Section of the Department of Climate Change, Energy, the Environment and Water ("**DCCEEW**"), I am writing to provide updated information regarding the CO_2 supply specification for CStore1, our offshore Carbon Capture and Storage ("**CCS**") hub project. I trust that this will assist you and your colleagues of the Sea Dumping Section of DCCEEW in your review of Australia's national "Action List" for the assessment of CO_2 streams for sequestration as per the London Protocol.

For more information about deepC Store ("**dCS**") and CStore1, please see attached Appendix 1 of this Follow Up Letter.

CO_2 Supply Specification for CStore1

1) Context

a) CCS Regulatory Landscape

CCS regulations and codes around the world are still in development. dCS and Pace CCS (https://paceccs.com/), dCS's technical advisor, are not aware of any mature domestic or international CCS regulations or codes that can be considered for the purposes of determining CStore1's CO_2 supply specification.

Accordingly, dCS has developed its CO_2 supply specification with Pace CCS based on:

i) CCS industry norms and the position of ISO technical Committee 265 that is managing the revision process of the ISO 27913 (which includes a recommended CO_2 specification)[1];
ii) input from the formal and informal meetings that Pace CCS has had with the following three CCS regulators[2] around the world:
   (a) South Australia Department of Energy & Mines (SA DEM), regulators of Santos's Moomba CCS project.
   (b) UK Health and Safety Executive (HSE) and North Sea Transition Authority (offshore), regulators of the two UK Track One Cluster CCS projects.

[1] While the next revision of the ISO 27913 is expected to include a recommended CO_2 specification, this will be applied as a guidance and not on a mandatory basis.

[2] These three regulators are responsible for the four of the five most advanced CCS hub projects in the world (with the fifth hub project being the Northern Lights Project in Norway).

(c) Dutch EZK, regulators for the Porthos CCS project.

b) Philosophy Adopted for CStore1

dCS has adopted the following principles to establish its CO_2 supply specification:

i) Follow CCS industry norms[3] to ensure that the CO_2 supply specification for CStore1 is compatible with the emerging CCS shipping industry;
ii) Ensure that no risk to downstream material integrity or other HSE risks are introduced;
iii) Maximise flexibility such that:
   (a) cost of CO_2 capture by the CO_2 Suppliers is minimised;
   (b) venting and downtime is minimised; and
   (c) All components that form part of the CO_2 supply specification to be within the range that can be detected and measured with reasonable accuracy in a laboratory

Upon developing the CO_2 specification, dCS has also considered a wide range of potential CO_2 supply sources. These include:

i) Iron & steel furnaces (dCS notes its agreement executed with Nippon Steel Corporation ("**NSC**"), Japan's largest steel producer, for NSC provide up to 5 million tonnes of CO_2 per annum to CStore1[4])
ii) Traditional fossil fuel power plants (dCS notes its agreement executed with Kansai Electric Power Co., Inc. ("**KEPCO**"), one of Japan's largest integrated power utility, for KEPCO to provide up to 10 million tonnes of CO_2 per annum to CStore1[5])
iii) Biomass power plants and waste incinerators
iv) Refinery stack
v) Cement plants & kilns
vi) Lime production
vii) Ammonia production
viii) Carbon capture Direct from air

Each industry has a different set of non-CO_2 components associated with its CO_2, with this range of non-CO_2 components considered in the development of the CStore1 CO_2 specification. dCS notes that:

i) dCS will apply the CO_2 supply specification as mentioned above to all CO_2 Suppliers
ii) dCS does not plan on setting specific / different CO_2 supply specification for each CO_2 Supplier (nor for CStore1 and subsequent CCS projects that dCS may develop). For CO_2 supply that deviates from the CO_2 supply specification for CStore1, dCS highlights the need for an assessment to be performed for evaluating any potential risks to CStore1.
iii) The CO_2 supplier is responsible for the delivery of the CO_2 to the battery limit based on dCS's specified arrival conditions and CO_2 specification.

---

[3] Same as the above.
[4] More information on dCS's agreement with Nippon Steel available at: https://www.nipponsteel.com/en/news/20220214_100.html
[5] More information on dCS's agreement with Kansai Electric Power available in Japanese at https://www.kepco.co.jp/corporate/notice/notice_pdf/20221130_2.pdf and in English at https://www.deepcstore.com/news/co2offtake-kepco-deepcstore

2) Basis of CO_2 Supply Specification for CStore1

a) Key Assumptions

The following assumptions are fundamental in the development of the CO_2 specification:

i) The battery limit between CO_2 Suppliers and CStore1, which is either at
   (a) pre-liquefaction (onshore), or
   (b) post-liquefaction (at the jetty)

ii) The CO_2 supplier is responsible for the delivery of the CO_2 to the battery limit based on the specified arrival conditions and CO_2 specification.

iii) Provision will need to be made for managing Boil-Off Gas ("**BOG**") of light ends (N_2, H_2, CH_4, Ar, CO, C_2H_6) immediately post-liquefaction where required.

Resultantly the CStore1 CO_2 specification will be specified for pre-liquefaction and post-liquefaction, including considerations for Low Pressure ("**LP**"), Medium Pressure (**"MP"**) and High Pressure (**"HP"**) shipping conditions.

At the time of the issuance of this document, CStore1:

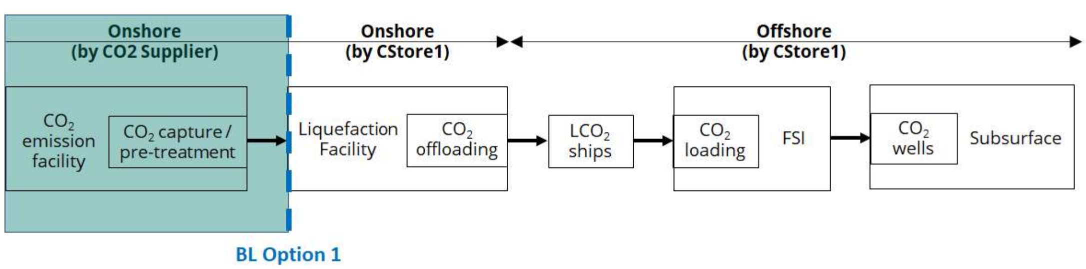
i) has not yet determined which shipping conditions to adopt for CStore1 (LP, MP, or HP). CStore1 notes that this key design decision, which will impact the entire CCS facility value chain, will be addressed in consultation with the CO_2 Suppliers; and

ii) does not have a designated geological storage site for sequestration. Since each geological storage site has a different geological makeup, it is prudent for CStore1 to confirm whether there would be any impact associated with the limits of non-CO_2 components set with respect to each storage site. For example, we anticipate that non-CO_2 components related to Sulfate Reducing Bacteria (SRB) such as SOx, H_2S and O_2 will be different for each geological storage.

b) Battery Limit and CO_2 Receipt Point

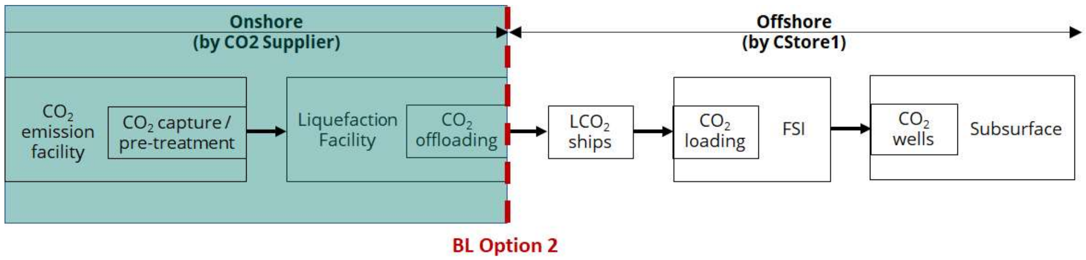
For CO_2 Suppliers who seek to set the battery limit at pre-liquefaction (onshore), the CO_2 receipt point for which custody transfer will occur from the CO_2 Suppliers to CStore1 will be as follows:

Figure 2: Battery limit option 1 - Pre-liquefaction (onshore)



For CO_2 Suppliers who seek to set the battery limit at post-liquefaction (at the jetty), the CO_2 receipt point for which custody transfer will occur from the CO_2 Suppliers to CStore1 will be as follows:

Figure 3: Battery limit option 2 - Post-liquefaction (at the jetty)



c) Pipeline and CO_2 Arrival Conditions

CO_2 to be delivered to the liquefaction facility (onshore) via pipeline could be in gas/dense phase. Typical conditions for this are as follows:

i) Dense phase 90-120 bar, 30-45 °C (max)
ii) Gas phase 30-40 bar, 30-45 °C (max)

d) Shipping Conditions

Three separate shipping conditions shall be considered for this CO_2 specification:

i) LP 7 bar, -49°C
ii) MP 19 bar, -25°C
iii) HP 75 bar, 10°C

Throughout the report LP, MP and HP shipping shall refer to the conditions as stated above.

To achieve LP and MP shipping conditions liquefaction involves refrigeration. Upon liquefaction (including refrigeration), the concentration of light end components (H_2, CH_4, N_2, Ar, CO, C_2H_6) in the bulk liquid is reduced, down to levels that match the actual solubility in the liquefied CO_2, resulting in a higher purity CO_2 fluid. CStore1 notes that:

i) CStore1 and the CO_2 Supplier will need to agree the ways in which to manage the BOG of light ends (H_2, CH_4, N_2, Ar, CO, C_2H_6) immediately post-liquefaction (including refrigeration); and
ii) The light end components that remain soluble in the liquefied CO_2 at the selected pressure regime of CO_2 liquefaction will not be removed

To achieve HP shipping conditions and based on the CO_2 arrival condition being set for dense phase CO_2 delivery, the pressure will need to be let down and the fluid be cooled. CStore1 notes that no BOG management is foreseen to be required under the HP shipping condition because the light end components will not drop out of the bulk CO_2 fluid.

3) CO_2 Supply Specification at Pre-liquefaction (Onshore)

The CO_2 supply specification for CStore1 for the battery limit at pre-liquefaction (onshore, battery limit option 1) is as per the table below.

deepC Store Limited
Level 5, 1008 Hay Street, Perth, WA 6000, Australia
ABN: 26 653 059 164
www.deepcstore.com

For avoidance of doubt, this CO_2 supply specification (at pre-liquefaction) is identical for the three shipping conditions (LP, MP, and HP) is identical.

b) For the LP and MP shipping conditions, the liquefaction process will remove the majority of the light ends (N_2, H_2, CH_4, Ar, CO, C_2H_6) and therefore the CO_2 supply specification will be higher purity at shipping conditions.

c) For the HP shipping condition, the light ends remain soluble in the liquefied CO_2 and therefore the CO_2 supply specification will remain the same as that for the battery limit at pre-liquefaction.

<table>
<tr><th colspan="2">Component</th><th colspan="2">Limit</th><th>Notes</th></tr>
<tr><td colspan="2">CO_2</td><td colspan="2">≥ 95.0 mol%</td><td>1</td></tr>
<tr><td colspan="2">H_2</td><td>≤ 1.5 mol%</td><td rowspan="6">Combined total ≤ 4 mol%</td><td>1, 4, 8</td></tr>
<tr><td colspan="2">CO</td><td>≤ 0.2 mol%</td><td>2</td></tr>
<tr><td colspan="2">N_2</td><td>≤ 4.0 mol%</td><td>1, 4, 8</td></tr>
<tr><td colspan="2">Ar</td><td>≤ 4.0 mol%</td><td>1</td></tr>
<tr><td colspan="2">Methane</td><td>≤ 4.0 mol%</td><td>1, 4, 8</td></tr>
<tr><td colspan="2">Ethane</td><td>≤ 4.0 mol%</td><td>1</td></tr>
<tr><td colspan="2">C_3+ & heavier hydrocarbons</td><td colspan="2">≤ 0.15 mol% (in total)</td><td>1, 10</td></tr>
<tr><td colspan="2">H_2O</td><td colspan="2">≤ 50 ppm</td><td>3</td></tr>
<tr><td colspan="2">O_2</td><td colspan="2">≤ 10 ppm</td><td>6, 11</td></tr>
<tr><td colspan="2">NOx</td><td colspan="2">≤ 10 ppm</td><td>6, 11</td></tr>
<tr><td colspan="2">Sox</td><td colspan="2">≤ 10 ppm</td><td>6, 11</td></tr>
<tr><td colspan="2">H_2S</td><td colspan="2">≤ 9 ppm</td><td>6, 11</td></tr>
<tr><td colspan="2">COS</td><td colspan="2">≤ 100 ppm</td><td>6, 11</td></tr>
<tr><td colspan="2">CS_2</td><td colspan="2">≤ 20 ppm</td><td>5</td></tr>
<tr><td colspan="2">NH_3</td><td colspan="2">≤ 10 ppm</td><td>6, 9</td></tr>
<tr><td colspan="2">BTEX</td><td colspan="2">≤ 100 ppm</td><td>2</td></tr>
<tr><td colspan="2">Methanol</td><td colspan="2">≤ 250 ppm</td><td>3</td></tr>
<tr><td rowspan="11">Solid Particulates (Max size of particulate: 1 μm)</td><td>Ash</td><td colspan="2" rowspan="11">≤ 1 (in total) mg/Nm^3</td><td>2, 7, 10</td></tr>
<tr><td>Dust</td><td>2, 7, 10</td></tr>
<tr><td>Na</td><td>2, 7, 10</td></tr>
<tr><td>K</td><td>2, 7, 10</td></tr>
<tr><td>Mg</td><td>2, 7, 10</td></tr>
<tr><td>Cr</td><td>2, 7, 10</td></tr>
<tr><td>Ni</td><td>2, 7, 10</td></tr>
<tr><td>Pb</td><td>2, 7, 10</td></tr>
<tr><td>As</td><td>2, 7, 10</td></tr>
<tr><td>Se</td><td>2, 7, 10</td></tr>
<tr><td>Hg</td><td>6, 7</td></tr>
<tr><td colspan="2">Cadmium, Cd
Thallium, Tl</td><td colspan="2">≤ 0.15 mg/Nm^3</td><td>2, 7</td></tr>
<tr><td colspan="2">Formaldehyde</td><td colspan="2">≤ 150 mg/Nm^3</td><td>2</td></tr>
<tr><td colspan="2">Acetaldehyde</td><td colspan="2">≤ 150 mg/Nm^3</td><td>2</td></tr>
</table>

Chlorides, fluorides, cyanides (Cl_2, HF, HCl, HCN)	≤ 150 mg/Nm^3 total	2
Amines	nil droplet	3
Glycols	Max droplet size: 2 μm	3
Naphthalene	≤ 100 ppb	3
Dioxins and furans	≤ 0.02 ng/Nm^3	2, 8
Nitrosamines and Nitramines	≤ 3 μg/Nm^3	2, 8
Mercaptans	≤ 300 ppb-mol	5

Notes (for table above):

1. Consistent with emerging international standards
2. CO_2 the most toxic component under all circumstances
3. No corrosion or metal integrity risk
4. Maximum flexibility for CO_2 emitters
5. Conservative limit to account for odour issue on/offloading & maintenance (requires review)
6. Conservative limit to account for possible chemical reactions
7. Risk of toxic accumulation
8. May impact refrigeration during shipping due to its impact to increase the bubble point of the fluid (requires review)
9. NH_3 limit to be confirmed based on rate of potential chemical reactions resulting in the formation of salts.
10. Subject to review of pore sizes of all storage reservoirs
11. Subject to review of reservoir chemistry of geological storage site. Geochemical or biochemical effects/limits of non-CO_2 components in the CO_2 stream to storage reservoirs unknown at this time.

For CO_2 supply that deviates from the CO_2 supply specification for CStore1 as mentioned above in section 1 b (Philosophy Adopted for CStore1), dCS highlights the need for an assessment to be performed for evaluating any potential risks to CStore1.

dCS also notes that:

a) as mentioned above, the liquefaction process (for low pressure and medium pressure shipping) will remove the majority of the light ends of the CO_2, and therefore the CO_2 will be higher purity at shipping conditions.
b) provision will need to be made for managing boil-off gas of light ends immediately post-liquefaction where required.

4) CO_2 Supply Specification at Post-liquefaction

a) Relationship between the specification for Battery Limit at Pre-liquefaction and that for Post-liquefaction

Provided the CO_2 specification is adhered to pre liquefaction, CO_2 purity will only improve as light ends boil off into the gas phase and no new species are introduced to the bulk fluid post liquefaction. Therefore, there is no requirement for compositional control post liquefaction.

The only other requirement to be met is that the fluid must be a liquid at the post-liquefaction, shipping condition (pressure and temperature conditions).

dCS also notes that:

i) Under the LP and MP shipping regimes, BOG consisting of the light ends (N_2, H_2, CH_4, Ar, CO, C_2H_6) will be created as a result of the liquefaction process of the CO_2 delivered by the CO_2 supplier to CStore1. CStore1 and the CO_2 Supplier will therefore need to agree the ways in which to manage the BOG of light ends immediately post-liquefaction (including refrigeration); and

ii) Under the HP shipping regime, the light ends remain soluble in the liquefied CO_2 and therefore no BOG is created.

b) Specification for Battery Limit at Post-liquefaction for MP and LP Shipping Conditions

The CO_2 supply specification for the MP and LP shipping conditions is as per below. When compared to the specification for battery limit at pre-liquefaction, dCS notes that:

i) The specification for the light ends (N_2, H_2, CH_4, Ar, CO, C_2H_6) are limited by their solubility in liquid CO_2 at the named shipping conditions. When the ≥95% CO_2 limit as per the specification for battery limit at pre-liquefaction is adhered to, this forms a limit of solubility to maintain the correct phase, and acceptable CO_2 purity for the given conditions.

ii) the CO_2 supply specification will be higher purity for battery limit at post-liquefaction (at shipping conditions).

Component	Limit	For reference - Northern Lights	Notes
CO_2	Minimum purity of CO_2 from capture plants (pre-liquefaction) for MP & LP shipping options must be ≥ 95.0 mol%		1
H_2	At saturation level for shipping temperature and pressure	≤ 50 ppm	1, 4, 8
CO		≤ 100 ppm	2
N_2		Non-condensable gases to be limited by the actual solubility in liquid CO_2 in the storage tanks at the capture plants	1, 4, 8
Ar			1
Methane			1, 4, 8
Ethane			1
C_3+ & heavier hydrocarbons	≤ 0.15 mol% (in total)		1, 10
H_2O	≤ 50 ppm	≤ 30 ppm	3
O_2	≤ 10 ppm	≤ 10 ppm	6, 11
NOx	≤ 10 ppm	≤ 10 ppm	6, 11
SOx	≤ 10 ppm	≤ 10 ppm	6, 11
H_2S	≤ 9 ppm	≤ 9 ppm	6, 11
COS	≤ 100 ppm		6, 11
CS_2	≤ 20 ppm		5
NH_3	≤ 10 ppm	≤ 10 ppm	6, 9

BTEX		≤ 100 ppm			2
Methanol		≤ 250 ppm			3
Solid Particulates (Max size of particulate: 1 µm)	Ash	≤ 1 (in total) mg/Nm^3	-		2, 7, 10
	Dust		-		2, 7, 10
	Na		(1 ppm)		2, 7, 10, 12
	K		(0.6 ppm)		2, 7, 10, 12
	Mg		(1 ppm)		2, 7, 10, 12
	Cr		(0.5 ppm)		2, 7, 10, 12
	Ni		(0.4 ppm)		2, 7, 10, 12
	Pb		(0.1 ppm		2, 7, 10, 12
	As		(0.3 ppm)		2, 7, 10, 12
	Se		(0.3 ppm)		2, 7, 10, 12
	Hg		(0.1 ppm)	≤ 0.03 ppm	6, 7, 12
Cadmium, Cd Thallium, Tl		≤ 0.15 mg/Nm^3	(0.03 ppm) (0.02 ppm)	≤ 0.03 ppm	2, 7, 12
Formaldehyde		≤ 150 mg/Nm^3	(122 ppm)	≤ 20 ppm	2, 12
Acetaldehyde		≤ 150 mg/Nm^3	(83 ppm)	≤ 20 ppm	2, 12
Chlorides, fluorides, cyanides (Cl_2, HF, HCl, HCN)		≤ 150 mg/Nm^3 total			2
Amines		nil droplet		≤ 10 ppm	3
Glycols		Max droplet size: 2 µm			3
Naphthalene		≤ 100 ppb			3
Dioxins and furans		≤ 0.02 ng/Nm^3			2, 8
Nitrosamines and Nitramines		≤ 3 $\mu g/Nm^3$			2, 8
Mercaptans		≤ 300 ppb-mol			5

Notes (for table above):

1. Consistent with emerging international standards
2. CO_2 the most toxic component under all circumstances
3. No corrosion or metal integrity risk
4. Maximum flexibility for CO_2 emitters
5. Conservative limit to account for odour issue on/offloading & maintenance (requires review)
6. Conservative limit to account for possible chemical reactions
7. Risk of toxic accumulation
8. May impact refrigeration during shipping due to its impact to increase the bubble point of the fluid (requires review)
9. NH_3 limit to be confirmed based on rate of potential chemical reactions resulting in the formation of salts.
10. Subject to review of pore sizes of all storage reservoirs
11. Subject to review of reservoir chemistry of geological storage site. Geochemical or biochemical effects/limits of non-CO_2 components in the CO_2 stream to storage reservoirs unknown at this time.
12. The individual ppm limit is presented for the sake of comparison between Northern Lights only, otherwise the limits are set in unambiguous units (mg/Nm^3).

As mentioned above in section 1 b (Philosophy Adopted for CStore1), for CO_2 supply that deviates from the CO_2 supply specification for CStore1, dCS highlights the need for an assessment to be performed for evaluating any potential risks to CStore1.

c) Specification for Battery Limit at Post-liquefaction for HP Shipping Condition

The CO_2 supply specification for the HP shipping condition is as per below. When compared to the specification for battery limit at pre-liquefaction, dCS notes that there is no change. This is because under the HP pressure regime, the light ends remain soluble in the liquefied CO_2 and therefore no BOG is created.

<table>
<tr><th>Component</th><th colspan="2">Limit</th><th>Notes</th></tr>
<tr><td>CO_2</td><td colspan="2">≥ 95.0 mol%</td><td>1</td></tr>
<tr><td>H_2</td><td>≤ 1.5 mol%</td><td rowspan="6">Combined total ≤ 4 mol%</td><td>1, 4, 8</td></tr>
<tr><td>CO</td><td>≤ 0.2 mol%</td><td>2</td></tr>
<tr><td>N_2</td><td>≤ 4.0 mol%</td><td>1, 4, 8</td></tr>
<tr><td>Ar</td><td>≤ 4.0 mol%</td><td>1</td></tr>
<tr><td>Methane</td><td>≤ 4.0 mol%</td><td>1, 4, 8</td></tr>
<tr><td>Ethane</td><td>≤ 4.0 mol%</td><td>1</td></tr>
<tr><td>C_3+ & heavier hydrocarbons</td><td colspan="2">≤ 0.15 mol% (in total)</td><td>1, 10</td></tr>
<tr><td>H_2O</td><td colspan="2">≤ 50 ppm</td><td>3</td></tr>
<tr><td>O_2</td><td colspan="2">≤ 10 ppm</td><td>6, 11</td></tr>
<tr><td>NOx</td><td colspan="2">≤ 10 ppm</td><td>6, 11</td></tr>
<tr><td>SOx</td><td colspan="2">≤ 10 ppm</td><td>6, 11</td></tr>
<tr><td>H_2S</td><td colspan="2">≤ 9 ppm</td><td>6, 11</td></tr>
<tr><td>COS</td><td colspan="2">≤ 100 ppm</td><td>6, 11</td></tr>
<tr><td>CS_2</td><td colspan="2">≤ 20 ppm</td><td>5</td></tr>
<tr><td>NH_3</td><td colspan="2">≤ 10 ppm</td><td>6, 9</td></tr>
<tr><td>BTEX</td><td colspan="2">≤ 100 ppm</td><td>2</td></tr>
<tr><td>Methanol</td><td colspan="2">≤ 250 ppm</td><td>3</td></tr>
<tr><td>Solid Particulates
(Max size of particulate: 1 µm)
(Ash, dust, Na, K, Mg, Cr, Ni, Pb, As & Se)</td><td colspan="2" rowspan="2">≤ 1 (in total) mg/Nm^3</td><td>2, 7, 10</td></tr>
<tr><td>Mercury, Hg</td><td>6, 7</td></tr>
<tr><td>Cadmium, Cd
Thallium, Tl</td><td colspan="2">≤ 0.15 mg/Nm^3</td><td>2, 7</td></tr>
<tr><td>Formaldehyde</td><td colspan="2">≤ 150 mg/Nm^3</td><td>2</td></tr>
<tr><td>Acetaldehyde</td><td colspan="2">≤ 150 mg/Nm^3</td><td>2</td></tr>
<tr><td>Chlorides, fluorides, cyanides
(Cl_2, HF, HCl, HCN)</td><td colspan="2">≤ 150 mg/Nm^3 total</td><td>2</td></tr>
</table>

Amines	nil droplet	3
Glycols	Max droplet size: 2 µm	3
Naphthalene	≤ 100 ppb	3
Dioxins and furans	≤ 0.02 ng/Nm^3	2, 8
Nitrosamines and Nitramines	≤ 3 µg/Nm^3	2, 8
Mercaptans	≤ 300 ppb-mol	5

Notes (for table above):

1. Consistent with emerging international standards
2. CO_2 the most toxic component under all circumstances
3. No corrosion or metal integrity risk
4. Maximum flexibility for CO_2 emitters
5. Conservative limit to account for odour issue on/offloading & maintenance (requires review)
6. Conservative limit to account for possible chemical reactions
7. Risk of toxic accumulation
8. May impact refrigeration during shipping due to its impact to increase the bubble point of the fluid (requires review)
9. NH_3 limit to be confirmed based on rate of potential chemical reactions resulting in the formation of salts.
10. Subject to review of pore sizes of all storage reservoirs
11. Subject to review of reservoir chemistry of geological storage site. Geochemical or biochemical effects/limits of non-CO_2 components in the CO_2 stream to storage reservoirs unknown at this time.

As mentioned above in section 1 b (Philosophy Adopted for CStore1), for CO_2 supply that deviates from the CO_2 supply specification for CStore1, dCS highlights the need for an assessment to be performed for evaluating any potential risks to CStore1.

5) Consideration for metering and monitoring

As mentioned above, dCS has adopted its CO_2 supply specification with the understanding that all components that form part of the CO_2 supply specification is within the range that can be detected and measured with reasonable accuracy in a laboratory.

dCS notes that a metering and monitoring philosophy will need to be developed separately to categories the components into those that require:

i) real-time metering due to its safety critical nature; and
ii) occasional metering for custody transfer purposes and/or for routine operation purposes.

Safety critical components:

i) WILL include water;
ii) MAY include strong oxidising agents, such as O_2, NO_2, and SO_3;
iii) MAY include impurities that can impact material integrity under some transient operating scenarios such as H_2;

iv) MAY include impurities that can increase the bubble point of the fluid, such as N_2, CH_4, and H_2; and
v) MAY include impurities that create an odour nuisance, such as H_2S and COS.

The threshold for plant alarm and shutdown (or routing of fluid to vent) must also be considered.

Regarding components that may be likely to be viewed as environmental risks (relative to plant integrity and operability), dCS notes that there are broadly three categories of environmental risks:

i) Toxic components, such as CO
ii) Bioaccumulating toxic components, such as dioxins
iii) Odouriferous (nuisance) components, such as H_2S

dCS has not defined with components require which level of metering and will plan to define this at a later stage of the CStore1 development as part of the Metering and Monitoring Philosophy development. Upon doing so, dCS will engage with the regulatory authorities to ensure that the CO_2 supply specification meets the requirements of relevant international and Australian regulations

For any questions or comments on this matter, please contact Daein Cha.

Kind regards,

[redacted]

Daein Cha
Managing Director and Chief Executive Officer
DEEPC STORE LIMITED

Appendix 1 – Overview of deepC Store ("dCS") and dCS's CCS Project "CStore1"

dCS is an Australian company headquartered in Perth Western Australia, and a CCS project developer and operator. Our flagship project "**CStore1**" has a first mover position in the Asia Pacific region as an offshore floating CCS hub (image below). CStore1 covers all of the value chain of CCS, that is, capture and liquefaction of CO_2 onshore, transport by ships to the hub, and injection from the floater.

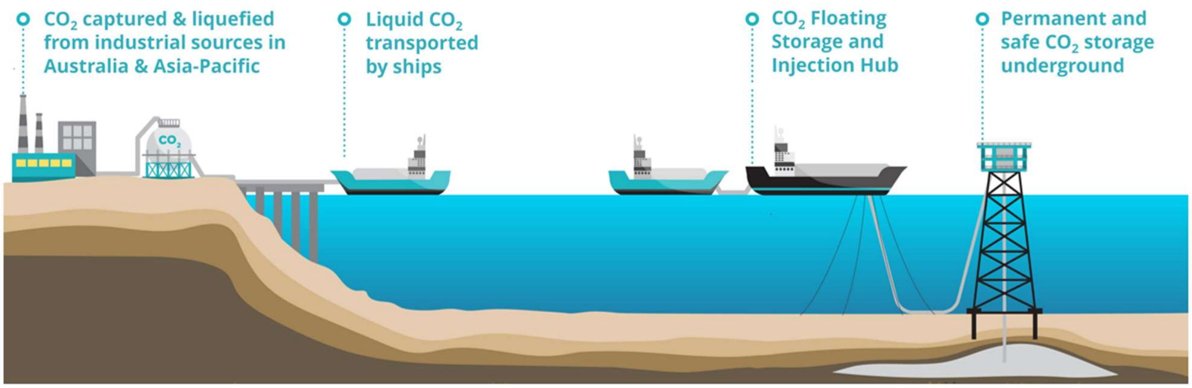


Figure 6: Image of CStore1

There is a range of key benefits associated FSI Hub facilities (noting that these benefits also apply for the utilisation of CO_2 ships), including:

(1) Multi-user: Compared to CCS projects that can be accessed by only one or very few designated CO_2 emitters due to limitations such as CO_2 pipeline distances and land use, the FSI Hub facility can offer CCS to any CO_2 emission source located along the coasts of Australia and overseas.

(2) Minimal pipeline distance, with reduced environmental impacts: The FSI Hub facilities can be located in proximity to offshore CO_2 storage sites, minimising transport pipeline requirement. Together with the use of CO_2 ships, the FSI Hub facilities significantly reduce its onshore and offshore environmental impacts including land clearing and disturbance that result from pipeline, storage, and injection infrastructure installation.

(3) Reduced residual value risk: The FSI Hub facilities are relocatable, reducing the exposure to residual value risks such as those related to the CO_2 storage site performance.

(4) Replicable and scalable: Use of FSI Hub facilities minimises development constraints related to transport pipeline distances and land use. This enables replicability and scalability to fully unlock the Australian offshore potential CO_2 storage capacity and offer CCCS to wide range of CO_2 emission sources within and overseas.

dCS partners with Commonwealth Scientific and Industrial Research Organisation (CSIRO) and multinational entities ABL Group ASA (via Add Energy Group), JX Nippon Oil and Gas Exploration Corporation ("**JX NOEX**"), Kyushu Electric Power, Mitsui O.S.K. Lines, Osaka Gas and Osaka Gas Australia, PGS ASA, Technip Energies and Toho Gas to deliver CStore1[6]. Our partners bring significant experience and expertise to develop our CStore1, including those as technical experts, operators of large-scale industrial facilities and ships, potential CO_2 suppliers and prospective investors in CStore1. Key development milestones include:

[6] More information on dCS's CStore1 Partners available at: https://www.deepcstore.com/cstore1-partners

(1) Agreement executed with Nippon Steel Corporation (Japan's largest steel producer) to provide up to 5 million tonnes of CO_2 per annum to CStore1[7];

(2) Agreement executed with Kansai Electric Power (Japan's 2nd largest power utility) to consider developing a supply chain for capturing and transporting up to 10 MTPA of CO_2 from KEPCO's power station to CStore1[8];

(3) Joint bid submitted with JX NOEX for GHG acreage offshore Australia[9];

(4) Shares subscription agreement executed with PGS[10]; and

(5) Letter of Intent executed with Mitsui O.S.K. Lines and Technip Energies in relation to the Pre-FEED, FEED, EPCI and O&M services for the FSI hub facility for CStore1[11].

CStore1 is currently in pre-FEED phase, with operations aimed to start by 2030.

(Remainder of the page left intentionally blank)

[7] More information on dCS's agreement with Nippon Steel available at: https://www.nipponsteel.com/en/news/20220214_100.html

[8] More information on dCS's agreement with Kansai Electric Power available in Japanese at https://www.kepco.co.jp/corporate/notice/notice_pdf/20221130_2.pdf and in English at https://www.deepcstore.com/news/co2offtake-kepco-deepcstore

[9] More information on dCS's joint bid with JX NOEX available at: https://www.nex.jx-group.co.jp/english/newsrelease/2022/joint_bid_for_a_greenhouse_gas_assessment_permit_for_a_greenhouse_gas_storage_acreage_release_area_i.html

[10] More information on dCS's shares subscription agreement with PGS available at: https://www.pgs.com/media-and-events/news/pgs-and-deepc-store-sign-share-subscription-agreement/

[11] More information on dCS's letter of intent available at: https://www.technipenergies.com/en/media/news/technip-energies-deepc-store-and-mitsui-osk-lines-join-forces-floating-carbon-capture-storage-hub