CLAIMS

1. A generally cylindrical element adapted for immersion in a body of water, the generally cylindrical element having an outer surface arranged, in use, to be in contact with the water, the outer surface comprising:

at least two rows of repeating shapes provided thereon,

each row of repeating shapes being separated from each adjacent row by a groove arrangement and each shape within a row being separated from adjacent shapes by at least one groove;

wherein the shapes comprise six sides to form a hexagon shape such that the outer surface of the generally cylindrical element reduces Vortex Induced Vibration (VIV) and/or drag acting upon the generally cylindrical element.

2. ~~A~~ The generally cylindrical element as claimed in claim 1, wherein each of the repeating hexagon shapes within each row is identical.

3. ~~A~~ The generally cylindrical element as claimed in claim 1 or claim 2, wherein each row provided on the outer surface comprises identical repeating hexagon shapes to the hexagon shapes of each other row, such that all of the hexagon shapes provided on the outer surface are identical.

4. ~~A~~ The generally cylindrical element as claimed in claims 1-3, wherein repeating hexagon shapes are arranged on the outer surface in a tessellation.

5. ~~A~~ The generally cylindrical element as claimed in any preceding claim, wherein the outer surface of the cylindrical element comprises a hexagonal tessellation in which each three adjacent hexagon shapes meet at adjoining vertices and the rest of the hexagon shapes repeat that arrangement across the outer surface of the cylindrical element.

6. ~~A~~ The generally cylindrical element as claimed in claims 1-5, wherein at least one vertex between two adjacent sides of each repeating hexagon shape comprises a radius.

7. ~~A~~ The generally cylindrical element as claimed in claims 1-6, wherein each repeating hexagon shape projects from the outer surface of the generally cylindrical element due to the groove arrangements.

8. ~~A~~ The generally cylindrical element as claimed in claims 1-7, wherein the generally cylindrical element is adapted to be placed around a substantially cylindrical structure which, in use, is located in the body of water.

9. ~~A~~ The generally cylindrical element as claimed in claim 8, wherein the generally cylindrical element is formed of two or more sections that when brought together envelope the substantially cylindrical structure.

10. ~~A~~ The generally cylindrical element as claimed in claim 9, wherein the generally cylindrical element is C-shaped in cross section and comprises a slit formed along the whole length at one side such that it can be slid over the length of the generally cylindrical structure.

11. ~~A~~ The generally cylindrical element as claimed in claims 1-7, wherein the generally cylindrical element is formed integrally with a substantially cylindrical structure which, in use, is located in the body of water.

12. ~~A~~ The generally cylindrical element as claimed in claims 1-11, wherein the groove arrangement comprises angled side faces.

13. ~~A~~ The generally cylindrical element as claimed in claim 12 when dependent on claim 6, wherein the angled side faces are angled between 40 to 80 degrees relative to the radius of the generally cylindrical element.

14. ~~A~~ The generally cylindrical element as claimed in claims 1-11, wherein the groove arrangement comprises a semi-circular profile.

15. ~~A~~ The generally cylindrical element as claimed in claim 14, wherein the width of the groove arrangement is within the range of 0.50 to 0.60 times ~~the~~ an outermost radius of the generally cylindrical element.

16. ~~A~~ The generally cylindrical element as claimed in claims 1-15, wherein the groove arrangement for each row of repeating hexagon shapes comprises an upper groove and a lower groove, where each of the upper and lower grooves encircles the full 360 degree circumference of the generally cylindrical element such that each of said upper and lower grooves is continuous around the generally cylindrical element.

17. ~~A~~ The generally cylindrical element as claimed in claims 1-~~16~~15, wherein the groove arrangement provides at least one separated path for a flow of water to follow around the circumference of the generally cylindrical element, such that water flowing within the groove arrangement meets at least one flow separation point.

18. ~~A~~ The generally cylindrical element as claimed in claim 17, wherein the flow separation point comprises a vertex of a hexagon shape where two sides of the hexagon shape meet.

19. ~~A~~ The generally cylindrical element as claimed in claim 17 or claim 18, wherein the flow separation point comprises a side of the hexagon shape.

20. ~~A~~ The generally cylindrical element as claimed in claims 17-19, wherein when the water flowing within the groove arrangement meets a flow separation point, the direction of at least a portion of the water flow is changed by less than 90°.

21. ~~A~~ The generally cylindrical element as claimed in any ~~preceding claim~~ of claims 8 to 10, provided in multiple part circular shells which when brought together envelope the substantially cylindrical structure located in the body of

water and which ~~typically~~ comprises buoyancy to aid floatation of the substantially cylindrical structure located in the body of water.

22. ~~A~~ The generally cylindrical element as claimed in claim 21, further comprising stacking flats to permit individual shells to be stacked one on top of another.

23. ~~A~~ The generally cylindrical element as claimed in claims 21 or 22, further comprising strap and/or bolt holes to assist coupling the shells to one another around a substantially cylindrical structure which, in use, is located in a body of water.

24. ~~A~~ The generally cylindrical element as claimed in claims 21 or 22, further comprising strap and/or lifting holes to assist transportation of the generally cylindrical element or shells thereof.

25. ~~A~~ The generally cylindrical element as claimed in any of claims 1 to 20, further comprising a subsea conduit, wherein the inner surface/throughbore of the generally cylindrical element is bonded directly to the outer surface of the subsea conduit.

26. ~~A~~ The generally cylindrical element as claimed in claim 25, wherein a protective coating layer is provided between the inner surface/throughbore of the generally cylindrical element and the outer surface of the subsea conduit in a co-axial manner.

27. ~~A~~ The generally cylindrical element as claimed in claim 26, wherein the protective coating layer is bonded to the respective surface on each of its outer and inner surfaces.

28. ~~A~~ The generally cylindrical element as claimed in any preceding claim, wherein the said groove arrangements comprise a groove having a depth of

profile = 0.01 to 0.1 times the outer diameter (OD) of the generally cylindrical element.

29. ~~A~~ The generally cylindrical element as claimed in claim 28, wherein the said groove arrangements comprise a groove having a depth of profile = approximately 0.05 times the outermost diameter (OD) of the generally cylindrical element.